

THE WEST AFRICAN EXAMINATIONS COUNCIL
BANJUL, THE GAMBIA



THE WEST AFRICAN SENIOR SCHOOL CERTIFICATE
EXAMINATION (WASSCE)

FOR SCHOOL CANDIDATES 2023

CHIEF EXAMINERS' REPORTS



THE GAMBIA

TABLE OF CONTENTS

<u>SUBJECT/PAPER</u>	<u>PAGE</u>
GENERAL RÉSUMÉ	Ia - Ii
<u>LANGUAGES</u>	
Résumé	Iia - IIb
Arabic 2	1 - 4
English Language 1	5 - 10
French 2	11 - 13
Literature-in-English 2	14 - 16
Literature-in-English 3	17 - 20
<u>GENERAL SUBJECTS</u>	
Résumé	IIIa - IIIb
Economics 2	21 - 25
Geography 2	26 - 29
Geography 3	30 - 42
Government 2	43 - 46
History 2	47 - 49
Islamic Studies 2	50 - 52
Christian Religious Studies 2	53 - 55

SUBJECT/PAPER**PAGE****MATHEMATICS****Résumé****IV**

Mathematics (Core) 2

56 - 65

Further Mathematics 2 (Elective)

66 - 71

SCIENCES**Résumé****V**

Agricultural Science 2

72 - 75

Agricultural Science 3

76 - 78

Biology 2

79 - 83

Biology 3

84 - 88

Chemistry 2

89 - 93

Chemistry 3 A

94 - 97

Chemistry 3 B

102 - 101

Health Science 2

102 - 106

Health Science 3

107 - 110

Physical Education 2

111 - 114

Physical Education 3

115 - 117

Physics 3 (Alternative A)

118 - 121

Physics 3 (Alternative B)

122 - 125

Physics 2

126 - 131

Science 2

132 - 141

Science 3

142 - 148

<u>SUBJECT/PAPER</u>	<u>PAGE</u>
<u>COMMERCIAL SUBJECTS</u>	
Résumé	VI
Business Management 2	149-152
Commerce 2	153-156
Financial Accounting 2	157-163
Principles of Cost Accounting 2	164-169
<u>HOME SCIENCES</u>	
Résumé	VII
Clothing & Textile 2	170-173
Clothing & Textile 3	174-176
Foods & Nutrition 2	177-179
Foods & Nutrition 3	180-181
Home Management 2	182-186
Home Management 3	187-189
<u>TECHNICAL/VOCATIONAL SUBJECTS</u>	
Résumé	VIIIa-VIIIb
Metalwork 2	190-193
Metalwork 3	194-196
Technical Drawing 2	197-200
Technical Drawing 3	201-204
Visual Art 2	205-208
Visual Art 3A	209-210

Visual Art 3B	211-213
Visual Art 3C	214-215
Applied Electricity 2	216-219
Applied Electricity 3	220-222
Auto – Mechanics 2	223-224
Auto – Mechanics 3	225-225
Woodwork 2	226-228
Woodwork 3	229-230

GENERAL RÉSUMÉ

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS FOR THE GAMBIA

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers of the various subjects was within the scope of the prescribed WASSCE syllabus and that it compared favourably with that of previous years.

2. CANDIDATES' PERFORMANCE

The performance of Candidates was reported by the Chief Examiners of the different subject groups as follows.

(1) LANGUAGES

The Chief Examiner for English revealed that candidates performed better in the continuous writing section of the paper. That there was a slight improvement in the letters and essays written by the candidates. The Chief Examiner for Arabic stated that there were no strengths as some of the candidates only copied questions without giving answers.

The Chief Examiner for French highlighted that the performance of candidates in comprehension in both letter and essay writing was satisfactory. Candidates also showed a high level of understanding of the questions as they were able to interpret them.

The Chief Examiners for Literature 2 and 3 stated that there was improvement in the performance of the candidates.

(2) GENERAL SUBJECTS

All the questions were said to be suitable for the level of the candidates, however their performance varied. The Chief Examiners for Geography 2, History 2, Government 2 and Islamic Studies reported an improvement in performance while the Chief Examiner for Geography 3 reported a decline in performance. Candidates were said to have performed well in sections A and B but did poorly in Section C in Geography 2 and Government 2, the candidates were said to have performed well in Sections A and B but performed poorly in Section C which required interpretation.

The Chief Examiner for Geography 3 reported that the overall performance of the candidates fell below expectation. The Chief Examiner for Economics also reported a poor performance as about 70% of the candidates got poor marks.

(3) MATHEMATICS

The general performance of the candidates was reported to be below average. However, it was better when compared to the previous years.

(4) SCIENCES

Generally, the performance of candidates in Chemistry 3 and Physical Education 3 was reported to be good. Candidates' performance improved in both Chemistry 3A and 3B compared to the previous year. In Physical Education 3, most of the candidates demonstrated their skills very well according to the Chief Examiners.

Satisfactory performance was reported in Health Science 2. There was also a slight improvement in the performance of candidates in Physics 3B and Science 2 compared to last year. The performance of candidates was average in Agricultural Science 3 as reported.

As in the previous year, the performance of candidates in Biology 2 and 3, Chemistry 2, and Physics 2 was reported to be unsatisfactory. In a similar vein, performance in Agricultural Science 2, Health Science 3, Physical Education 2, Physics 3A and Science was reported to be very low.

(5) **COMMERCIAL SUBJECTS**

The chief examiner for Business Management indicated that there was improvement in candidates' performance. However, the chief examiners for Financial Accounting, Commerce and Cost Accounting reported a drop in performance.

(6) **HOME SCIENCES**

The Chief Examiners' reports indicate that Candidates' performance improved in Clothing and Textiles papers 2 and 3. Performance in Foods and Nutrition 2 and 3 was below expectation. Candidates' performance in Home Management 2 and 3 was average.

(7) **TECHNICAL SUBJECTS**

The Chief Examiners for Auto Mechanics 2 and 3 reported that the candidates performed above average while the Chief Examiner for Visual Art 3A reported that the candidates' performance improved slightly. The Chief Examiners for Metalwork 3 and Woodwork 2 and 3 reported that the performances were average. Performance in other papers were reported to be below average.

3. CANDIDATES' STRENGTHS

The Chief Examiners reported on candidates' strengths as follows:

(1) **LANGUAGES**

The Chief Examiners reported as follows:

The Chief Examiner for English indicated that there was a slight improvement in the essays and letters written by candidates. The questions were clearly interpreted. There was a marked improvement in their vocabulary as there were minimal grammatical errors in their work. The Chief Examiner for French stated that the responses of most candidates showed that they were well prepared for the examination. The questions were well comprehended and responded to. The letters and essays were written as demanded by the questions.

The Chief Examiner for Literature-in-English 2 and 3 indicated that candidates' performance had improved especially in Literature -in- English 2 where outstanding performance was reported in every question attempted whereas in Literature-in-English 3, most of the candidates were said to have demonstrated strong understanding of the drama texts and poems. However, the Chief Examiner for Arabic did not see any strength worthy of mention.

(2) **GENERAL SUBJECTS**

In the General Subjects, the Chief Examiners reported on the strengths of candidates as follows:

- The Chief Examiner for Economics 2 reported that most of the candidates followed instructions by answering the required number of questions. Most of them showed their strength in section B (Data Response) question numbers 1 and 2.

- The Chief Examiner for Geography 3 reported that about 10% of the candidates did exceptionally well as they presented structured answers backed by good diagrams. Some of the candidates also did well in sub-questions (b) and (c) of question 6 as well as sub-question (b) of question 4.
- The Chief Examiner for History 2 reported that most of the candidates adhered to the rubrics of the paper by answering the required number of questions. 65% of the candidates displayed knowledgeability in the subject as they were able to develop on their points very well. More than half of the candidates displayed legibility in writing.
- The Chief Examiner for Geography 2 reported that some of the candidates were fully prepared for the examination as they presented their points very well which enabled them to score high marks. Some of the candidates, about 40% of them, were able to give relevant examples to support their answers.
- The Chief Examiner for Islamic Studies 2 reported that candidates demonstrated strength in questions 1, 2 and 3 and thus scored good marks.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates presented their answers brilliantly as demanded by the questions. Their writings were legible.
- The Chief Examiner for Economics 2 reported that most of the candidates followed instructions by answering the required number of questions. Most of them showed strength in section B Data Response (question numbers 1 and 2).
- The Chief Examiner for Geography 3 reported that about 10% of the candidates did exceptionally well as they presented structured answers backed by good diagrams. Some of the candidates also did well in sub-question (b) and (c) of question 6 as well as sub-question (b) of question 4.
- The Chief Examiner for History 2 reported that most of the candidates adhered to the rubrics of the paper by answering the required number of questions. 65% of the candidates displayed knowledgeability in the subject as they were able to develop on their points very well. More than half of the candidates displayed legibility in writing.
- The Chief Examiner for Geography 2 reported that some of the candidates were fully prepared for the examination as they presented their points very well which enabled them to score high marks. Some of the candidates, about 40% of them, were able to give relevant examples, both local and international, to support their answers.
- The Chief Examiner for Islamic Studies 2 reported that candidates demonstrated strength in questions 1, 2 and 3 and thus scored good marks.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates presented their answers brilliantly as demanded by the questions. Their writings were legible.

(3) MATHEMATICS

The Chief Examiners for Mathematics reported on the strengths of candidates as follows:

- Copying and completing tables of values for a given quadratic equation.
- Solving inequalities.
- Calculation of time from a given formation.
- Differentiating between angles of elevation and depression.
- Calculation of areas of sectors and segments of a circle.
- Finding the inverse of a function.
- Linear sequence.
- Solving of equations of motion in uniform acceleration.

(4) SCIENCES

The Chief Examiners for the Sciences reported on the strengths of candidates as follows:

- Following instructions and displaying legible handwritings.
- Correct definition of scientific words/terms.
- Ability to Interpret and answer the required number of questions.
- Use of logical approach to answer questions.
- Ability to tabulate titration results correct to two decimal places.
- Ability to take readings, measure distances, label diagrams and plot graphs.
- Supplying units for final answers.

(5) COMMERCIAL SUBJECTS

The Chief Examiners of the Commercial Subjects reported on the strengths of candidates as follows:

- High scores in questions 2, 3 and 4 in Business Management.
- Good performance in question 1 in Commerce.
- Good responses in the theoretical aspect of section A in Financial Accounting.
- High scores in questions 1, 3 and 9 in Principles of Cost Accounting.

(6) HOME SCIENCES

The Chief Examiners in the Home Sciences reported on the strengths of candidates as follows:

- Most candidates were able to complete the tasks in the practical papers.
- Candidates were able to use suitable serving dishes.
- Some candidates were able to follow the instructions on the questions.
- Candidates were able to make proper use of the utensils and equipment.

(7) TECHNICAL SUBJECTS

The Chief Examiners for the Technical Subjects reported on candidates' strengths as follows:

- The use of the basic tools was properly demonstrated.
- Skills in providing good quality of line work.
- The use of correct scale and the required dimensions.
- Features needed in freehand sketches were well presented.
- Some of the candidates produced good drawings and shading techniques.

4. CANDIDATES' WEAKNESSES

Candidates' weaknesses were reported on as follows:

(1) LANGUAGES

The Chief Examiners in the language subjects reported on the weaknesses of candidates as follows:

The Chief Examiner for English stated that the comprehension and summary passages were not fully understood by a good number of the candidates. The responses to questions asked were far from what was expected. Sentence structures were faulty, and candidates wrote sentences that were difficult to understand. There were lots of spelling errors and faulty expressions.

The Chief Examiner for French highlighted that candidates lacked fluency and as a result, could not express themselves in the language. There were lots of grammatical errors as a lot of them could not differentiate the tenses such as present, future, simple past, and past participle.

The Chief Examiner for Literature-in-English reported that the poor performance in Literature 2 was caused by misinterpretation of questions. A good number of candidates could not present their essays in an orderly and organized manner, whereas in Literature 3, most of the candidates could not provide statements to the themes of the questions they attempted. Most of them did not provide character identification for the Drama questions. Most candidates still lacked the ability to define figurative and poetic devices required by the poetry questions and those candidates who were able to give some relevant points could not develop them.

The Chief Examiner for Arabic mentioned that some candidates did not understand the questions and could not write the required answers.

(2) GENERAL SUBJECTS

The Chief Examiners in the General Subjects reported on the weakness of candidates as follows:

- The Chief Examiner for Geography 2 reported that a good proportion of the candidates could not draw a good sketch map of Senegambia and Africa. They could not insert the required features since the maps were poorly drawn.
- The Chief Examiner for Geography 3 reported that some of the candidates performed poorly because of their inability to correctly spell certain common and technical words such as hemisphere, latitude, altitude, summer, winter, etc. Some were not able to develop their points while some lacked the basic understanding of some command words like Highlight and Describe, thereby leading to loss of marks.
- The Chief Examiner for History 2 reported that candidates' inability to display basic understanding of certain key words of the subject matter was still evident. Nearly 60 percent of the candidates could not express themselves in simple and correct English. This made it difficult to comprehend what they wrote. Some candidates failed to follow examination instructions. Illegible handwriting accounted for some of them to lose marks.
- The Chief Examiner for Government 2 reported that many of the candidates could not pass due largely to their inability to understand the questions as well as inability to express themselves in simple and correct English Language while some could not develop their points and thus resorted to mere mentioning of words. Some candidates were in the habit of copying questions as answers to other questions. Some candidates were not able to explain their points. Some candidates copied as many questions as possible on the same piece of examination paper.
- The Chief Examiner for Islamic Studies reported that the candidates performed poorly because they did not do well in Hadith which was a perennial problem.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates performed badly because they did not follow the rubrics of the paper, some did not develop their points as they merely listed them while some of them wrote on stories that were not even in the question paper.
- The Chief Examiner for Economics reported that the candidates displayed inadequate preparation for the examination as evidenced in their lack of understanding of the questions. Some of them resorted to writing out of context.

(3) MATHEMATICS

The Chief Examiners in the Mathematics Subjects reported on the weaknesses of candidates as follows:

- Inability to illustrate a given information in a diagram e.g. bearing.
- Use of non-given scales to plot points on a graph.
- Inability to determine gradients, midpoints, and equation of a line.
- Inability to construct frequency distribution table to calculate the mean and standard deviation.

(4) SCIENCES

The Chief Examiners in the Science Subjects reported on the weaknesses of candidates as follows:

- Not following instructions, improper diagrams/illustrations.
- Disorderly presentation of work and not using key words in definitions.
- Inability to identify specimens, underlined words and write botanical names.
- Wrong use of chemical symbols of atoms/ions.
- Insufficient laboratory experience, use of apparatus and chemicals.
- Low knowledge of subject and misinterpretation of questions.
- Repetition of answers/ideas.

(5) COMMERCIAL SUBJECTS

The Chief Examiners in the Science Subjects reported on the weaknesses of candidates as follows:

- Responses to questions 3, 4 and 5 in Commerce were poor.
- Poor spelling, wrong numbering, and non-adherence to rubrics in Business Management.
- Inability to clearly identify the error involved in each transaction in question 2 in Financial Accounting.
- Lack of skills in good examination planning as candidates did not take their time to read and select the questions they could answer well. Poor command of the English Language, poor time management and non-adherence to rubrics in Principles of Cost Accounting.

(6) HOME SCIENCES

The Chief Examiners in the Home Science Subjects reported on the weaknesses of candidates as follows:

- Candidates had difficulty in illustrating and identifying diagrams.
- Poor construction of sentences and spelling difficulties.
- Some candidates did not finish their project works.
- Candidates had problems in interpreting the questions.
- Table setting was a challenge for most of the candidates.
- Incomplete responses to questions.

(7) TECHNICAL SUBJECTS

The Chief Examiners in the Technical Subjects reported on the weaknesses of candidates as follows:

- In Visual Art, candidates' weaknesses included poor drawing and composition, inability to observe objects and to use colour or shade properly.
- In Technical Drawing, weaknesses observed were poor visualization with no awareness of what the lowest point was about. Lack of knowledge in the geometry of drawing a triangle

- with given specifications, poor line work and wrong dimensioning, wrong displacement of views, and poor sectioning.
- In Woodwork and Metalwork, candidates' weaknesses were poor sketching skills, questions not being fully attempted and less periods allocated to technical subjects.
- In Auto Mechanics and Applied Electricity, candidates' weaknesses were lack of enough practice to improve on their practical skills and inadequate coverage of the syllabus. They also demonstrated lack of ability to select correct tools. The responses of some candidates also indicated that some questions were not properly treated during lessons or that the teachers are not competent in those areas.

5. **SUGGESTED REMEDIES**

The Chief Examiners of the different subject groups proposed the following as remedies to the candidates' weaknesses.

(1) **LANGUAGES**

The Chief Examiners proffered the following to improve candidates' performance:

- Candidates are advised to adequately prepare themselves before the examination.
- Candidates should endeavor to read as many materials as possible to broaden their scope as well as to enhance their chances of passing the subjects.
- Teachers must use prescribed texts to enhance better teaching and learning.
- Candidates must enrich their vocabulary through extensive reading.
- Candidates must endeavor to read, write, and speak in English; French and Arabic candidates are encouraged to improve on their competencies in those subject areas.
- Candidates must carefully read and fully understand the questions before attempting them.
- Schools should employ the right type of teachers.
- Schools should work harder to reduce teacher attrition rate for continuity.
- Syllabus coverage must always be attained before every examination.
- Students should be encouraged to enrich their vocabulary in Arabic through the reading of numerous Arabic relevant materials.

(2) **GENERAL SUBJECTS**

The Chief Examiners proposed the following as remedies:

- Candidates should be encouraged to familiarise themselves with the examination format by reading and answering past question papers.
- Schools should endeavour to always cover the examination syllabuses before the start of the examinations.
- Teachers should adequately prepare their candidates for the examinations.
- Candidates should be encouraged to attend private and public syndicate classes.
- Candidates should be encouraged to read the prescribed textbooks.
- Candidates should endeavour to complete the syllabus rather than gamble with a view to passing the examination.
- Candidates must desist from the practice of answering two or three questions on the same page.
- Schools should employ well qualified teachers in all subjects.
- Candidates should endeavour to explain concepts in economics and use relevant examples in the process.
- Adequate preparation should be done by the candidates by learning the key terms of the various subjects to enhance their understanding.

(3) MATHEMATICS

The following suggestions were given by the Chief Examiners to improve performance of the candidates:

- Teachers should discourage the idea of indiscriminate rounding of values until at the final answers.
- Teachers should ensure that the students have full coverage of the syllabus.
- Mastering of the rubrics is a necessity before any attempt to answer the questions.
- Students need to know concepts as much as they learn computational techniques.

(4) SCIENCES

The Chief Examiners in the Science Subjects gave the following recommendations to remedy the poor performance of candidates:

- Subjects to be taught by trained and specialized teachers.
- Use of recommended textbooks and syllabi.
- Revision of WASSCE past papers with students.
- Teachers to read Chief Examiners' Reports and follow their recommendations.
- Equip science laboratories with apparatus and how to handle them safely.
- Early preparedness and good writing skills.

(5) COMMERCIAL SUBJECTS

The following suggestions were given by the Chief Examiners to improve performance:

- Candidates should always read instructions and adhere to the rubrics of the paper.
- Candidates are encouraged to attempt their best questions first while also apportioning time to each question and show workings within the solution to attain maximum scores.
- Candidates should give correct headings to accounts to attain maximum scores.
- Candidates should restrict themselves to the questions asked rather than spending time to show other aspects which do not attract marks.
- Candidates are advised to read over their work before submitting their scripts.
- Teachers are advised to spend valuable time on the Practice aspect of Financial Accounting and actively involve students in solving practical exercises.
- Regular class exercises and assignments at the end of every topic taught will help assess students' level of understanding.
- Teachers should endeavour to cover all areas of the syllabus well ahead of the exams to give enough time for revision.
- Teachers are advised to revise past questions and discuss the answers with their students in class.
- The use of the internet could also be of help to acquaint students with the latest developments in their subjects.
- For theory questions, candidates are advised to give examples to support answers to enhance clarity in their work. They should also show all workings leading to final answers.
- Candidates should purchase recommended textbooks and stop relying on pamphlets which are mere supplementary materials.
- It is a good idea to buy past question papers from WAEC to acquaint oneself with the format of the questions and the rubrics.

(6) HOME SCIENCES

To improve on the performance of candidates, the Chief Examiners in the Home Sciences made the following recommendations:

- School Administrators should ensure that Home Science Laboratories are well equipped, and candidates should be exposed to a lot of practical sessions.
- Qualified Teachers should be appointed to teach the subject.
- Candidates should use the prescribed textbooks.
- The entire syllabi should be covered.
- Candidates should be taught to understand the questions before attempting them.

(7) TECHNICAL SUBJECTS

- Candidates should be allowed to use the workshops frequently to improve their skills.
- Candidates should be provided with adequate tools, equipment, and materials for use in the workshops.
- The coverage of all topics in the syllabus should be ensured.
- Proper teaching aids must be provided for the teachers, and this include textbooks and practical training materials.
- Candidates should improve on their drawing abilities.

LANGUAGE SECTION

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS FOR THE GAMBIA
THE LANGUAGES

1. STANDARD OF THE PAPERS

All the Chief Examiners in the Language section indicated that all the papers were within WAEC standard.

2. CANDIDATES' PERFORMANCE

The Chief Examiner for English Language revealed that candidates performed better in the continuous writing section of the paper. That there was slight improvement in the letters and essays written by the candidates. Whereas the Chief Examiner for Arabic stated that there were no strengths as some of the candidates' only copied questions without giving answers.

The Chief Examiner for French highlighted that the performance of candidates in comprehension, in both letter and essay writing, was satisfactory. Candidates also showed high level of understanding of the questions as they were able to interpret them.

The Chief Examiner for Literature 2 and 3 stated that there was improvement in the performance of the candidates.

3. CANDIDATES' STRENGTHS

The Chief Examiner for English indicated that there was a slight improvement in the essays and letters written by candidates. The questions were clearly interpreted. There was a marked improvement in their vocabulary as there were minimal grammatical errors in their work. The Chief Examiner for French stated that the responses of most candidates showed that they were well prepared for the examination. The questions were well comprehended and responded to. The letters and essays were written as demanded by the questions.

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4. CANDIDATES' WEAKNESSES

The Chief Examiner for English stated that the comprehension and summary passages were not fully understood by a good number of the candidates. The responses to questions asked were far from what was expected. Sentence structures were faulty, and candidates wrote sentences that were difficult to understand. There were lots of spelling errors and faulty expressions.

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The Chief Examiner for Arabic mentioned that some candidates did not understand the questions and could not write the required answers.

5. SUGGESTED REMEDIES

The Chief Examiners came up with the following to improve candidates' performance:

- Candidates are advised to adequately prepare themselves before the examination.
- Candidates should endeavor to read as many materials as possible to broaden their scope as well as to enhance their chances of passing the subjects.
- Teachers must use prescribed texts to enhance better teaching and learning.
- Candidates must enrich their vocabulary through extensive reading.
- Candidates must endeavor to read, write, and speak in English; French and Arabic candidates are encouraged to improve on their competencies in those subject areas.
- Candidates must carefully read and fully understand the questions before attempting them.
- Schools should employ the right type of teachers.
- Schools should work harder to reduce teacher attrition rate for continuity.
- Syllabus coverage must always be attained before every examination.
- Students should be encouraged to enrich their vocabulary in Arabic through the reading of numerous Arabic relevant materials.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
ARABIC 2

1. GENERAL COMMENTS ON THE PAPER

Questions on the essay were generally within the ability of the candidates. Prose and poem questions were somehow difficult. However, the number of candidates has increased this year. The following were constrain:

- Lack of qualified Arabic teachers
- Lack of suitable textbooks
- Lack of Arabic language newspapers and magazines to enrich students vocabularies
- Arabic is not a spoken language at home and offices

2. CANDIDATES' STRENGTHS

There is no strength, some candidates copy questions without explanations.

3. CANDIDATES' WEAKNESSES

Some of the candidates did not understand the questions and could not write the required number of words (at least 120 words).

4. SUGGESTED REMEMDIES

Students should be encouraged to enrich their vocabulary through the reading of limited Arabic poems, newspapers, and listening to weekly Arabic news on Gambia Radio and Television Services. They can also listen to other Arabic news and programs on other Arabic channels.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Composition

Expected answers

Meaning of questions one: If you want to succeed you should keep awake during the night

Introduction

Success cannot be achieved easily

Lazy person cannot achieve anything in his or her life

Allah says in the Holy Quran those who sacrifice among us will be guided by Allah .

Lazy person, talkative and sleeping without work will never succeed in life

Question 2

Football

The meaning of football

Expected answers

Football match is organised between 22 players

Divided into two teams equally

Each team struggle to score a goal

Players play with foot and head without touching the ball with hands

Goalkeeper is the only person to touch the ball with hands

Football match last for two intervals
Each interval is 45 minutes
The match is administered by a referee

Question 3

BIRTHDAY

Expected answers

Birthday is annual celebration for a person
It is normally organised by relatives
Parents and friends
Gift is normally given to celebrating person
Cakes and juice is usually distributed among friends

Question 4

LETTER TO A YOUNGER BROTHER ADVISING HIM TO PURSUE HIS EDUCATION

Expected answers

It reduces poverty in the society
It enables the person to have confidence in his or herself
Enables the person to have good employment
It is a source of building confidence between person and his or her God

أَجِبْ عَنْ سُؤَالٍ وَاحِدٍ مِنَ الْقِسْمِ الْأَوَّلِ وَأَرْبَعَةَ أَسْئَلَةٍ مِنَ الْقِسْمِ الثَّانِي
وَيَجِبُ أَنْ تَكُونَ أَجْوِبَتُكَ بِالْعَرَبِيَّةِ.

*Answer one question in part 1 and four questions in part 2.
Your answer must be written in Arabic.*

القِسْمُ الْأَوَّلُ : الإِثْنَاءُ

PART I COMPOSITION

اُكْتُبْ حَوَالِي مِائَةٍ وَعِشْرِينَ كَلِمَةً عَنْ وَاحِدٍ مِنَ الْمَوْضُوعَاتِ الْآتِيَةِ:

Write a composition of about 120 words on any of the following topics:

- ١ - مَنْ طَلَبَ الْعِلْمَ سَهَرَ اللَّيَالِي
- ٢ - مُبَارَاةُ كُرَّةِ الْقَدَمِ فِي مَنْطِقَتِي
- ٣ - عِيدُ مِيلَادِ حَضْرَتِهِ
- ٤ - رِسَالَةٌ إِلَى أَخِيكَ الْأَصْغَرِ تُرَكِّزُ فِيهَا عَلَى أَهْمِيَّةِ التَّعَلُّمِ

PART 2
LITERATURE

Question 1

Explain the following Poem

Expected Answers

A dialogue between a female (girl) bread seller and travellers at a garage

Why are you called Bintu Hukoumah (Princess of Government)?

She replied; I don't know either. My father or mother did, I was dropped at a dumping site

Question 2

Discuss the life history of Doctor Zakaria Husain

His name is Zakria Edris

Born 1950 in Otshi City, Nigeria

He studied basic Islamic Studies in his home city

Later attended University of Ibadan, Nigeria, and obtained BA, Masters and PHD Degrees

He studied in six Universities for a period of 35 years. He was a great Poet and orator

Published many Islamic books and Scientific Magazine in Nigeria, UK, Iran, Greece, Saudi Arabia, Malaysia and many other countries

Question 3

Explain the following Poem

Expected Answers

STANZA ONE

The poet complained about difficulties of life. He said he wouldn't mind dying slowly without achieving anything in life

Question 4

DISCUSS LIFE HISTORY OF HASSAAN B. THABIT

He is Abul Wualid Hassaan

Born in Medina

He lived during Jahiliyaah period

He was a great poet supporting rulers of Ghasaan

He migrated with Prophet Muhammad (S.A.W) to Medina and embraced Islam

He was a great helper to Prophet Muhammad (S.A.W)

The Prophet pray for him

Hassaan lived for 120 years. 60 of his life was spent in Jahiliyyah period and another 60 in Islam

Question 5

Explained the following Poem

Expected Answers

The female poet said

That her brother Sakhr is a strong and tall young man who regularly carries sword

He is Generous

He Possesses a huge tent under which poor people gathered to receive gift from him

He died at youthful age

The poet continued to say that her brother has achieved a lot more than his contemporaries.

القسم الثاني: الأدب

PART 2
LITERATURE

أجب عن السؤال الأول وثلاثة أسئلة أخرى من الأسئلة الآتية.

Answer question one and any other three from the following questions.

- ١ - أذكر قائل القصص الآتية والمناسبة التي قال فيها.
"لأنني لا أعرف لي أباً ولا أمّاً سوى رجلٍ يُسمّى بباكي، وهو الذي أخبرني
بأنّي كنتُ لقيطة، وأنه وجدني في الرّبالة وذهب بي إلى بيتي ..."
"رحلة البحث عن الإنسان"
- ٢ - أكتب بإيجاز عن ترجمة حياة الأستاذ الدكتور زكريا حسين.
- ٣ - اشرح الأبيات الآتية شرحاً مفصلاً:
فأنرك أفكاري تربع غرورها # وأنرك أخزائي تكفن أخزائي
وأزحف في غنشي نظيرك جاهلاً # ذواعي وجدي أو بواعث وجداني
ومستسلماً في كل أمرٍ وحالة # لحكمة ربي لا لأحكام إنسان
[ميخائيل نعيمة]
- ٤ - تحدث بإختصار عن حياة حسان بن ثابت
- ٥ - اشرح الأبيات الآتية شرحاً جلياً
طويل التجاد رفيع العماد # وساد عشيرته أفردا
إذا القوم مدوا بأيديهم # إلى المجد مداً إليه يدا
فقال الذي فوق أيديهم # من المجد ثم مضى مضعداً
[نماضير الخنساء]

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
ENGLISH LANGUAGE 2

1. GENERAL COMMENTS ON THE PAPER

The paper was within the reach of the candidates. There were no ambiguities in the instructions given. The questions were clearly and easily phrased, and the candidates understood them well. However, the quality of the paper, printing and arrangement of the pages were a challenge for the candidates.

2. CANDIDATES' STRENGTHS

The candidates did well in the Continuous writing section of the paper. There is slight improvement in the letters and essays written by candidates. The questions were clearly interpreted. There is also improvement in their vocabulary and minimal grammatical errors were noticed. Ninety-five per cent of the candidates attempted all the questions. However, five per cent wrote essays that were short of the expected length, that is, 450 words.

3. CANDIDATES' WEAKNESSES

The Comprehension and Summary passages were not fully understood by the candidates. Although the passages appeared simple, candidates' responses to the questions asked were far from what is expected. Sentence structures were faulty, and candidates wrote sentences that were difficult to understand what they intended to say. Some of the candidates still have challenges with using the punctuation marks. The only one they know is the 'period mark' which, in fact, is not appropriately used.

Spelling errors and faulty expressions highlighted in the Chief Examiner's report annually keep occurring in every examination series. Below are few of these errors noticed this year:

- a. latter for letter
- b. once for ones
- c. weather for whether
- d. .know for no
- d. find for fine
- f. when for went
- g. does for those
- h. where for were
- i. so for sure

The list goes on and on. The candidates must understand that the correct spelling of words is an integral aspect of this paper. The wrong spelling of words hinders effective communication.

4. SUGGESTED REMEDIES

- Candidates have to prepare themselves very well to face the examination.
- Enough practice exercises should be given to candidates to improve their writing skills.
- Teachers should stop giving copious notes and give more practice exercises in reading and speaking.
- More and frequent in-service training programmes for teachers of English should be encouraged.
- Teachers should stop speaking vernacular with/to students within the school.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Your school participated in an inter-school sports festival recently. As the Sports Prefect, write a report on the event for your school.

The candidate's school participated in an inter-schools' sports festival recently. As the Sports Prefect, the candidate is required to write a report of the event for his/her school.

This was the least popular question. One per cent of the candidates attempted this question. Most of them ended up writing a letter to the principal. Two per cent of the one per cent that attempted it did better.

Question 2

There have been several articles in the national newspapers on the lack of maintenance of public facilities. Write a letter to the editor of one of the newspapers expressing your opinion on the matter.

The candidate is expected to write a letter to the editor of a national newspaper expressing his/her opinion on the lack of maintenance of public facilities. This question was less popular among the candidates. Two per cent of them attempted it. Fifty per cent of the two per cent that attempted it did not fully understand what was required of them. They wrote about the facilities available but not the lack of maintenance of the facilities. The formal features were also not adequately handled. They therefore did not score good marks.

Question 3

Your friend who resides in another country wants to study in your school and has written for information and advice. Write a letter to him, telling him all that he needs to know about the school.

The candidate is required to write a letter to his/her friend who resides in another country, providing information about his/her school and advising him.

This was the most popular question. Ninety per cent of the candidates attempted it. Seventy per cent of the ninety per cent dwelled on informing the friend about the school and failed to offer advice. One per cent did not write the required number of words, that is 450 words. Others wrote a lot more than the required number of words. Fifteen per cent of the candidates could not write the formal features of the letter correctly, especially the subscription. Candidates wrote long, awkward addresses and at the close, "Yours faithfully", signature and full names after the signatures. These therefore did not score high marks.

Question 4

Write an article for publication in your school magazine on the need to revive the activities of clubs and societies in schools.

The candidate is required to write an article for publication in his/her school magazine on the need to revive the activities of clubs and societies in schools.

This was also a less popular question among the candidates. Two per cent of them attempted it. Of this number, one per cent of them did well. The formal features of the article were not properly handled.

Question 5

*Write a story to illustrate the saying: **Half a loaf is better than none.***

The candidate is required to write a story to illustrate the saying: *Half a loaf is better than none.*

This was the second most popular question. Five per cent of the candidates attempted it. Thirty per cent of the five per cent were able to interpret the saying, *half a loaf is better than none*. The rest could not correctly interpret the saying and therefore wrote disjointed stories and merely tagged the saying at the end.

Storytelling is an art that Candidates should not gloss over. It should be deliberately practiced if they are to write stories of any kind in the examination. They also need to familiarize themselves with these sayings. If they do, then they would be able to write stories that illustrate or end with these sayings.

Question 6

Read the passage **carefully** and answer the questions on it.

It was a cold windy Monday morning just before dawn. A frail old woman who could see beyond a few metres ahead of her – an early septuagenarian – braved all the odds and stepped out onto the dirt road in the village of Koomla. For her, today’s duty had to be done even if it meant further risking her delicate health. “What would I not do for Kodu to amount to something in this life that has given me nothing but woes?” Mma Kodu thoughts to herself.

And so, despite the ominous signs from the sky, wearing just a threadbare sweater over an equally aged wrapper, she forged ahead, daring the draught of air that was threatening to topple her. Luckily, the sand ground was still largely undisturbed owing to the dew, so she didn’t have to contend with fending off particles from her rheumy eyes.

“Come what may,” Mma Kodu assured herself as her left foot plonked into a muddy pothole she hadn’t seen in time, “today I shall see The Pathfinder, before he leaves for the city.” Her destination was still about nine kilometres away. At home, The Pathfinder, a respected middle-aged university teacher – the very first person to earn the highest postgraduate degree from the village of Koomla – had just roused himself from dreamland. In the dream a figure in white had told him he owed an obligation to the old woman. She was on her way to give him a parcel for her son studying at university in the city, about a thousand miles away.

The Pathfinder had come for a two-day visit and the news had got to Mma Kofu, who gladly took all of her savings for the three months, put it in a small envelope and tied it up in the edge of her wrapper. The duo were to meet at the junction where the village road led off the city. “You know, Lord, that this is all I have. Please let my son turn out well,” the old woman prayed. “No sacrifice is too much for one’s child,” she heaved, skipping over another muddy pothole, for it had rained the previous day.

By the time Mma Kodu got about a mile from The Pathfinder’s home, the day now bright enough for her to see with less strain. However, the sky suddenly became overcast and only seconds later there was a torrent from the heavens. There was very little that the surprised old woman could do to stave off the watery onslaught, so she trudged on stoically. At the appointed place, The Pathfinder activated his wipers at top speed as he stayed on the lookout for the person he was expecting.

As drenched Mma Kodu came into view, The Pathfinder switch off the ignition and rushed out to meet up with her, guiding her to a nearby shed. After a few minutes of peasantries, she handed over her widow’s mite. “Mma, please wait here till the sky stops weeping,” he begged her. “I must run along now.”

“Ah, what can be beat a mother’s love!” Dr. Felix Adoka soliloquized pensively, shaking his head as he winked a left to an oncoming driver, prepared to confront the elements. “I shall ensure her son gets a teaching job once he is done,” he promised himself.

- (a) Why did Mma Kodu leave home on a cold, windy Monday morning?
- (b) What two difficulties did Mma Kodu face on her way to meet The Pathfinder?
- (c) What may have prompted the villagers to call the man “The Pathfinder”?

- (d) What two indications are there in the passage that Mma Kofu was poor?
- (e) What was The Pathfinder's attitude to Mma Kofu?
- (f) What was the expectation of Mma Kodu concerning her son?
- (g) In what age range would you place Mma Kodu?
- (h) ... sky stops weeping ...
What figure of speech contained in the expression above?
- (i) "... before he leaves for the city"
(i) What is the grammatical name given to this expression as it is used in the passage?
(ii) What is its function?
- (j) For each of the following words, find another word or phrase which means the same and which can replace it as it is used in the passage:
 - (i) delicate;
 - (ii) ominous;
 - (iii) an obligation;
 - (iv) overcast;
 - (v) pensively.

There is a clear indication from the performance of the candidates in this question that most of them did not understand the passage set for this test.

- 6a. Ten per cent of the candidates got the answer right. The rest copied whole chunks from the passage as answers.
- 6b. Two per cent of the candidates got the answer right. The rest did not understand the question.
- 6c. Seventy per cent of the candidates got the answer correct. The rest just copied portions of the passage.
- 6d. Two per cent of the candidates got the answer right. The rest copied lengthy sentences from the passage.
- 6e. One per cent of the candidates got the answer correct. The rest could not understand the question.
- 6f. Fifty per cent of the candidates got the answer right. The rest copied unnecessary portions from the passage.
- 6g. One per cent of the candidates got the answer right. The rest did not understand the word "Septuagenarian".
- 6h. Seventy per cent of the candidates got the answer right. However, some of them saw the expression as "Metaphor or Oxymoron".
- 6i.(i).Forty per cent of the candidates got the answer right. However, others saw the expression as Adjectival Phrase or Noun Clause.
- 6j. Two per cent of the candidates were able to give correct alternatives to replace words in the passage. Three per cent of them scored zero.

Question 7

Read the following passage **carefully** and answer the question on it.

For all well-meaning citizens, the moral decadence in our society nowadays is cause for concern. Some have argued that the root cause of this decadence is poor parenting. Indeed, poor parenting has given rise to most of the criminality that we witness today. We all keep on complaining when, in fact, parents themselves are largely to blame for the unsavoury situation. In order to improve this situation, parents need to inculcate certain sterling qualities in their children.

There is no doubt that temptation are bound to arise in everyday life. However, if lessons in self-control are instilled in children, they will be able to resist temptations. Children who have self-control are not likely to have problems with the law; moreover, they will be able to avoid health issues and financial stress, as well as other consequences of lack of self-restraint. For example, a child who has been taught to avoid eating junk food will not become obese. Such a child already knows that every action has a consequence.

Today, many people consider themselves better than others and therefore look down on them. They are arrogant, impudent and intolerant; as such they are hardly ever willing to accommodate other people's ideas. A child who has imbibed the virtue of humility will respectfully take interest in others and be willing to learn from them. Sometimes, humility is misconstrued as a weakness but in reality it is a strength which helps people to recognize their faults and acknowledge their limitations. Parents should ensure that their children take active part in chores and duties at home. They will therefore know that there is virtue in serving others.

In life, we cannot avoid and disappointments. A child cannot learn how to walk without occasional falls. Similarly, in life we experience occasional setbacks. For example, a child may fail a test at school. In such a situation, what is needed is encouragement that will boost the child's confidence for future tests. Parents can help the child to work a strategy for achieving resounding success. Children should be taught the truth in the axiom. "If you fail at first, try, try and try again. "This training in resilience helps children to face life's challenges with confidence.

*Many adults lack integrity, so when they say "yes" they really mean "no". They can therefore hardly be trusted or relied on and usually fail to take responsibility for their action or failures. The actions of such adults have given implications for society. If parents train their children in the need to have integrity, such children will not go about engaging in criminal **activities**.*

*Cutting corners **in order to get rich quick** is the stock-in-trade of many adults, who now engage in forms of illegal and unwholesome activities to acquire sudden wealth. Indeed, the culture of hard work is fast disappearing. If children are well trained in appreciating the **value** of hard work, they will grow into adults who will shun all forms of shady activities aimed at making an overnight fortune.*

*Obedience to **laws is a key** quality that will make any society stable and function smoothly. For example, if taxes are paid when due as stipulated by societal laws, money realized will **be used** to provide the badly needed social amenities and infrastructure. **Parents** have an important role to play by training their children to obey rules and regulations at home. This training will enable them to become law-abiding adults.*

*In the light of the foregoing parents should be good models in terms of character, comportment, **speech** and dedication to duty among other things. Only under such circumstances can **we** build a stable society that benefits all.*

*In **six** sentences, **one of each**, summarise the qualities that the writer advises parents to instil in their children.*

- (i) Five per cent of the candidates got the answer right. The rest mindlessly lifted sentences from the passage.
- (ii) Twenty per cent of the candidates got the answer right. The rest copied whole portions from the passage.
- (iii) None of the candidates got this answer right. They just copied long sentences from the passage.
- (iv) Five per cent of the candidates got the answer right. The rest lifted mindlessly.
- (v) Thirty per cent of the candidates got the answer right. The rest did not.
- (vi) Forty per cent of the candidates got the answer right. The rest of them did not.

Summary is a challenge. The candidates find it too difficult to surmount. They should consciously practice summary writing techniques if they want to be at ease when they are faced with such an exercise.

RECOMMENDED TEXTBOOKS

1. .New Practical English Bks. 1, 2 & 3
2. .First Aid in English
3. .Brighter Grammar Bks. 1, 2 & 3
4. Oxford Advanced Learners Dictionary
5. WAEC past examination papers

Tregidgo, P.S., Ogundipe, P.A.
Macmillan

Cambridge Publishers
WAEC office.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
FRENCH 2

1. GENERAL COMMENTS ON THE PAPER

From the general perspective, the performance of the candidates in French, in both essay and letter writing, is satisfactory. Apparently, several reasons can be said to be responsible for this satisfactory performance. Amongst them are the adequate understanding of the questions and their ability to interpret and analyse them. Besides, the general aptitude of students in French language is improving. The statistics showed that almost 35% of the candidates in this exam performed well in French paper 2.

2. CANDIDATES' STRENGTHS

It has come to our notice that some of the candidates do have experience on this WASSCE Exam. Despite, it's their first time to write for this exam, some of them were well prepared before the exams proper. Their responses to some of the areas abundantly show that they have substantial understanding and knowledge of the questions as we required and expected of them. In that regard, we could infer that their work to possess a comprehensive knowledge of the questions was up to the fact that some of them did effortful in-depth preparation of the various essays and letter writings as was required in relation with the marking scheme. Their scripts even showed that some of them did command the level of French proficiency required for them to express valid points they had at their disposal. It was therefore expected to come across valid points in the answer.

Most of the candidates chose question number 2 in the essay and question number 5 for the letter writing. Therefore, few chose the other questions (1, 3, 4, 6).

3. CANDIDATES' WEAKNESSES

Some of the problems that the candidates met are:

- Some candidates lack experience on WASSCE exam paper;
- Inability to respect the formulas of the essay and letter writings;
- The environment has been part of their problem in terms of expressive deficiency;
- A lot of grammatical problems and punctuations;
- Tenses: present, future, simple past, past perfect, etc.

4. SUGGESTED REMEDIES

At this level, for French paper 2 exam and even the Oral French, we wish to recommend the following::

- The formulas of writing the essay and the letter (introduction, body and conclusion);
- The respect of the composition (number of words);
- The connection between WAEC syllabus and that of the Ministry of Basic and secondary Education;
- Reading French publications, listening programs on radio and French channels in order to improve on their vocabulary;
- The council should review the essay and letter writing, for instance, writing a story that can illustrate a proverb. We have realized that some proverbs are not at the level of the WASSCE candidates; The candidates never meet those proverbs or even stories during their normal lessons ;
- The council and stakeholders should think of this particular part of the exam; that is to say, how the essay and letter writing can be part of the curriculum in order to improve on it;

- Exam class teachers (grade 9 and grade 12) should have special training sessions about the GABECE and the WASSCE exams, because most of those class teachers are ignorant about the way these exams are conducted.

In conclusion, we think that all the points we elaborated on will be put into consideration to realize a better performance in the years to come.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Ecrivez une composition pour montrer les dangers de l'égoïsme

About 90% of the candidates did not answer this question which is talking about composition of an essay that can prove that égoïsme est un danger.

Question 2

Vous avez assiste à un mariage au village ou en ville. Racontez ce qu s'est passé.

This is the question that almost 90% of the candidates answered. Here, the percentage of good performance is high (about 65%).

Question 3

Vous êtes Ministre de l'éducation nationale de votre pays. Dites ce que vous ferez pour encourager les filles à aller à l'école et pourquoi.

A good number of the candidates tried and did something good (40 to 50% tried).

Question 4

Vous venez d'être admis(e) à l'école secondaire. Ecrivez une letter à votre soeur, l'invitant à venir vous rendre visite pendant le weekend. Dites-lui comment elle pourra arriver à l'école sans difficulté et ce que vous comptez faire pour lui rendre la visite agréable.

About 85% of the candidates did not attempt this question, and those who chose it did not perform to expectation.

Question 5

Votre ami(e) est le nouveau la nouvelle président(e) du club de francais. Ecrivez-lui une letter de félicitations et donnez-lui quelques conseils.

In this section, about 60% of the candidates faced this question. The performance was encouraging. We can say that 65% did well.

Question 6

Votre oncle vous a envoyé un colis contenant des livres et une importante somme d'argent. Ecrivez-lui une lettre pour l'infomer de la réception du colis et pour le remercier. Dites-lui comment vous comptez utilisiers les livres et l'argent.

Some of the candidates performed better with regard to this question (about 40%)

COMMON SPELLING MISTAKES:

This is one of the key problems in WASSCE French paper two; Most of them do not consider spelling as the main factor in this section. Therefore, they write anyhow they feel. The following were the common spelling mistakes which were even unacceptable:

Instead of: lettre, they write letter

Mariage – marriage

Ça va – cava / ça va

Famille - family

Juin - June

Content / contente – content, etc.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
LITERATURE-IN-ENGLISH 2

1. GENERAL COMMENTS ON THE PAPER

This year's paper stood shoulder to shoulder with the previous years in terms of pattern, syllabus, requirements and expected standards. The questions were carefully worded and weighted for the adequate comprehension of the average school-going candidate. The paper's standard was therefore in place.

2. CANDIDATES' STRENGTHS

This year's performance reflected some improvement, in varying degrees, over last year's. At the top, there was an increase in high grades (15 + marks per question). Also there were some outstanding performances in almost every question attempted on the paper. At the bottom, the zeros were reduced and the bulk of the weak performances shifted from below to above on the 05 mark.

3. CANDIDATES' WEAKNESSES

Negatively, the performance was seriously marred by misinterpretation of questions and inadequacy of relevant materials. This affected about 45% of the candidates. Also, there was an increase in the unequal weighting of the two questions. At least 50% of these candidates wrote far less in the second answer than in the first. About 30% or more wrote either nothing or almost nothing in the second question. In addition, about 30% of the essays lacked orderly or organised presentation and average mastery of the language. These defects are inimical and must be at least minimised for proper improvement in performance.

4. SUGGESTED REMEDIES

The improvement in this year's performance, though evident, was not much significant. It was also marred by the evidence of zeros in almost every question. The performance was not as bad as last year, but somehow it was not much better either. Certainly, it can be better and indeed it must be bettered through careful, consistent reading and writing. In these ways candidates will demonstrate more understanding of the texts and questions. Also candidates should write more orderly and organized essays in proper paragraphs through at least average mastery of the language.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

BUCHI, EMECHETA: *Second Class Citizen*

Question 1

Examine the contribution of Adah's first day at the Methodist School to the development of the plot.

This was a very popular question (attempted by over 70 %). About half of these candidates merely described, in varying degrees, Adah's first day and later experiences in her schooling as well as (in some cases) her family life in England. About 30% supplied to a reasonable extent, the requirements of the question in an orderly manner with at least, average mastery of the language – identifying Adah's character and explaining her dreams and attitude to education and self – advancement. The remaining candidates (25% or more) provided either irrelevant narrations or unacceptably brief sketches of the story. This question was not as well answered as it was popular.

Question 2

Why does Mr Noble find it difficult to evict his tenants?

This question was certainly not popular (about 20%). Over 50% of these candidates clearly misinterpreted the question – concentrating on purely racial grounds. Some 30% discussed the proper points – the controlled state of the white tenants and the law's unfairness vis – a – vis landlords and tenants (rents). About 20% of these candidates gave orderly presentation and acceptable mastery of language in their answers. Also, there were a few outstanding answers. However, this question generally was neither popular nor well – answered.

Questions 3 and 4 were attempted by extremely few candidates (not more than 10 in each case). All merely copied the question or provided unacceptably brief sketches.

ALEX, AGYEI-AGYIRI:

Unexpected Joy at Dawn

Question 3

What impression do you form of Mama Orojo?

Question 4

Consider the contributions of Massa and Marchak to the development of the plot.

Question 5

How does the advice of the narrator's grandfather influence his actions?

This question was not popular (about 20%). Over half of these candidates resorted to irrelevant narrations of the story at the expense of the question's requirements. About 30% examined the grandfather's advice vis – a – vis his own life in a racially – torn society and how this advice follows, even hunts, the narrator in his own life experiences in a similar society. The advice is also applied to the race problem in general, not only the narrator. The rest of these candidates (about 20%) provided most unacceptably brief sketches of the story. On the whole, this question was neither popular nor well- answered.

Question 6

Examine the ideology of the brotherhood in the novel.

This question was highly popular (about 70%). It was also rather fairly answered. About 40% or more of these candidates concentrated on the brotherhood- its organisation, aims expectations and challenges. These were discussed in fairly organized and balanced essays with acceptable mastery of language. Some 35% of these candidates presented irrelevant narrations of the story at the expense of the question's requirements. The rest presented unacceptably brief sketches of something in the story- neither accurate nor relevant to the question's requirement. This question was highly popular and generally fairly answered.

Question 7

Consider Heathcliff's marriage to Isabella.

This question was also highly-popular (over70%). It was also fairly (but not equally) well-answered. About 50% of these candidates provided answers containing details with varying degrees of adequacy, relevance, orderliness and language mastery. However, about 30% concentrated mainly on Heathcliff's reasons and backgrounds at the expense of the marriage itself or Isabella's reasons/attitudes. This rendered such answers rather one-sided and

inadequate. The remaining 30% provided either irrelevant narrations or very brief sketches of the story. These notwithstanding, the question stands out as highly popular and fairly answered.

Question 8

Discuss the use of `the weather`, `the windows` and `the setting` as symbols in the novel.

This was a far less popular question (20%). Also, it stands out as one of the most misinterpreted questions on the paper. Ironically this question provided a few of the most outstanding answers on the paper. Over 60% of these candidates merely described the weather, windows and setting without any reference to symbolism. Also the bulk of these answers were far too brief, sketchy and scanty for the exam standard. This question was neither popular nor well answered.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
LITERATURE-IN-ENGLISH 3

1. GENERAL COMMENTS ON THE PAPER

The marking exercise officially commenced with the usual three days coordination of examiners. This started with the general coordination followed by subject coordination that went successfully; the coordination of the marking scheme and the marking of the dummies. The questions for this examination series were set within the scope of the syllabus and they were within the prescribed academic level of the students.

2. CANDIDATES' STRENGTHS

Most of the candidates demonstrated their understanding of the drama texts and poems because what they wrote, showed that they were taught. However, only a handful of them attempted the questions in conformity with the rudiments of the examination.

3. CANDIDATES' WEAKNESSES

Even though the questions were set within the scope of the syllabus and within the academic reach of the students, yet the majority performed poorly, because of the following reasons:

- The majority did not provide statements of the theme to the questions attempted.
- Most of them did not provide character identification for the Drama questions.
- The majority of the candidates did not define the figurative and poetic devices required by the Poetry questions.
- Most of them wrongly stated the genre of the questions they answered. For example, they claimed that 'Fences' is a poem and that the 'Caged Bird' is a play.
- A few of the candidates demonstrated little or no knowledge of the drama texts and poems.
- Grammatical challenges, especially in the areas of tense, agreement, punctuation and spelling made it difficult for the candidates to effectively communicate their ideas.
- Some relevant points mentioned by some of the candidates were not properly developed or elaborated on by the candidates.
- It is also worth noting that most of the candidates performed better in Drama especially African Drama than in poetry.
- In this regard, a popular text for African Drama was 'The Lion and the Jewel' while the popular text for Non-African Drama was 'Fences'.
- Similarly, the more popular African poem was 'A Government Driver on His Retirement' while the more popular poem for the Non-African Poetry was 'The Caged Bird'

4. SUGGESTED REMEDIES

The following recommendations are pivotal to the improvement of the candidates' performances in Literature-In-English 3 (Drama and Poetry):

- The subject should be taught by teachers who studied the subject at university or college levels.
- The teachers should read the actual texts and poems with students during lessons.
- School Heads should ensure that teachers, through their aligned Supervisors, go through the syllabus and the CHIEF EXAMINERS' REPORTS and make sure that the students are duly informed about the way forward if they want to excel in the exam.
- The teachers should demonstrate answering sample examination questions with the students during lesson.

- The teachers should give enough exercises (questions) on the poems and texts treated for students to practice and the teachers should mark the exercises with feedback provided to the learners.
- It is worth noting that literature is not a note-oriented subject and therefore teachers should desist from the unpleasant habit and practice of giving notes to students.
- Students should be encouraged to read and analyze poems and plays on their own and focus on the study of only one of the texts for both African and Non-African drama.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

AFRICAN DRAMA

JOHN, K. KARGBO: *Let me Die Alone*

Question 1

Consider Lamboi and Musa as conspirators.

Question 2

Discuss the use of foreshadow and soliloquy in the play.

Questions 1 and 2 ‘**Let me Die Alone**’ were the most unpopular questions in this section. Only about 5 percent of the candidates attempted them, and their answers showed lack of understanding of the play.

WOLE, SOYINKA: *The Lion and the Jewel*

Question 3

Examine the encounter between Lakunle and Side in Morning.

Question 4

Show why Baeoka opposes the construction of the railway.

Questions 3 and 4 ‘**The Lion and The Jewel**’ were the most popular ones attempted by around 95 percent of the candidates. More than half of them demonstrated understanding of both the play and the questions but did not score better marks because of their lack of knowledge in providing statement of theme and character identification.

SECTION B

NON-AFRICAN DRAMA

JOHN, OSBORNE: *Look Back in Anger*

Question 5

Does Jimmy love Helena?

Question 6

Comment on the role of Cliff Lewis in the play.

Questions 5 and 6 ‘**Look Back in Anger**’ were also unpopular questions attempted by around 5 percent of the candidates. They demonstrated knowledge of the play, but they did not provide a statement of theme and character identification. Because of this, though some of them got satisfactory marks, the majority did poorly.

AUGUST, WILSON: *Fences*

Question 7

What does Troy’s perception of death portray about him?

Question 8

Show why Bono is committed to his friendship with Troy

Questions 7 and 8 ‘**Fences**’ were again the most popular questions of this section and were attempted by around 95 percent of candidates who took the examination. They demonstrated knowledge of the play though the majority did not demonstrate knowledge of statement of theme and character identification as required by the marking scheme. This was the main reason why most of them did not score good grades.

SECTION C **AFRICAN POETRY**

Question 9

Examine the changes in mood in A Government Driver on His Retirement.

Question 9 ‘**A Government Driver on His Retirement**’ was the more popular question that most candidates demonstrated knowledge of. Most of them did not demonstrate knowledge of statement of theme and definition of mood as requirement for answering the question and merely paraphrased the poem. However, a small number wrote the statement of theme, defined mood, and the changes of mood in the poem.

Question 10

Consider the use of alliteration, assonance and repetition in Black Woman.

Question 10 ‘**Black Woman**’ was not a popular question though as only 20 percent of the candidates attempted this question. They demonstrated knowledge of the poem but most of them did not provide statement of theme, nor did they define ‘alliteration, assonance and repetition’. This was the primary reason for their poor performance in this question.

SECTION D **NON-AFRICAN POETRY**

Question 11

Comment on the poet’s diction in Do does not go Gentle into that Good Night.

Question 11 ‘**Do not go Gentle into that Good Night**’ was the unpopular question in this section as it was attempted by only 30 percent of the candidates. Even though most of them demonstrated knowledge of the poem, they still performed poorly because they did not provide a statement of theme, nor did they define the key word, ‘Diction’ as required by the marking scheme.

Question 12

Examine the use of imagery in Caged Bird.

Question 12 '**Caged Bird**'. This question was more popular as it was attempted by about 70 percent of the candidates. Unfortunately, most of them did not score impressive marks because they only paraphrased the entire poem and moreover, they did not provide a statement of theme, nor did they define the key word 'imagery'.

GENERAL SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
GENERAL SUBJECTS

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers of the various subjects was within the scope of the WAEC prescribed syllabuses and that the questions were drawn from all parts of the respective syllabuses. All the papers compared favourably with those of the previous years.

2. CANDIDATES' PERFORMANCE

All the questions were said to be suitable for the level of the candidates, however their performance varied. The Chief Examiners for Geography 2, History 2, Government 2 and Islamic Studies reported an improvement in performance while the Chief Examiner for Geography 3 reported a decline in performance. Candidates were said to have performed well in sections A and B but did poorly in Section C in Geography 2 and Government 2, the candidates were said to have performed well in Sections A and B but performed poorly in Section C which required interpretation.

The Chief Examiner for Geography 3 reported that the overall performance of the candidates fell below expectation. The Chief Examiner for Economics also reported a poor performance as about 70% of the candidates got poor marks.

3. CANDIDATES' STRENGTHS

The Chief Examiners reported on candidates' strength and enumerated them as follows:

- The Chief Examiner for Economics 2 reported that most of the candidates followed instructions by answering the required number of questions. Most of them showed their strength in section B (Data Response) question numbers 1 and 2.
- The Chief Examiner for Geography 3 reported that about 10% of the candidates did exceptionally well as they presented structured answers backed by good diagrams. Some of the candidates also did well in sub-questions (b) and (c) of question 6 as well as sub-question (b) of question 4.
- The Chief Examiner for History 2 reported that most of the candidates adhered to the rubrics of the paper by answering the required number of questions. 65% of the candidates displayed knowledgeability in the subject as they were able to develop on their points very well. More than half of the candidates displayed legibility in writing.
- The Chief Examiner for Geography 2 reported that some of the candidates were fully prepared for the examination as they presented their points very well which enabled them to score high marks. Some of the candidates, about 40% of them, were able to give relevant examples to support their answers.
- The Chief Examiner for Islamic Studies 2 reported that candidates demonstrated strength in questions 1, 2 and 3 and thus scored good marks.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates presented their answers brilliantly as demanded by the questions. Their writings were legible.
- The Chief Examiner for Economics 2 reported that most of the candidates followed instructions by answering the required number of questions. Most of them showed strength in section B Data Response (question numbers 1 and 2).
- The Chief Examiner for Geography 3 reported that about 10% of the candidates did exceptionally well as they presented structured answers backed by good diagrams. Some of the candidates also did well in sub-question (b) and (c) of question 6 as well as sub-question (b) of question 4.

- The Chief Examiner for History 2 reported that most of the candidates adhered to the rubrics of the paper by answering the required number of questions. 65% of the candidates displayed knowledgeability in the subject as they were able to develop on their points very well. More than half of the candidates displayed legibility in writing.
- The Chief Examiner for Geography 2 reported that some of the candidates were fully prepared for the examination as they presented their points very well which enabled them to score high marks. Some of the candidates, about 40% of them, were able to give relevant examples, both local and international, to support their answers.
- The Chief Examiner for Islamic Studies 2 reported that candidates demonstrated strength in questions 1, 2 and 3 and thus scored good marks.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates presented their answers brilliantly as demanded by the questions. Their writings were legible.

4. **CANDIDATES' WEAKNESSES**

The following weaknesses were reported:

- The Chief Examiner for Geography 2 reported that a good proportion of the candidates could not draw a good sketch map of Senegambia and Africa. They could not insert the required features since the maps were poorly drawn.
- The Chief Examiner for Geography 3 reported that some of the candidates performed poorly because of their inability to correctly spell certain common and technical words such as hemisphere, latitude, altitude, summer, winter, etc. Some were not able to develop their points while some lacked the basic understanding of some command words like Highlight and Describe, thereby leading to loss of marks.
- The Chief Examiner for History 2 reported that candidates' inability to display basic understanding of certain key words of the subject matter was still evident. Nearly 60 percent of the candidates could not express themselves in simple and correct English. This made it difficult to comprehend what they wrote. Some candidates failed to follow examination instructions. Illegible handwriting accounted for some of them to lose marks.
- The Chief Examiner for Government 2 reported that many of the candidates could not pass due largely to their inability to understand the questions as well as inability to express themselves in simple and correct English Language while some could not develop their points and thus resorted to mere mentioning of words. Some candidates were in the habit of copying questions as answers to other questions. Some candidates were not able to explain their points. Some candidates copied as many questions as possible on the same piece of examination paper.
- The Chief Examiner for Islamic Studies reported that the candidates performed poorly because they did not do well in Hadith which was a perennial problem.
- The Chief Examiner for Christian Religious Studies reported that some of the candidates performed badly because they did not follow the rubrics of the paper, some did not develop their points as they merely listed them while some of them wrote on stories that were not even in the question paper.
- The Chief Examiner for Economics reported that the candidates displayed inadequate preparation for the examination as evidenced in their lack of understanding of the questions. Some of them resorted to writing out of context.

5. **SUGGESTED REMEDIES**

The Chief Examiners proposed the following measures as remedies for the weaknesses highlighted above:

- Candidates should be encouraged to familiarise themselves with the examination format by reading and answering past question papers.

- Schools should endeavour to always cover the examination syllabuses before the start of the examinations.
- Teachers should adequately prepare their candidates for the examinations.
- Candidates should be encouraged to attend private and public syndicate classes.
- Candidates should be encouraged to read the prescribed textbooks.
- Candidates should endeavour to complete the syllabus rather than gamble with a view to passing the examination.
- Candidates must desist from the practice of answering two or three questions on the same page.
- Schools should employ well qualified teachers in all subjects.
- Candidates should endeavour to explain concepts in economics and use relevant examples in the process.
- Adequate preparation should be done by the candidates by learning the key terms of the various subjects to enhance their understanding.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
ECONOMICS 2

1. GENERAL COMMENTS ON THE PAPER

The questions were generally within the scope of the syllabus and the standard was in line with the level it was meant to test. About 70 percent of the candidates scored very low marks across most of their answers which suggest poor preparation for the examination. However, the performances of 30 percent of the candidates were good.

2. CANDIDATES' STRENGTHS

- Most candidates adhered to the stated instructions by answering only four questions out of the eight questions given, i.e, candidates attempted one question from section A, which is choose one out of two. Again, from section B candidates only attempted three questions out of the six.
- Most of the candidates exhibited their strengths in section A (Data Response) questions numbered one and two, with about 40% of the candidates been able to attempt question 1a, 1b and 2a correctly.

3. CANDIDATES' WEAKNESSES

The weaknesses manifested were:

– **Inadequate knowledge of the questions/subject matter**

Candidates showed inadequate knowledge of the questions as more than 70% of the candidates could not get more than 10 marks out of the possible 20 marks. Quite a lot of them did not have knowledge of the demands of the questions.

Many candidates resorted into just writing and going out of context which did not earn them any mark.

There is evidence that most of the schools did not complete their syllabus. The poor attempts manifested on the candidates' work could be an indicator of lack of syllabus coverage.

– **Poor expression of terms**

Most candidates failed to present their answers in the context that the questions asked for. Definitions, explanations and differentiation appear to be a big challenge to most candidates. More than 80% of the candidates' expressions to questions were out of context and did not earn them any mark. Most candidates were listing instead of explaining terms as required in the questions.

– **Failure to look at the distribution of marks to questions**

The question paper was explicit, and the marks were evenly distributed. Most candidates never look at the distribution of marks to a particular question and hence could not know the demand per question or sub-question. This makes them score very low marks in their answers to questions.

– **Poor handwriting**

More than 40% of the candidate's handwritings were poor even though they were writing out of context.

4. SUGGESTED REMEDIES

- Candidates should be given syllabus as part of their stationary so that they can know and monitor their syllabus coverage with their teachers. This can also help them to prepare on their own.
- Teachers should drill their candidates on how to attempt questions by giving them assignments and standard internal exam to better prepare them for external exam. The explanations, descriptions, differentiations, graph illustrations and interpretation should be well explained and tested in internal exams in schools.
- Schools should make Chief examiners report available for all subject teachers each year. This will help the subject teachers to overcome the repeated challenges candidates face during exams each year.
- Candidates should write legibly, and they should explain their points clearly according to the contextual meaning and avoid their literal understanding.
- Most of the candidates' works are not well organized. Examiners find it difficult to know the end and beginning of each question.
- Candidates should start each question on a new page of the answer booklet. Examiners find it very difficult to know the end and beginning of each question when candidates' work is not well organize.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

The equilibrium position of a firm is illustrated in the diagram below. Study the diagram and answer the questions that follows.

- (a) *Determine the firm's:*
 - (i) *equilibrium output level*
 - (ii) *equilibrium price*
- (b) *At the equilibrium output level, calculate the firm's:*
 - (i) *total cost;*
 - (ii) *total revenue;*
 - (iii) *total profit.*
- (c) *Is the firm operating in the long-run or short-run? Explain your answer.*
- (d) *(i) What type of market is the firm operating in?*
(ii) List three features of the market type identified in (d)(i).

About 60% of the candidates attempted this question and they were able to determine the equilibrium output level and the equilibrium price. Again, most of the candidates calculated the firm's total cost, total revenue and total profit correctly stating the formula along. This indicates that most of them understood the calculation aspect. However, for question 1 (c), candidates stated that the firm is operating in the short-run market but giving out the reason was the difficult part they faced. Likewise, for (d)(i) and (ii) most of the candidates couldn't state the type of market and also list its features.

Question 2

Table 1 below represent the output levels of a firm producing hand sanitizer. Use the information to answer the questions that follow.

Output (units)	0	10	18	28	36	45
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If the cost function of the firm is given as $C = 30 + 4q$, where C is the total cost and q is the units produced, calculate the:

- (a) total cost in dollars of producing:
 - (i) 18 units;
 - (ii) 36 units.
- (b) Average cost in dollars of producing:
 - (i) 28 units;
 - (ii) 45 units.
- (c) What is the marginal cost in dollars of producing 28 units?
- (d) Determined the profit made from producing 45 units when the market price is fixed at \$ 5.00 per units.
- (e) Determined the fixed cost of the firm. Explain your answer.

Almost 70% of the candidates who attempted this question could calculate the total cost and average cost using the cost function. So, a good mark was scored by the candidates in 2(a) and 2(b). However, the problem realized was that most of the candidates couldn't calculate the marginal cost of the firm and also about 40% of the candidates failed to determine the profit of the firm when producing 45 units at a price of \$ 5. For about 30% determined the fixed cost but couldn't explain the answer.

Question 3

- (a) Distinguish between:
 - (i) money cost and opportunity cost;
 - (ii) normal good and inferior good.
- (b) Explain how the scale of preference assists the following economic groups in making efficient allocation of their resources:
 - (i) individuals;
 - (ii) firms;
 - (iii) governments.

This question was poorly attempted by about 70% of the candidates. About 20% of this number were able to distinguish between money cost and opportunity cost but could not explain or even differentiate what normal and inferior goods are. But even the few candidates that answered it only gave one-sided answers on each which attract only 1 mark. Candidates also fail to explain in detail how scale of preference assists the individual, firm and government in the efficient allocation of resources, instead candidates only explain the arrangement of resources according to wants which only attracted 1 mark on each.

Question 4

- (a) Define economic system.
- (b) Distinguished between a capitalist economy and a socialist economy under the following

- (i) *Aim of production;*
- (ii) *Consumer sovereignty;*
- (iii) *Competition.*

(c) *State three features of land as a factor of production.*

This question was poorly answered by candidates. Most of the candidates that attempted the question defined economic system. And most of the candidates also stated the features of land as a factor of production but they fail to explain in detailed. However, the challenges candidates faced in the question was how to differentiate the three-point mention in (b) under capitalist and socialist economy.

Question 5

- (a) *Differentiate between a sole proprietorship and a partnership.*
- (b) *List four characteristics of a sole proprietorship.*
- (c) *Outline four advantages of a public limited liability company*

This was the most popular question in section B. About 80% of the candidates that attempted the question scored an average mark. Most of the candidates explain sole proprietorship and partnership leaving out with the main aim of making profit which made them score half of the mark which is 2 out of 4 in total. In question 5(b) almost all the candidates answered it correctly. The problem was 5(c) were most candidates thought that public companies are owned by the government, so they were answering through that concept, although few candidates answered 5(c) perfectly.

Question 6

- (a) *Define location of industry.*
- (b) *Explain how the following factors influence where a firm is sited:*
 - (i) *raw materials;*
 - (ii) *market;*
 - (iii) *government policy.*

This question was also popular but attempted poorly. About 85% of the candidates that attempted it defined location of industry as where industry is sited without expanding the definition which attracted only one mark instead of two marks. As for 6(b) only about 30% mentioned the correct considerations of the factors influencing the siting of an industry such as transportation cost, bulky nature of some raw materials and perishability of products in the market aspect. For the majority like 70% were out of topic.

Question 7

- (a) *Define Gross Domestic Product (GDP).*
- (b) *Describe the output approach as a method of computing national income.*
- (c) *Identify any three problems associated with the expenditure approach of calculating national income*

This question was poorly answered by over 80% of the candidates who could not define GDP and couldn't explain the output approach *as a method of computing national income*. Furthermore, all the candidates that attempted this question scored zero (0) in 7(c)

Question 8

- (a) *What is an embargo?*
- (b) *Outline any three reasons for imposing tariffs on imports.*

(c) *Explain any three reasons against the use of tariffs.*

This question 8 was also a popular one. Most of the candidates explained what embargo means. About 60% of the candidates only mentioned points in 8(b) and (c) without explaining making them to score a low grade. Although few candidates explained in detailed and scored brilliant marks.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
GEOGRAPHY 2

1. GENERAL COMMENTS ON THE PAPER

The questions were up to standard and comparable with those of previous years. The questions covered all aspects of the syllabus and the various domains of learning. They were devoid of ambiguity as they were framed in simple and straightforward. The marking scheme was exhaustive and addressed the demands of the questions.

The overall performance of the candidates in section A and C were better compare to section B. Most of the candidates did not appear to have in-depth knowledge of topics under regional geography of Africa. However, is important to note that some of the candidates in some of the centres appear to have difficulties in understanding some of the questions resulting in underperformance in those questions, question 9b in section C.

2. CANDIDATES' STRENGTHS

Some of the candidates prepared adequately for the examination. Such candidates wrote their points intelligently which led to high scores. Little number of the candidates showed strengths in the question involving RURAL SETTLEMENTS as well as questions that relate to ECOWAS. Some of the candidates, about 45%, articulated their answers and the manner of presentation were indeed impressive, particularly question number 2, 4 and 8. Most candidates did well in questions 2, 4 and 8. Some candidates about 40%, made judicious use of both local and universal examples to support their answers, example, '8b'.

3. CANDIDATES' WEAKNESSES

Highlighted below are a summary of the weaknesses noted on the candidates' scripts for the centres marked:

- Poor map work: A high proportion of the candidates could not draw good sketch maps of Senegambia and Africa. Such candidates could not properly insert the required features since the outlines were poorly drawn just like last year.
- Listing of points: Mere listing of points for questions that required outlining, stating, explaining or highlighting which led to loss of precious marks.
- Poor expressions: Some candidates expressed their points poorly because of poor command of English.
- Misinterpretation of questions: Despite the clarity of the questions, some candidates could not answer them correctly showing that either they did not prepare adequately for the examination, or they misunderstood the questions and wrote off point.
- Poor Handwriting: Some of the candidates wrote their answers in very bad handwritings this made it difficult for the examiners to read what the candidates have written.
- There were cases of some candidates about 35% who answered more than 4 questions.
- It is also observed that some candidates do not follow the rubrics as per the numbering of questions as well as sequencing them according to the instruction as indicated on the front page of the answer book.
- Most of the candidates, 30% failed to provide keys to their maps.
- Use of correcting fluid was common.
- Some candidates did not number their questions
- Some candidate jumbles up their questions. You find, for example, a part "a" of a question on page 2 and "b" part on page 5 etc.
- Lot of spelling mistakes.
- There were also cases of candidates failing to present their answers in complete sentences

NB: Almost all the weaknesses were just like previous years. This shows that teachers are not following the recommended remedies given last year.

4. SUGGESTED REMEDIES

The following points are suggested as remedies to overcome candidates' weaknesses:

- Practising map drawing: Candidates are advised to practise map drawing and the insertion of geographical features on maps across the various topics in the syllabus to achieve mastery. Such maps should have keys for ease of reading and interpretation.
- Adequate explanation of points: Points should be properly explained for questions that require outlining, describing, stating, explaining or highlighting in order to obtain full marks.
- Good expression: English Language is the tool of expression in our educational system. It is expected that candidates should properly master this tool of communication in order to properly express their lines of thoughts.
- Proper interpretation of questions: Candidates are supposed to fully understand the demands of questions before making choice of the questions to be answered. This will ensure that they do not write off point.
- Improvement in handwriting: candidates with poor handwriting should improve it through practice since without legible handwritings; candidates cannot effectively communicate their lines of thoughts.
- Questions should be properly vetted before they are approved and printed in order to avoid confusions.
- Teachers should encourage students to read extensively.
- Learners should be encouraged to use relevant geography textbooks.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

Question 1

- (a) *Identify **five** problems affecting industrial growth in Developing countries.*
(b) *Suggest **five** measures that can promote the growth of industries in Developing countries*

This question was a straight-forward question. It was simple. It demands for problems affecting industrial growth in Developing countries and measures to promote the growth of industries. It was a popular question attempted by almost 55% of the candidates. Most candidates scored good marks. However, about 20% of the candidates scored low marks. Instead of problems, most of them wrote on factors for location of industries.

Question 2

- (a) *Outline **five** characteristics of rural settlements in Tropical Africa.*
(b) *In what **five** ways does rural settlement depend on urban settlement?*

Question 3

Describe rail transportation in Tropical Africa under the Following headings:

- (a) ***Four** advantages*
(b) ***Three** problems affecting rail transportation*
(c) ***One** solution to each of the problems stated in 3(b).*

This was not a popular question. All candidates who attempted it scored low marks. This shows that this topic was not taught as it should have been by teachers.

SECTION B: SENEGAMBIA

Question 4

- (a) *What is internal trade?*
- (b) *Outline **five** problems limiting internal trade in Senegambia*
- (c) *Identify **four** importance of internal trade in Senegambia.*

A little over 85% of the candidates attempted this question and they did relatively well. The "a" part of the question was well done by a relatively good number. Both the 'b' and 'c' parts of this questions were not very impressive. Even the few that did fairly well, mostly listed their answers instead of presenting them in sentences with examples.

Questions 5

- (a) *Draw a sketch map of Senegambia*

On the map, locate and name:

- (i) *the Sudan savanna belt;*
 - (ii) *the Guinea savanna belt;*
 - (iii) *one town in 5(a)(ii).*
- (b) *Identify **four** characteristics of the Guinea savanna in Senegambia*
 - (c) *Outline **five** economic importance of the Guinea savanna to Senegambia*

This question was not as popular as questions 1 and 4. It attracted about 15-25% of the candidates. It's also important to state that almost all those who attempted it did fairly well. In doing the map outline both failed massively in locating and naming the specified savanna belts. Identification of the characteristics of the Guinea savanna was equally a major challenge for some candidates. Although the 'a' and 'b' parts were poorly done, the 'c' was generally good.

Question 6

- (a) *Draw a sketch map of Senegambia.*

On the map, locate and name

- (i) *River Saloum*
 - (ii) *River Senegal*
 - (iii) *Kerewan*
- (b) *Outline **three** characteristics of rivers in Senegambia*
 - (c) *In what **four** ways are rivers useful in Senegambia?*

A little over 30% of the candidates in these centres attempted this question. The map outline was good but the location of Rivers, Senegal and Saloum were a challenge for most the candidates. It is also worth noting that approximately 95% of those who attempted this question failed to locate Kerewan on the map. Both the 'b' and 'c' parts of the question were poorly attempted. For example, most candidates failed to describe the characteristics of rivers in Senegambia. Another observation is that although they gave some uses of rivers in Senegambia, a good number of the candidates failed to give examples of these uses.

SECTION C: AFRICA

Question 7

(a) *Draw a sketch map of Africa. On the map, locate and name:*

- (i) *Latitude 23½° S*
- (ii) *Ahaggar (Hoggar) mountains*

(b) *In what **four** ways are lowlands useful in Africa?*

(c) *Highlight **three** disadvantages of highlands in Africa*

This was another popular question with about 65-70% of the candidates attempting it. The map outline was fairly good, however the location of Ahaggar Mountains and Latitude 23½° S were a great challenge for a large number of the candidates. The 'b' and 'c' parts though attempted but were poorly presented with little examples.

Question 8

Write a geographical account of copper mining in Zambia under the following headings:

- (a) *List **three** member countries of the Economic Community of West African States (ECOWAS)*
- (b) *State **five** objectives of the Economic Community of West African States (ECOWAS)*
- (c) *Outline **six** achievements of the Economic Community of West African States (ECOWAS)*

This was an equally very popular question and attracted approximately 75% of the candidates. There appears to a shallow understanding of both the objectives and achievements of ECOWAS among candidates. This is manifested in the types of answers presented. For examples, most candidates failed to identify the basic aims and objectives of ECOWAS as well as explain some achievements of ECOWAS.

Question 9

(a) *Draw an outline map of Africa.*

On the map locate and name

- (i) *Lake Victoria*
- (ii) *River Nile*
- (iii) *River Niger*

(b) *Outline **three** challenges affecting irrigation agriculture along the Nile River Basin*

(c) *Suggest **one** solution to each of the challenges outlined in 9 (b)*

This question was attempted by about 50% of the candidates and the 'a' part was fairly well done except for few cases of wrongly locating River Niger. The 'b' part was not done to standard likewise the 'c' part which is sequel to the 'b' part. It is rather interesting that a good number of the candidates generally failed to describe the challenges facing irrigation in the Nile Basin and thus could not suggest solutions.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
GEOGRAPHY 3

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper compared favourably with those of the previous years, but the general performance of candidates was below average. There was enough evidence from the scripts that many candidates were not prepared for the examination. The overall quality of responses was very similar to that of last year. The paper did give all candidates the opportunity to demonstrate the geography they have learnt. Most of the candidates followed the rubrics when deciding on the nature of their responses and paid attention to some of the key words such as 'explain', 'describe' or 'give responses to support your answer'. In addition, questions were drawn from familiar topics. However, the performance of candidates had to be seriously addressed. Generally, the performance of candidates this year were not as good as that of last year or the previous years.

2. CANDIDATES' STRENGTHS

The candidates performed fairly well in question three (3) and (6) as most of those who attempted the question scored above average mark.

- Sub-questions (b) and (c) of questions six (6) and four (4) (b) were well answered by most of the candidates (about 90%).
- Part (a) of question three (3) was accurately answered by many candidates.
- There were a handful of candidates whose works were exceptionally good. These candidates (about 10%) presented structured answers backed by geographically acceptable diagrams.

3. CANDIDATES' WEAKNESSES

Despite the simple and non-ambiguous nature of the questions, the overall performance is far worse than that of the previous years. The poor performance is among other factors, due to the following reasons:

- Candidates' inability to correctly spell simple words. Some of these wrongly spelled words were:
 - Hamaspere for hemisphere - alatidue for altitude
 - winnter for winter - slatinate for salactite
 - sommer for summer
 - lattidue for latitude
- Failure to amplify key points in answering certain questions.
- Misunderstanding of some of the command words, such as 'describe', 'highlight'.
- Many candidates did not answer the required number of questions. Instead of answering four (4) questions, they answered three (3). Some even answered two (2) and this led them to score below average marks.
- In some centres the candidates answered (attempted) more than the stipulated number of questions expecting the examiner to mark all and select the best four questions required by the rubrics. This made them not to have enough time to amplify most of the questions which led to low or below average marks.
- Problems of basic mathematics is noticed in questions 1 and 2. None of the candidates was able to convert from foot to metric system. It appears as if this concept is not taught well in schools.

- Candidates displayed poor knowledge of contours and map reading skills and this led to getting below average marks.

4. SUGGESTED REMEDIES

- Candidates and teachers should be familiar with the geography syllabus.
- Mere listing points without explanation earns the candidates only half the mark. So, candidates must learn to amplify points in order to get the maximum points allocated for each question.
- Students should be encouraged to have the relevant textbooks.
- Students should be told the importance of correct spellings of words. Wrong spellings of technical words and certain key words will reduce scores in a particular question.
- Candidates must be told to strictly follow the rubrics of examination to avoid being penalized.
- Candidates must be encouraged to leave space at the end of each question in case they wish to add some material at a later stage.
- Head teachers and subject teachers should read the chief examiners report annually to keep abreast with the recommendations given.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Study the map extract provided on a scale of 1: 50,000 and answer the questions that follow. (Attach the topographical map extract to this booklet)

- (a) *On the topographical map extract, **mark** and **name** the following features using the letters in the bracket:*
- (i) *Confluence (CF);*
 - (ii) *Steep slope (SS);*
 - (iii) *Ridge (RG);*
 - (iv) *Area liable to floods (LF);*
 - (v) *Spur (SP).*
- (b) *Calculate the gradient along the line A to B using the metric method of measurement.*
- (c) *Highlight **three** drainage characteristics of the mapped area.*

Understanding the question

1a) This question expected the candidates to simply identify and mark features on the topographical sheet provided by drawing a line of identification across or along the feature. Mark and name the features using the letters in the bracket for naming.

1b) This sub-question expected candidates to calculate the gradient (slope of the land) along line A and B by using the formula vertical interval over horizontal equivalent. VI must be converted to metric (see expected answers) and finally answer must be written as 1 in 45.

1c) This question expected candidates to explain the drainage characteristics of the mapped area and identify water bodies e.g. Lakes, streams, rivers (showing their direction of flow). Identify pattern (e.g. dendritic) and state whether the mapped area is well drained or not.

Comments on individual sub-questions

- a) This was a very simple question based on the first lessons of map reading and no examiner can make it much simpler than it was. Sadly, a significant number of about 80% of the candidates got the location wrong. In some instances, candidates had no idea of what to do and as such they simply wrote down their names on the map and submitted it empty without any of the features as in the question. About 20% of the candidates only wrote the figures in the bracket as stated in the question without doing proper marking of the features on the map.

Only (1%) of those who attempted this question scored more than 50% of the marks allocated to the question.

Expected answers

Marking and naming of features

- (i) Confluence (CF)
- (ii) Steep slope (SS)
- (iii) Ridge (RG)
- (iv) Area liable to floods (LF)
- (v) Spur (SP)

The following features should be identified by drawing a line across or along them and naming them using the letters provided in the brackets

(b) This sub-question was answered by about (70%) of the candidates. The answers supplied were miserably poor, indicating their level of unpreparedness. About (30%) of the respondents had no idea of what do. Measurements were inaccurate, some wrote down figures with their units in meters, kilometres and even some in degrees. Some irrelevant and intelligible answers such as;

$$\text{Gradient} = \frac{\text{vertical interval}}{\text{horizontal length}} = \frac{VI}{HL}$$

$$VI = 1400 - 800 = 600 \text{ km}$$

$$HD = 12\text{km}, 12^\circ, 12\text{m}, \text{etc.}$$

Expected answers.

Calculation of the gradient along the line A to B

$$\text{Gradient} = \frac{\text{Vertical Interval}}{\text{Horizontal Equivalent}} = \frac{V.I}{H.E}$$

$$V.I = 1400 \text{ ft} - 1000 \text{ ft} = 400 \text{ ft}$$

$$1 \text{ inch} = 2.54 \text{ cm} \text{ (1 foot} = 30.48\text{cm)}$$

$$V.I = 400 \text{ ft} \times 12 \times 2.54 \text{ cm} \text{ or } (400 \times 30.48\text{cm})$$

$$\text{Length of line A to B} = 11\text{cm} \pm 0.2 \text{ (10.8cm} - 11.2\text{cm)}$$

$$\text{Scale of the map} = 1: 50,000$$

$$= 1\text{cm represents } 1/2\text{km}$$

$$H.E = 11 \times 50,000$$

$$\text{Gradient} = \frac{400 \times 12 \times 2.54\text{cm}}{11 \times 50,000} \text{ or } \frac{400 \times 30.48\text{cm}}{11 \times 50,000}$$

$$= \frac{12,192}{550,000}$$

$$\text{Gradient} = \frac{1}{45.11} \text{ or } 1 \text{ in } 45$$

The (c) part of the question was very poorly handled by almost 90% of the candidates. Most of them interpreted the question as importance and uses of the rivers instead of drainage characteristics of the map, some gave answers such as:

- “Rivers are used for transportation”
- “Presence of floody”
- “Rivers are used for washing”
- “Rivers have minerals”

Expected answers

Drainage characteristics of the mapped area

- River Niensi is the major river in the mapped area
- It flows from southwest to northeast
- The drainage pattern is dendritic
- Many of the rivers have tributaries
- The south eastern end of the mapped area is liable to flooding
- An area in the central part of the mapped area is liable to flooding

- Other rivers include Kwadidi, Akesu, and Aponapon etc.
- Other areas are well drained
- There are many rivers in the mapped area
- Most rivers are in their youthful stage
- The river valleys are narrow
- The mapped area has many watersheds
- The drainage density is high
- The major rivers and some of their tributaries are over 10 feet wide

Question 2

The table below shows the temperature and rainfall distribution of Station X. Study and use it to answer the questions that follow.

Station X

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°C)	25	27	32	34	35	33	29	28	28	29	28	25
Rainfall (mm)	0	0	0	0	15	99	211	211	142	48	8	5

- Identify the type of climate represented by Station X.
- From which hemisphere was the climate figures taken?
Support your answer with one reason.
- Outline four characteristics of the rainfall recorded at Station X.
- Calculate the mean annual temperature for Station X.

Understanding the Question

- This question expected the candidates to name the type of climate which station x represents.
- This part of the question expected the candidates to identify the hemisphere in which station x is found
- The (c) part of the question was asking the candidates to explain the characteristics of the rainfall recorded at station x
- The (d) part of the question expected the candidates to calculate the mean (average) annual temperature recorded at station x

Comments on individual sub-questions

- This was not a very popular question and was attempted by only about 86% of the candidates. About 90% of those who attempted the question were not able to name the type of climate and instead went on to guess answers and mainly wrote answers like “Hamattan”, monsoon climate etc. The overall performance in this question was below average. Candidates did not score good marks. Most of them, about 80%, could not come out with any convincing characteristics of the rainfall recorded at station X. Of the remaining 20%, 50% of them were able to score good marks while the remaining 5% scored no marks.

Expected answers

The type of climate

Tropical Continental Climate or Sudan type

- This sub-question was for candidates to name the hemisphere from which the climatic data was taken and provide support for the answers given. About 90% of the candidates got this sub-section wrong as they failed to identify the hemisphere and mostly went on to write only north or South.

Expected answers**Hemisphere from which climate figures was taken**

= Northern hemisphere

Reasons

Hottest months are March to June (Northern summer)

Coldest months are December to February (Northern winter)

- (c) This part of question (2) expected the candidates who attempted this question to write the characteristics of the rainfall recorded at station x. About 75% of the candidates who attempted this question were not able to write the correct characteristics of the station. Notwithstanding, few candidates, about 25% were at least able to write the characteristics. Generally, it was poorly attempted.

Expected answers**Characteristics of the rainfall recorded in station X**

Rainfall not evenly distributed

Eight months rainfall colleague

Type of rainfall is conventional

Four months without rain

Almost no rainfall in the winter and spring

Rainfall is concentrated in summer and autumn

Single maximum rainfall regime

Annual total rainfall of 739 mm

Rain does not fall throughout the year

Months of highest rainfall are July to August

- (d) The sub-question was well answered by about 70% of those candidates who attempted it. They were able to calculate the mean annual temperature for station X. Of the remaining 30%, 25% were able to do proper calculation and equated their answers in degree Celsius (°C).

Expected answers**Calculation of the mean annual rainfall for station X**

$$25+27+32+34+35+33+29+28+28+29+28+25 = 353^{\circ}\text{C}$$

$$\text{a. } = 353^{\circ}\text{C} \div 12$$

Question 3

- (a) *List the four seasons of the year.*
(b) *Outline two differences between standard time and local time.*
(c) *With the aid of a diagram, describe the formation of solar eclipse.*

Understanding the question

Part (a) of this question was asking the candidates to name the four seasons of the year.

Sub- question (b) expected candidates to differentiate standard time and local time

Part (c) of the question was asking candidates to explain how a solar eclipse is formed and in responding to this question, examiners expected candidates to provide a diagram which will explicitly describe how a solar eclipse occur.

Comments on individual sub-questions

This was a very popular question among the candidates but the performance was not encouraging at all. Only about 40% of those who attempted it scored over 60% of the possible marks.

In question 3(a), almost 80% of those who attempted it scored good marks. Of the remaining 20%, 15% had no idea of what was required of them and therefore produced answers such as:

- Winnter
- Autum
- Sammer
- Dry season

- Rain season
- Hot season
- Wet season

Expected answers

(a) Seasons of the year

- summer
- winter
- spring
- autumn/fall

The (b) of the question was well attempted. This part required candidates to outline two differences between Standard Time and Local Time. It was poorly handled by the candidates, and almost about 90% of the candidates who attempted this question scored zero (0). Only 10% of the candidates scored half of the marks allocated to this sub-question.

Expected answers

(b) Differences between standard time and local time

- Standard time is for time zone whereas local time is for particular meridian
- Standard time is used worldwide while local time is used in particular areas
- Standard time is shared by countries within a time zone of 15° span while local time is shared by countries on the same longitude.
- There are 24 standard times whereas there could be more than 360 local times
- Standard time varies by multiples of 1 hour whereas local time varies by multiple of 4 minutes.
- Standard time has wider area of coverage than local time
- Standard time is used in international communities while local time is not used in international communities
- All countries have many local times but used one or more standard time(s)
- Local time is the time of a place is the time determined based on apparent movement of the sun whereas standard time is determined by the central meridian passing through the country.

The (c) part of the question was poorly handled by the candidates. They portrayed no knowledge of the meaning of “solar eclipse”. They simply wrote anything that came in their minds.

Expected answers

(c) Description of the formation of solar eclipse

- the earth revolves round the sun once in 365¼ days
- the moon revolves round the earth once in 28 days
- when the moon comes between the earth and the sun
- light from the sun is obscured from observers on the earth surface
- causing a period of darkness
- lasts for short time usually 10 seconds and 7.5 minutes
- moon’s shadow is cast on the part of the earth surface
- the darkness can be total or partial
- the shadow cast by the moon on the earth surface causes a total darkness called umbra
- but when the shadow cast by the moon on the earth surface causes partial darkness is called penumbra.

Question 4

(a) *List:*

- (i) **Three** surface features of limestone region;
- (ii) **Four** underground features of limestone region.

(b) *Outline four benefits of limestone regions.*

Understanding the Question

Part (ai) of this question was asking the candidates to simply outline surface features of limestone region.

Similarly, part (a(ii)) expected the candidates to outline underground features of limestone.

Part (b) asked candidates to explain the importance of limestone regions.

Comments on individual sub-questions

Part a(i) of the question required candidates to state three features of a Limestone region. Only few about (45%) of the candidates were able to name at least two (2) of the features. The rest were writing anything that came in their minds.

Part a(ii) of the question also required candidates to list four underground features of a limestone region. Just like the part (a(i)) only about (35%) of the candidates who attempted this question were able to name the features. The few candidates about (10%) who attempted gave responses spelt wrongly e.g. salamites, salagmites, carves, dolinas etc

Expected answers

(a) (i) Surface features of limestone region

- Grikes/grykes
- Clints
- Swallow holes /sink holes
- Dolines
- Chalk cuesta
- Dry valley
- Limestone pavement
- Disappearing streams
- Uvala
- Poljes
- Ponor
- Resurgent streams
- Gorges
- Scar
- Karst window
- Karst bridge
- Fluting and grooving
- Karst tower/karst pinnacle. etc

(ii) Underground features of limestone regions

- Cave/caverns
- Gorge
- Resurgent streams
- Stalactites
- Stalagmites
- Natural pillar/columns/ limestone pillar
- Underground rivers
- Underground valley
- Curtain. etc

The (b) part of the question was well handled by the candidates who attempted this question. It was well attempted by 90% of the candidates. This group of candidates had good ideas of the benefit of limestone. The remaining 10% of the candidates scored low marks due to;

- i. Misinterpretation of the question
- ii. Irrelevant materials etc.

Expected answers

(b) Benefits of limestone regions

- Raw materials for cement industries
- Provides grazing land
- Source of underground water
- Limestone used in smelting tin and iron ore
- Beautiful scenery for tourism
- Portions are fertile for agriculture
- Used for habitation/settlement
- Source of minerals
- Limestone is used in reducing the acidity or alkalinity of the soil
- Reservoir of crude oil
- Chalk is obtained from limestone regions
- Limestone is used as an aggregate for the base of roads
- Limestone is used in the production of paint
- Caves in limestone regions are used for defence purposes
- Habitat for wildlife
- Source of construction materials, etc.

Question 5

- (a) List **three** processes of river transportation.
- (b) State **four** characteristics associated with the **middle** course of a river.
- (c) With the aid of a diagram, describe the mode of formation of the interlocking spurs.

Understanding the Question

Part(a) of this question asked candidates to simply write down the processes of river transportation and not medium of river transportation as in human Geography.

Part(b) expected candidates to highlight the characteristics identified with the middle course of a river.

In part (c) candidates were expected to explain how interlocking spurs are formed and they must do this by using suitable diagrams. In short, candidates should use diagrams to explain how spurs are formed.

Comments on individual questions

Part (a) of this question was not well handled by the candidates. Almost 75% of those who attempted it did so because they want a fourth question to satisfy the rubrics but not because they knew the answer. The 25% who have little idea of the process of river transportation failed to spell the process correctly.

Expected answers

(a) Processes of river transportation

- Solution
- Traction
- Saltation
- Suspension

The (b) part of the question was also poorly handled by almost 80% of the candidates. Most of the candidates found it very difficult to provide correct characteristics associated with the Middle course of a river. Most answers supplied by candidates only provide a vague and wrong ideas . E.g of these answers are outlined below:

- The river here is big
- The presence of tributaries
- The river is in a wide and big place, etc.

Expected answers

(b) Characteristics associated with the middle course of a river

- Lateral erosion predominates
- Wide V or narrow U-shaped valley
- Presence of cliffs
- Presence of meanders
- Presence of terraces
- Presence of slip off slopes
- Increased volume of river due to addition by tributaries
- Increased load
- Transportation of materials downslope
- Gentle gradient
- Reduced velocity
- Interlocking spurs are cut back to form bluffs/truncated spurs
- Deposition by the sides and floor of the valley

Part (c) of this question required the candidates to describe the mode of formation of interlocking spurs. It also required the candidates to draw relevant diagrams to aid their explanation. The responses of the candidates were not encouraging. They portrayed no knowledge of what the middle course of a river is and as such about 99% did not attempt this part of the question at all.

Expected answers

(c) Description of mode of formation of interlocking spurs

- Formed in the upper section of a river
- Presence of highland projecting into the course of the river with alternate bands of hard and soft rocks
- Presence of obstacles such as hard rocks
- Vertical erosion dominates at this section
- The river meanders as it takes its course along the easiest path down its slope
- Soft rocks are eroded by fast-flowing river
- As a result, the river tends to go round the hard rock
- As this continues, the bends in the river becomes more pronounced as the river flows faster
- This erodes the concave sides causing the highlands to project into the the floor of the rivers as spurs
- Little erosion occurs at the convex side
- Materials eroded from the concave bank are deposited to the convex bank
- Further erosion causes the alternate spurs on the bank to project into the concave banks of the river
- Which eventually interlock with each other to form features called interlocking spurs

Question 6

- (a) *Define climate.*
- (b) *List **five** factors that affect climate.*
- (c) *Highlight **four** characteristics of Equatorial climate.*

Understanding the Question

Part (a) of this question expected candidates to simply give the meaning of the term climate.

Part (b) was asking candidates to merely write down the factors that affect climate

Part (c) asked candidates to explain the characteristics of Equatorial climate.

Comments on individual sub-questions

This was another popular question attempted by most of the candidates about 95%. The performance very good and encouraging. Only few candidates about 5% struggled to answers the question.

The (a) part of the question simply required the candidates to define climate.

(a) Definition of climate

- Climate is the average weather condition of an area taken over a long period of time usually over 35 years.

The sub part (b) demanded candidates to list **five** factors that affect climate. It was also well answered by almost all the candidates and they scored higher marks.

(b) Factors that affect climate

- Latitude
- Altitude/height
- Continentality/distance from the sea
- Ocean currents
- Planetary winds/atmospheric circulation
- Slope and aspect
- Cloud cover
- Natural vegetation
- Soil
- Global warming

Part (c) to this question was well answered by many candidates. The sub-question was comparatively well answered and about 80% of the candidates scored good marks. The weaker ones about (20%) were unable to provide correct responses to the characteristics of the Equatorial Climate. Again they presented their usual far-fetched answers such as:

- It is used for agricultural product.
- It is dense vegetation.
- It is good for the cultivation of crops.
- The area can be used for irrigation etc.

Expected answers

(c) Characteristics of Equatorial climate

- high temperature all year round
- mean monthly temperature of 27°C
- small annual range of temperature (2°C – 4°C)
- high humidity
- relative humidity of over 80%
- large amount of cloud cover in the sky
- small daily range of temperature of about 8°C
- high annual rainfall of more than 2000mm
- rain falls throughout the year no marked dry season
- rainfall type is conventional/orographic
- lightning and thunder accompany rainfall
- hot and wet always
- zone of trade winds

- double maxima rainfall regime
- precipitation exceeds evaporation
- no month with rainfall less 254mm
- sunshine intensity is reduced by cloud cover
- thick cloud cover
- under the influence of southwest monsoon winds
- no month with an average temperature below 18°C

Question 7

- (a) *What is weathering?*
 (b) *Explain the following processes of mechanical weathering:*
- (i) *Frost action;*
 (ii) *Exfoliation.*

Understanding the Question

Part(a) of this question was asking students to simply define the term weathering.

Part (b) expected candidates to describe two processes of mechanical weathering, part (bi) was to explain the process of frost action and part 6(ii) the process of exfoliation. All of these are processes associated with temperature changes

Comments on individual questions

This was averagely attempted (i.e. by about 45 – 50%) by the candidates. The overall performance was nothing but average.

The part (a) was a straightforward question. It requires candidates to briefly explain the term Weathering.

The performance in sub-question 7(a) was not encouraging. Candidates found it very difficult to provide a geographical definition of weathering. Most of the answers supplied by candidates only provide part of the definition. For example: weathering is the breaking down of rocks into tiny particles to form soil. Such definition is only centred on physical weathering and leaving out the other weathering process.

Expected answers

(a) Definition of weathering

- The gradual disintegration or decay of rocks *in situ* by chemical or mechanical processes.

The (b) part of the question proved to be difficult for candidates. Almost 70% of the candidates could not give correct responses in explaining the process of mechanical weathering: (i) Frost action and (ii) exfoliation. Some of them were giving responses such as:

- The rock mineral will break the rock apart
- It can also occur in the forest areas
- Some of the rocks heat up mostly at the night.

Expected answers

(b) Description of the processes of mechanical weathering

(i) Frost action

- Called frost wedging
- Also called freeze-thaw weathering
- Takes place in mid-latitude and temperature regions
- Can also occur in mountainous regions
- Such areas are subject to freezing

- Cracks and crevices need to develop on rocks
- Water in the form of rainfall or snow seeps into the cracks
- The water freezes
- Water increases in size when it freezes
- Water increases by 10% of its volume when frozen
- The frozen water exerts pressure on the walls of the crack
- The pressure widens the cracks
- In the day or summer, ice melts and water seeps deeper into the widened cracks
- The process of freeze and thaw continues
- This eventually led to the shattering of rocks into the blocks in a process called *frost action*
- Called talus and screes

(ii) Exfoliation

- takes place in arid and semi-arid regions
- there is a big difference between daytime and nighttime temperatures
- as the rocks are heated in the daytime, the outer layers expand
- expansion is more on the surface than in the interior
- as it cools in the night it contracts
- contraction is more on the surface than in the interior
- continuous expansion and contraction produces stress on the outermost layer
- the outer layer pulls away
- the outer layer peels off from the cooler interior
- in a process called exfoliation
- the peeling resembles that of onion peels
- the boulder left behind after the peeling is called exfoliation domes
- could also be as a result of unloading of overburden or pressure release
- this occurs mainly in the tropics
- plutonic rocks are under pressure
- the rocks are compressed by overburden
- when exposed by erosion
- the pressure on them is released
- the rocks expand slightly in volume
- The expansion causes the surface layer to crack and peel off.
- The rock peels are thin and parallel to the rock surface
- The onion-like peels called sheet structure
- Exfoliation dome is left behind

Question 8

- (a) *What is solar energy?*
 (b) *Outline **three** advantages of solar energy.*
 (c) *Highlight **three** problems associated with harnessing of solar energy.*

Understanding the question

Part (a) of this question was asking candidates to simply define the term solar energy.

Part (b) expected candidates to explain the pros or importance of solar energy

In part (c) of this question, candidates were asked to explain problems connected with the use of solar energy. Candidates were simply required to explain how the use of solar energy is hampered.

Comments on individual sub-questions

It was a popular question. It attracted many candidates (about 90%) as the topic is taught in other disciplines such as Physics, Science, and Agriculture. Candidates found the question to be relatively easy to handle. The performance in this question was excellent although few candidates

face some difficulties in answering some aspects of the question especially the (c) part of the question.

The part (a) of the question was a very straight forward question asking candidates ‘what is solar energy’? The performance in sub-question 8 (a) was slightly above average mark. Almost 40% of those who attempted this question were at least able to briefly explained what solar energy is. The remaining 60% found it very difficult to come up with correct definition of solar energy. They confused solar energy with solar system.

Expected answers

(a) Meaning of solar energy

- Radiant energy from the sun which comes as heat and light and can be harnessed as an atmospheric resource.

The (b) part of the question attracted very good scores because of its simplicity. About 80% of the candidates who attempted the questions were able to outline the advantages of solar energy. Some candidates’ responses were clear and informative. The remaining 15% merely listed the advantages of solar energy but failed to explain the points.

Expected answers

(b) Advantages of solar energy

- Inexhaustible and renewable
- Abundant
- Entirely free/ low running cost
- Energy independence
- Provides heat energy in the environment
- Provides light during the daytime
- Helps plants in the process of photosynthesis
- Non-polluting/environmentally friendly/very neat
- Noiseless nature
- Given to multiple application
- No periodic maintenance
- Helps to keep the satellite in space
- Provides different forms of energy
- No direct cable connection
- Helps to reduce the use of fossil fuel
- Saves space
- Source of vitamin D

The (c) part of the question was not properly handled by the candidates. The candidates portrayed no knowledge of the problem associated with the harnessing of solar energy. They simply wrote down anything that came in their minds, and sometime accidentally stumble on one of the required points.

Expected answers

(c) Problems associated with the harnessing of solar energy

- Initial cost is very high
- Inadequate capital
- Low level of technology
- Competition with other sources
- Unreliability/thick cloud cover
- Pollutant in the environment obstructs the flow of energy
- Not evenly distributed across regions of the world
- Could take a lot of space

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
GOVERNMENT 2

1. GENERAL COMMENTS ON THE PAPER

This year's questions for the West African Senior School Certificate Examination in Government Paper 2 were within the reach of candidates although section C required interpretation in order to fully understand them. The questions were of standard. The Marking Scheme for the questions was very comprehensive to the extent that any average candidate who is analytical could have scored good marks to enable him/her acquire respectable grade. The questions were drawn from familiar topics in the syllabus but required a little bit of thinking to understand what they required. The rubrics of the questions were clearly stated on the question paper.

The performance for this examination was satisfactory, it fell below expectation. The candidates' performances were only satisfactory because they continued to rely on leakages from the internet instead of seriously studying to pass their examination. This indicates their ill-preparedness towards the examination. It could also be due to either their lack of tuition or the use of unsuitable textbooks and other reading materials.

2. CANDIDATES' STRENGTHS

On the average, about 50% of the candidates was able to score marks within the range of 25 to 40. Some of the candidates displayed a thorough understanding of the questions and gave relevant answers to the questions. The candidates who performed well in this year's examination did so as a result of the following: They

- followed the rubrics of the paper by selecting the required number of questions from Section A which is on the Elements of Government and Section B which is country specific.
- identified relevant points and related them to the questions.
- offered precise answers to their chosen questions.
- presented their work in an orderly manner.
- presented their work with clarity and legibility.

3. CANDIDATES' WEAKNESSES

- About 40% of the candidates scored within the range of 0% to 10%. The main problems leading to these poor performances were due to the following:
- Candidates lacked understanding of the questions and thus misinterpreted them. Candidates were unable to express themselves properly in English language and therefore could not properly communicate their thoughts to the examiners.
- Candidates were unable to develop ideas to explain their points as many were guilty of merely mentioning points without explaining them reasonably.
- Candidates demonstrated poor level of preparation and lack of basic knowledge of the subject matter.
- Some candidates were in the habit of just copying the examination questions as answers which is disappointing.
- The poor performance of candidates was also because of their inability to spell and write correctly vital words in government like fund, legislature, judiciary, executive and many others. Candidates were unable to articulate their points with good expressions to give clear meaning to their presentation.
- Some candidates answered as many questions as they could on one page of the answer sheet. Other candidates answered less than the required number of questions and that affected their performances.

- Some candidates continued to provide unnecessary introductions to questions as marks are not awarded for such details.
- Some candidates answered questions without numbering them which made it difficult for examiners to identify such questions for them

4. SUGGESTED REMEDIES

The Government questions set for this year's West African Senior School Certificate Examination for school candidates should have been within the reach or level of the candidates. They were standard although it needed a little bit of application and analysis to understand the demands of the questions. For better or improved performances in the subsequent examinations, the school candidates should be advised to note the following:

- Candidates have to know that there is a paradigm shift in setting questions from Recall and Comprehension questions to Application, Analysis and Evaluation questions which need some level of thinking to appreciate the questions.
- Candidates need to explain reasonably the points they raise in answering questions instead of merely mentioning points which seriously affect their performance.
- Candidates need to improve upon their command of the English language in order to respond to questions better.
- In addition, candidates should be sensitized to desist from answering two or more questions on the same sheet in the answer booklet.
- Candidates should be advised to stop writing unnecessary introductions not required by questions as no marks are awarded for such introductions.
- Candidates should highlight or outline points in two or more sentences instead of using one word to answer a question.
- Attempts should be made by candidates to lay hands on appropriate textbooks and other reading materials to help them in their studies in Government. Apart from these seeming weaknesses, candidates should not have any excuses for not obtaining good grades in the subject.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

ELEMENTS OF GOVERNMENT

Question 1

*Identify **five** major functions of government as an agent of the state.*

This question was very popular among the candidates as it was straight forward and about 90% of the candidates attempted it. The overall performance was impressive. On the average, about 70% of the candidates who attempted this question scored good marks of about 10 out of 15. Majority of them could have scored better marks if they had fully explained the functions of government as an agent of the state and not just merely mentioning the points. Candidates should also take note that there is a difference between Law and Low. The function of the Legislature is law making and not low making.

Question 2

*Explain **five** factors that hamper the effective operation of the justice delivery system in a democratic state.*

This question was not popular among the candidates. The candidates who attempted it were about 10% of the candidature for government. The average marks scored were equally disappointing, about 2 out of 15. The candidates had difficulty in coming out with practices that disrupt rendering justice to the people. Majority of the candidates wrote directly on the problems of the judiciary without linking some of them to how they may affect the justice delivery system. They could not also express themselves very well to score very good marks.

Question 3

*Highlight **five** factors that have contributed to the weakened government institutions in many West African states.*

This question was not very popular as on the average about 35% of the candidates attempted it. The candidates' approach to this question was wrong as they did not address the question. The candidates mistakenly took the question to be criticisms of West African governments instead of governmental institutions like the Civil Service, Public Corporations, Local Governments and others in West Africa. This made them raise points not related to the question. The average score mark was about 5 out of 15.

Question 4

*In what **five** ways does political socialization assist in the democratic process of a state?*

This question surprisingly was not very popular among the candidates as only about 20% of the candidates attempted it. The average mark obtained for the question was unsatisfactory as candidates were able to score about 4 out of 15. The candidates concentrated on explaining the roles of the agents of political socialization instead of showing how political socialization positively impacts the democratization process. The candidates who seemed to have the ideas were also not convincing in their explanations else they could have scored better marks than they had.

Question 5

*Outline **five** reasons for which it is important for a state to have efficient local government system.*

This question was very popular among the candidates with about 75% of them attempting it. The performances of the candidates were good and the average score mark was 9 out of 15. Some candidates failed to obtain good marks as they were guilty of giving repetitive answers. Other candidates seemed not to have understood the requirements of the question.

SECTION B

POLITICAL AND CONSTITUTIONAL DEVELOPMENTS IN WEST AFRICA AND INTERNATIONAL RELATIONS

Question 6

*Highlight **five** reasons for which African states remain divided on many major issues under the umbrella of the African Union (AU).*

This question was not popular among the candidates with about 10% of them attempting it. The performances of the candidates were equally not impressive. Majority of the candidates did not understand the demands of the question, instead of writing on the conflicting issues that divides

African states, they were rather writing on the general problems faced by the African Union (AU). The average score of the candidates was about 2 out of 15 marks.

Question 7

*Explain **five** major mistakes committed in democratic governance that give cause for the military to intervene in politics.*

This question was very popular. About 80% of the candidates attempted it and their responses were impressive. It was very clear from their responses that they were reading or have adequate materials on this question. However, quite a number could not link their points to satisfy the demands of the question. Some literally wrote on the factors that prompt military intervention in states without realizing that not all those points can be used to answer this question, e.g. personal ambition of soldiers, or the contagious effects of coups in Africa. The average marks scored was good about 10 out of 15.

Question 8

*In what **five** ways can the traditional authorities collaborate with the government for the development of The Gambia?*

This was a popular question attempted by about 50% of the candidates. The candidates who attempted it surprisingly could not raise convincing explanations for their points. Other candidates failed to understand that the word collaboration means partnering with the government. Some candidates also wrote on the functions of chiefs generally as answers to the question which made them fail. The average marks scored was only satisfactory about 7 out of 15.

Question 9

*Outline **five** ways in which the formation and operations of political parties have contributed to the democratic development of The Gambia.*

This question was popular among the candidates as about 70% of them attempted it. The question was straight forward, however most of the candidates deviated. The question was specifically on the roles political parties have played towards the development of democracy in The Gambia. However, many of the candidates dwelt on the general contributions of political parties in the state which may not necessarily answer the question. The average mark scored was only satisfactory, about 6 out of 15.

Question 10

*Identify **five** low points in the 1951 Constitution of The Gambia which caused an increase in nationalist agitation.*

This question was very unpopular among the candidates. About 10% of the candidates attempted it and the average mark scored was poor, about 1 out of 15. The candidates seemed not to have any idea about the 1951 Constitution and found it difficult understanding the phrase 'low point' in the stem of the question, which simply means criticisms or dissatisfaction.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
HISTORY 2

1. GENERAL COMMENTS ON THE PAPER

The questions this year are straight forward and in accordance with the WAEC History syllabus for senior secondary schools. Almost 75% of the candidates attempted the number of questions they were required to answer. Candidates were mostly attracted to questions 2, 3, 5, 7 and 9 which earned them average marks.

Generally, the candidates' performance this year is slightly above average. 50% of the candidates were unable to express themselves well. There were a lot of spelling mistakes and grammatical errors. Nonetheless, a good number of the candidates did well in questions 2, 3 and 5. They were able to talk about how the Mandinka migration affected The Gambia, named the British explorers, highlighted the difficulties they encountered in The Gambia and also outlined the social effects of Christian missionary activities.

2. CANDIDATES' STRENGTHS

- 70% of the candidates followed the rubrics by answering the required number of questions.
- A substantial number of candidates were able to outline the points with regard to questions answered.
- 65% of the candidates seem to be knowledgeable in the subject. They developed their points well
- 60% of the candidates displayed legibility in writing.

3. CANDIDATES' WEAKNESSES

- Some candidates did not fully understand the rubrics. They either attempted less or more than the required number of questions.
- Attempting three or more questions on the same page was common.
- A considerable number of candidates were unable to express themselves. There were lots of spelling mistakes. For instance, some could not spell the names of the British explorers, some also found it difficult to spell words like trade, Islam, barrier, climate, hostile, population, etc.
- Some candidates wrote scanty answers (mere mentioning of points).
- Some candidates did not understand the questions. Consequently, they veered or went out of topic.
- Illegible handwriting and clumsy work.

4. SUGGESTED REMEDIES

- Students should be encouraged to read extensively in order to improve their understanding of the English Language.
- The teachers should endeavor to cover the syllabus for candidates to have options when answering questions.
- Teachers should prepare the students for the examination. They should teach them how to answer examination questions and also the rules of the examination.
- Examination supervisors and invigilators should be vigilant during the conduct of examination to avoid examination malpractices.
- WAEC should come up with stringent or tougher measures against candidates who wrote the same question numbers, same expressions and same common mistakes in their work.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

HISTORY OF THE GAMBIA UP TO 1800

Question 1

- (a) List any **three** material remains that are objects of archaeological studies.
- (b) Identify any **four** problems associated with archaeology.

It was a fairly popular question. About 60% of the candidates attempted it. However, over 20% of them were unable to list the material remains that are objects of archaeological studies and at the same time unable to identify the problems associated with archaeology.

Question 2

*In what **five** ways has the Mandinka migration affected The Gambia?*

This was a very popular question among the candidates as about 90% of them attempted it but were unable to explain the ways the Mandinka migration affected The Gambia. Some of the candidates wrote on the reasons for the Mandinka migration.

Question 3

- (a) Name any **three** British explorers that visited The Gambia before 1800.
- (b) Highlight any **four** difficulties encountered by the early British explorers in The Gambia.

This was another popular question. About 95% of the candidates attempt it.

A good number of them were able to name the British explorers that visited The Gambia before 1800. Although, some of the candidates listed the names of Portuguese explorers instead of British explorers.

In the B part, candidates knew the difficulties encountered by the early British explorers. They highlighted them but could not fully developed the points to obtain good marks.

SECTION B

THE GAMBIA IN THE 19TH CENTURY

Question 4

*Outline any **five** factors responsible for the prolonged resistance of Foday Kabba Dumbuya against the British and their Soninke allies.*

A very unpopular question that attracted very few candidates. The few candidates that attempted it were unable to explain the factors responsible for the prolonged resistance of Foday Kabba Dumbuya against the British and their Soninke allies.

Question 5

*Identify any **five** social effects of the Christian missionary activities in The Gambia.*

A very popular question. About 95% of the candidates attempted it. They scored relatively high marks. Although, some of the candidates wrote on the reasons for the coming of Christian missionaries while others talked about the problems faced by the Christian missionaries in The Gambia.

Question 6

- (a) Name any **three** European powers that divided the Fulladu Empire among themselves.
- (b) Highlight any **four** factors that led to the European acquisition of the Fulladu Empire.

Another unpopular question. The few candidates that attempted it were unable to identify the factors that led to the European acquisition of Fulladu Empire. Some of the candidates were able to name the European countries that divided Fulladu Empire among themselves.

SECTION C

THE GAMBIA IN THE 20TH CENTURY

Question 7

- (a) Name any **three** political parties that were formed in The Gambia before independence.
- (b) Identify any **four** roles played by the Trade Unions in The Gambia during the struggle for independence.

A popular question, about 75% of the candidates attempted it and 50% of them were able to name the political parties formed before independence. Nonetheless, the candidates could not identify the roles played by trade unions in The Gambia during the struggle for independence.

Question 8

*Identify any **five** factors that made the people of The Gambia unable to prevent the British from declaring a protectorate over the interior.*

A fairly popular question, about 65% of the candidates who attempted it were unable to identify the factors that made the people of The Gambia unable to prevent the British from declaring a protectorate over the interior.

Question 9

*Highlight any **five** reasons that motivated The Gambia to be a member of the Organization of African Unity.*

Another popular question. About 70% of candidates that attempted the question were able to explain the reasons that motivated The Gambia to join the Organization of African Unity (OAU/AU).

However, some of the candidates wrote on the benefits The Gambia derived from being a member of the organization.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
ISLAMIC STUDIES 2

1. GENERAL COMMENTS ON THE PAPER

This year's examination was conducted in all schools in the country. The questions were straight forward and easy to understand and were within the syllabus.

The performance of students this year was better than last year where students were able to score high marks in some areas.

2. CANDIDATES' STRENGTHS

The students performed well in questions one, two and three and were able to score high marks in them. In question four, it was average. They were able to score two or three points.

3. CANDIDATES' WEAKNESSES

They performed badly in questions five and six. This was because Hadith was a problem for all students. They hardly perform well in it. Many of them do not even attempt it. As for question six, it was only those who did African history that were able to bring one or two points in it. Most of them do not even know Uthman dan Fodio.

4. SUGGESTED REMEDIES

More work has to be done to encourage students to improve on hadith and to have more relevance on hadith. It is becoming a problem that students are neglecting the study of Hadith in schools. Teachers should do their best to make sure that they have enough materials on hadith.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) *Write Suratul-ikhlas in either Arabic or transliteration.*
- (b) *Translate Suratul-ikhlas into English.*
- (c) *State the teachings of Suratul-ikhlas.*

About 95% of the students attempted this question and were able to score high marks in writing the surah in transliteration and translating the surah into English. The only problem they have was to comment on it. Only few were able to bring some points like the uniqueness of Allah and there is none like unto Him. The other relevant points they failed to bring are:

- Absolute existence is part of Allah's attributes.
- Allah is eternal absolute.
- He has neither a son nor a daughter.
- He also has no father or mother.
- The concept of trinity is derived.
- Allah is not comparable to any of His creatures.
- Associating partners with Allah is unforgiveable.
- Anything associated with the Godhood amount to shirk.

Question 2

Highlight on the obligatory prayers (salawat).

About 70% of the students attempted this question and were able to score high marks like stating the names of the prayers. The number of rakahs in each prayer and their time. But they failed in bringing in other relevant points like:

- The recitation of suwan in the first two rakahs of subhr, maghrib and ashhr are said loudly.
- The recitation of suwar in subhr and ashhr are said silently.
- Prayers is the distinguishing mark between a Muslim and non-Muslim.
- These prayers can be done individually or congregationally.
- They must be performed in clean places.
- The mosque is the most preferable place.
- The person performing these prayers must face the Qiblah.
- Each of the prayers has fixed time.

Question 3

Give an account of the contributions of Caliph ABU-Bakarr to Islam.

About 70% of the students attempted this question and were able to score some marks in it like: He was the first caliph, He led Muslims in prayers when the prophet (SAW) was sick, He gave his daughter Aisha to the prophet (SAW) for marriage, He fought many battles with the prophet (SAW), He bought some slaves and freed them, He ordered for the compilation of the Quran, etc. The other points they failed to bring are:

- He dispatched Usamah's expedition which had been planned by the prophet (SAW).
- He fought against those who proclaimed prophethood.
- He enforced the collection of zakat.
- He expanded the frontiers of Islam.
- He sent expedition to avenge the murder of the prophet (SAW) emissary to Ghassanid prince of Basrah.
- He replicated the leadership style of the prophet (SAW).
- HE spent his wealth and energy to promote Islam.
- He directed the Shu'rah committee to determine who become the next caliph .
- He suggested Omar b. Khattab as the next caliph and was accepted.

Question 4

Outline the contributions of Imam Bukhari to the development of Hadith.

About less than 10% of the students attempted this question and were not able to bring some points in it. The points they failed to bring are:

- He travelled far and wide in search of Hadith.
- He spent sixteen years travelling.
- He collected 600,000 traditions (Hadith).
- He applied critical standard in sorting out the Hadith.
- He collected over 7000 traditions.
- His book on tradition contains 3,450 articles.
- His collection came down to 4000.
- The selected traditions were arranged into 97 books.
- The Hadith are of the Musanat type.
- He often included notes in the chapter heading.
- His collection is of the Sahih (sound) type.

- Through his collection, hadith studies became a science with rules.
- His books were the most authentic among the six books of hadith.
- His work covered all aspects of Fiqh.
- He influenced Muslim b. Hajjab and others.

Question 5

Comment on Hadith 9 of AN-NAWAWI'S collection.

Less than 5% of the students attempted this question and were not able to bring relevant points. Some wrote on hadith and others commented on other hadith. The points they were to bring are:

- The Hadith was the prophet's (SAW) response to a question on Hajj.
- The question happened when revelation was coming down.
- It was related when the prophet (SAW) said "Allah has commanded you to perform Hajj, so perform Hajj, O servant of Allah".
- A man asked the prophet (SAW) whether every year.
- The prophet's response; "that whatever I forbid you to do, avoid it, and whatever I command you to do, do as much as you can."
- The prophet (SAW) discouraged unnecessary questions.
- Asking too many questions may lead to confusion.
- The prophet (saw) was not happy with the man's question.
- A positive response could have led to the performance Hajj every year.
- A Muslim is advised to do good actions based on his ability.
- The forbidden acts must be totally avoided.

Question 6

Examine the consequences of Uthman b. Fodio's jihad on Hausa land in the 19th century.

Less than 5% of the students attempted this question and could not bring any relevant point in it. The points that they were to bring are:

- The Jihad aided the spread of Islam throughout the Haus land.
- It brought about an end to the tyrannical leadership of the Habe king.
- Shariah was introduced as the system of government.
- Shariah courts were established.
- Women education was popularized.
- It helped centralization of power in the land.
- The jihad gave inspiration to other jihads.
- There was a sudden surge in literary activities.
- Quranic schools (madrasah) were established.
- Rights of women were restored.
- Sokoto and Gwandu were the twin capitals of the new sokoto empire.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CHRISTIAN RELIGIOUS STUDIES 2

1. GENERAL COMMENTS ON THE PAPER

The 2023 WASSCE CRS paper was set in accordance with the identified syllabus. The questions were at the level of the candidates and the language used was quite satisfactory. Some questions were of great help to candidates as it avails the opportunity for them to answer. There has been a good background of the questions as per the syllabus because it relates to the daily life happenings. It also gave a moral value to the candidates on how to contribute to the socio-economic development of the society.

The selection of question is quite relevant to the candidates' level. The exam was in a way so fair to the writers though some missed some facts about the stories.

In a nutshell, the paper was seriously scrutinized and sieved to suit the candidates. This is to attain the objective for both candidates and the examination body.

2. CANDIDATES' STRENGTHS

There are some candidates who brilliantly wrote on the questions pointing out facts as asked. The organization of the work is properly done.

Fresh questions are started on fresh pages.

There was legibility of writing by candidates which fastens the work of examiners.

Arrangements of facts are superbly done by some candidates.

The lesson written by some students are quite satisfactory and educative.

Instructions are followed by many candidates as per number of questions per section and per paper.

3. CANDIDATES' WEAKNESSES

Fresh questions are not started on fresh pages.

Questions are answered with only few lines.

Lessons are not accurate and in line with the questions.

Numbering of questions are not done by some candidates.

Writing on another story different from what was asked.

Some writings are clumsy and difficult to read.

There is no separation between questions.

Some copies the questions as their answers.

There is a script from a centre where words can't be identified as English words.

4. SUGGESTED REMEDIES

To assess candidates before registering as some copied only the questions.

To sieve candidates as some may not be of the faith but decided to register for the subject leading to poor scoring.

To guide the candidates on the examination syllabus as some are denominationally minded through their writing.

To organize a refresher training for CRS teachers by the focal office as some do not teach the right thing as portrayed in candidates' write ups.

To identify a CRS focal person by MoBSE to monitor the subject delivery.

To engage qualified or seasoned persons for the exercise.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *Narrate the events that led to the marriage between Moses and Zipporah.*

- (b) Explain **two** reasons for which people seek asylum.

It has been a very attractive and opted question for candidates. Many set the facts are required. Good marks were scored by many. Some wrote on Moses and the burning bush, and some went on to deliberate on the sacrifice of Isaac by his father.

Question 2

- (a) Recount how the diplomatic relations between Tyre and Israel enhanced the building of the Temple during Solomon's reign.
(b) Highlight **two** benefits of diplomatic relations among nations

One at least answered this questions. It seems it is not much understood by candidate. The action of Solomon fostering relationship with Tyre is missed.

Question 3

- (a) Recount the events that took place in Judah after the death of King Josiah to the first deportation of the Jews.
(b) State **four** causes of civil unrest in a nation.

This question was not understood. The facts are not properly stated. There have been mixed facts stated. The order of rulers was not well jotted down. Low marks were attained by students

Question 4

- (a) Let us build with you; for we worship your God as you do, and we have been sacrificing to Him ever since.... Narrate the events that followed this request of the Samaritans.
(b) State **four** causes of tension among neighbours.

The question on the permission to the Samaritan's was briefly attempted. Those who opted for it were not able to state the facts on the building of the temple. Some biblical names were of difficulty for some candidates to spell. The year too is an issue for some to indicate.

Question 5

- (a) Then Jesus said to him, begone Satan! For it is written, you shall worship the Lord your God and Him only shall you serve. Narrate the events that took place before Jesus made the above statement as recorded in Mathew.
(b) Highlight **three** lessons which Christians can learn from Jesus' encounter with Satan in 5(a).

This is the most popular narration among questions. The temptation of Jesus was well presented though in accordance to the different gospels but the facts remain the same. It was a well scored question.

Question 6

- (a) Lord, how often shall my brother sin against me, and I forgive him?
Narrate Jesus's response to the above question.
(b) Outline **three** benefits one stands to gain in forgiving others.

The issue of unlimited forgiveness by Jesus was so unfortunate that some candidates went onto writing on the Lord's Prayer while some derailed and wrote on how we need to forgive instead of writing on the accounts by the servants and his master with the fellow servant. Many lost marks but few were able to pin to the point.

Question 7

- (a) *Outline the circumstances that led to the untimely death of Ananias and Sapphira.*
- (b) *State **four** lessons the church of today can learn from the actions of Ananias and Sapphira that led to their death.*

This was an interesting story of Sapphira and Ananias on how they sold their land and submitted the proceeds to the community. Many understood the narration well leading to scoring good marks. The issue of the benefits was the problem, but some took life experiences to be as their lessons.

Question 8

- (a) *Outline James' instructions to Christians on how to conduct effective and result-driven prayer.*
- (b) *State **four** factors that hinder prayer from being heard and answered.*

The admonishment by Peter to the believers was badly written by some while others vividly elaborate on the topic as asked. The responsibility of both elders and youths are clearly written but those who understood it. There were some who wrote on different issue about the believers. A certain candidate wrote on the issue of the Jews and the Hellenists.

Question 9

- (a) *Highlight Peter's advice to elders and the youth of the church on how to promote good relationship.*
- (b) *Indicate **three** ways by which conflict retards the growth of the church.*

On James' exhortation on how effective prayers can be attained, some candidates blindly wrote clearly on being patient, not doubting, perseverance, righteousness etc. which was clearly mentioned by James. On the conditions hindering effective prayers, some strayed away and wrote on the positive issues instead on the negative. There are some who spelt out the right points for effective prayer and the conditions hindering it.

COMCLUSION

The WASSCE 2023 had been amazing as there were some candidates who scored zero in all questions showing the understanding level of candidates. As compared to 2022, it seemed a bit better in scoring as the marks were a bit encouraging. Some were so discouraging that as a Christian we don't expect the score they attained most especially famous stories like the temptation, Ananias Sapphira, Moses' encounter with Pharaoh's daughters, etc. The paper was fair enough and the lessons were day to day life experiences.

MATHEMATICS SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
MATHEMATICS

1. STANDARD OF THE PAPERS

The Chief Examiners' reports for both papers highlighted that the questions were widely spread over the syllabi, and the standards of the papers were like those of the previous years. The papers were well structured and properly worded with clear rubrics and no ambiguity.

2. CANDIDATES' PERFORMANCE

The general performance of the candidates is below average. However, the performance was good when compared to the previous years.

3. CANDIDATES' STRENGTHS

Candidates demonstrated good understanding in the following areas:

- Copying and completing tables of values for a given quadratic equation.
- Solving inequalities.
- Calculation of time from a given formation.
- Differentiating between angles of elevation and depression.
- Calculation of areas of sectors and segments of a circle.
- Finding the inverse of a function.
- Linear sequence.
- Solving of equations of motion in uniform acceleration.

4. CANDIDATES WEAKNESSES

The following weaknesses were observed from the candidates answer scripts:

- Inability to illustrate a given information in a diagram e.g. bearing.
- Use of non-given scales to plot points on graph.
- Inability to determine gradients, midpoints, and equation of a line.
- Inability to construct frequency distribution table and to calculate the mean and standard deviation.

5. SUGGESTED REMEDIESS

The following suggestions were given by the Chief Examiners to improve candidates' performances:

- Teachers should discourage the idea of indiscriminate rounding of values, rather only at the final answers.
- Teachers should ensure that the students have full coverage of the syllabus.
- Mastering of the rubrics is a necessity before the attempt to answer the questions.
- Students need to know concepts as much as they learn computational techniques.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
GENERAL MATHEMATICS/MATHEMATICS (CORE) 2

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper compares favourably with those of the previous years, with topics drawn from a wide range of the syllabus. Although there was a misleading or ambiguous question i.e. Question 6, the rest of the questions were clear and within the reach of the candidates. Even though, the performance was poor, it shows an upward trend in the overall performance of the candidates. The poor performance could be due to inadequate teaching materials and lack of seriousness on the part of the candidate

2. CANDIDATES' STRENGTHS

Copying and completing table of values for a given quadratic equation.
Solving inequalities.
Calculation of time from a given formation.
Formation of equations from given data.
Differentiating between angles of elevation and depression.
Calculation of areas of sectors and segments of a circle.

3. CANDIDATES' WEAKNESSES

Inability to illustrate a given information in a diagram e.g. bearing.
Use of non-given scales to plot points on graph.
Inability to determine gradients, midpoints, and equation of a line.
Inability to construct frequency table to calculate the mean and standard deviation.
Failure to express in two decimal places, answers to questions involving money, and failure to indicate the denomination symbol of the currency.

4. SUGGESTED REMEDIES

Teachers should discourage the idea of indiscriminate rounding of values, rather only at the final answers.
Teachers must make use of the blackboard geometric instrument while teaching instead of free hand drawing of lines and circles, thereby setting good examples for the candidates.
Mastering of the rubrics is a necessity before the attempt to answer the questions.
Full coverage of the syllabus is required of the candidates before the exams.
Unlimited exercises must be given to the candidates as practice before the exams

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *A car travels a distance of 112 km at an average speed of 70 km/h. It then travels further for 60 km at an average speed of 50 km/h. Calculate, for the entire journey, the total time taken.*

(b) *If $\frac{x}{y} = 2$ and $\frac{y}{z} = 3$, find the value of $\frac{x+y}{y+z}$.*

Comment

(a) Although most of the candidates were able to calculate the time, they were unable to express it in its simplest term.

- (b) The candidates were expected to find the value of $\frac{x+y}{y+z}$ by substitution and simplification.
Only about 10% of the candidates were able to do so.

Solution

$$\begin{aligned}\text{Time} &= \frac{112}{70} + \frac{60}{50} \\ &= 2.8 \text{ hours} \\ &= 2 \text{ hours } 48 \text{ minutes.}\end{aligned}$$

$$\begin{aligned}\frac{x+y}{y+z} &= \frac{2y+y}{y+\frac{y}{3}} \\ &= \frac{(3y)}{(\frac{4y}{3})} \\ &= \frac{9y}{4y} \\ &= 2\frac{1}{4} \text{ or } 2.25\end{aligned}$$

Question 2

In a football match, the tickets for the children and adults were sold at D 3.00 and D 5.00 respectively. If 400 people attended the football match and D 1,700.00 was collected in ticket sales;

- (a) How many tickets were sold to adults?
(b) Mr. Sonko sold 250 tickets. If 175 of the tickets were for adults, how much sales did he make altogether?

Comment

(a) Based on the given information, the candidates were supposed to distinguish the two different equations and solve them simultaneously.

(b) The candidates were to find the total sales on 250 tickets sold by Mr. Sonko. Most candidates were able to subtract 175 from 250 to get the number of tickets sold to the children; but could not proceed further to get the total sales.

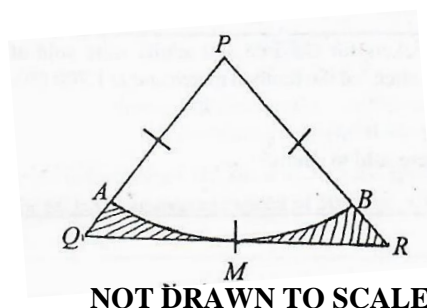
Solution:

$$\begin{aligned}\text{(a)} \quad x+y &= 400 \dots\dots\dots 1 \\ 3x+5y &= 1700 \dots\dots\dots 2 \\ 2y &= 500 \\ y &= 250 \\ x &= 150\end{aligned}$$

Tickets sold to adults = 250.

$$\begin{aligned}\text{(b) Children} &= 250 - 175 \\ &= 75 \\ \text{Total sales} &= 3(75) + 5(175) \\ &= 225 + 875 \\ &= \text{D1, 100.00}\end{aligned}$$

Question 3



In the diagram, PQR is an equilateral triangle of side 18cm. M the midpoint of \overline{QR} . An arc of a circle with centre P touches \overline{QR} at M and meets \overline{PQ} at A and \overline{PR} at B. Calculate correct to **two** decimal places, the area of the shaded region.

[Take $\pi = \frac{22}{7}$]

Comment:

Most of the candidates failed to make use of Pythagoras theorem to find the height of the equilateral triangle, and hence use it in finding the area of sector PAMB and the area of the equilateral triangle.

Solution: from $\triangle PMR$

$$|MP|^2 + 9^2 = 18^2$$

$$MP = 9\sqrt{3} \text{ cm.}$$

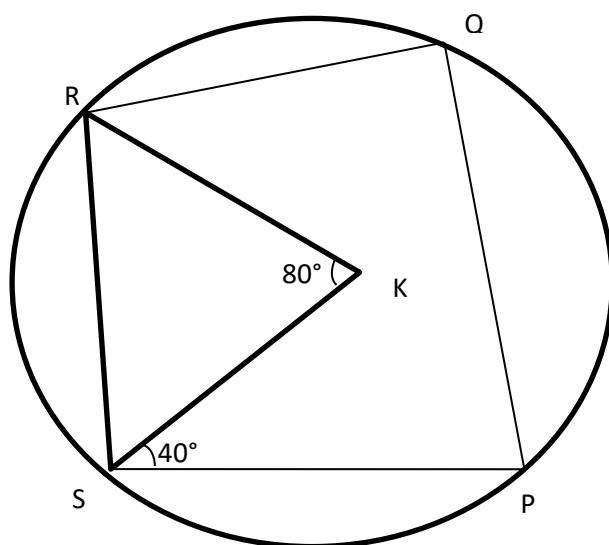
Since $\triangle PQR$ is equilateral, all angles = 60°

$$\begin{aligned} \text{Area of sector AMB} &= \frac{60}{360} \times \frac{22}{7} \times (9\sqrt{3})^2 \\ &= 127.2857 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of } \triangle PQR &= \frac{1}{2} \times 18 \times 9\sqrt{3} \\ &= 140.2961 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Shaded region} &= 140.2961 - 127.2857 \\ &= 13.0104 \\ &= 13.01 \text{ cm}^2 \end{aligned}$$

Question 4



In the diagram, PQR and SRQ are triangles in a circle centre K. \overline{KR} is a bisector of $\angle SRQ$, $\angle KSP = 41^\circ$, and $\angle SKR = 80^\circ$. Find:

- $\angle RQP$
- $\angle SPQ$

Comment: most of the candidates were unable to recognize $\triangle KRS$ as isosceles, and this enabled them to trace $\angle KSR$ as 50° . However, they were unable to recall other angle properties to determine the angles asked to solve.

Solution: (a)

$$\begin{aligned} \angle KRS &= \angle KSR \\ 2\angle KSR + 80^\circ &= 180^\circ \\ 2\angle KSR &= 100^\circ \\ \angle KSR &= 50^\circ \\ \angle RPQ + \angle KSR + 41^\circ &= 180^\circ \end{aligned}$$

$$\begin{aligned}\angle RQP + 50^\circ + 41^\circ &= 180^\circ \\ \angle RPQ &= 89^\circ\end{aligned}$$

$$\begin{aligned}\text{(b) } \angle SRQ &= 2 \angle KRS \\ &= 2 \times 50^\circ \\ &= 100^\circ \\ \angle SRQ + \angle SPQ &= 180^\circ \\ 100 + \angle SPQ &= 180 \\ \angle SPQ &= 80\end{aligned}$$

Question 5

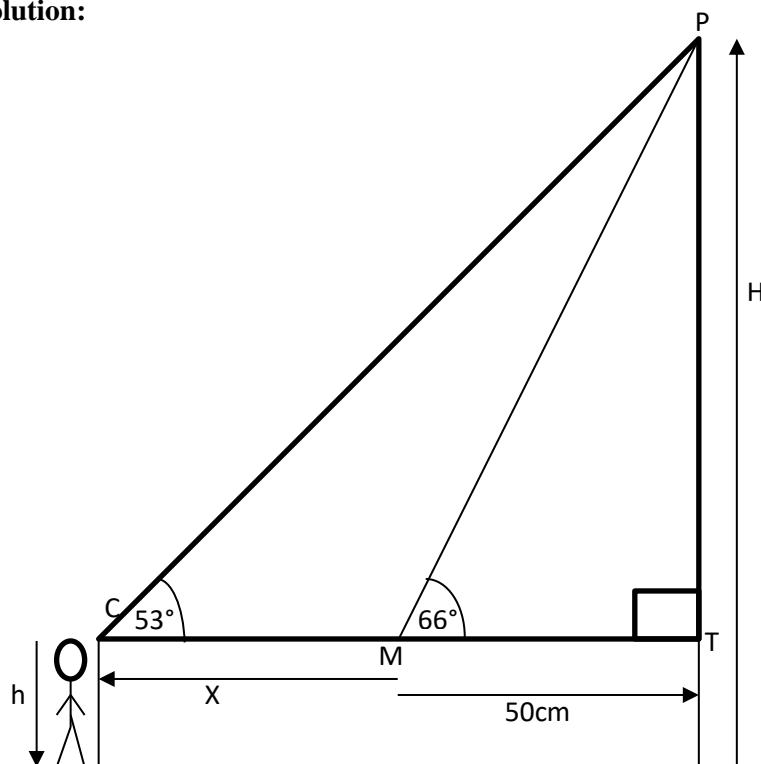
A boy stands at a point M on the same horizontal level as the foot, T , of a vertical building. He observes an object on the top, P , of the building at an angle of elevation of 66° . He moves directly backwards to a new point C and observes the same object at an angle of elevation of 53° .

If $|MT| = 50$ m:

- illustrate the information in a diagram;
- calculate correct to **one** decimal place:
 - The height of the building
 - $|MC|$.

Comment: poor interpretation of the information in a diagram form has misled most candidates in solving the question. They could not indicate correctly on the diagram the angle of elevation.

Solution:



NOT DRAWN TO SCALE

$$\begin{aligned}\text{(i) } \tan 66^\circ &= \frac{|PT|}{50} \\ |PT| &= 50 \times (\tan 66^\circ) \\ \text{Height of building} &= (112.3 + h) \text{ m} \\ \text{(ii) } \tan 53^\circ &= \frac{112.3}{x+50} \\ 1.327(x+50) &= 112.3\end{aligned}$$

$$1.327x = 45.95$$

$$x = 34.627$$

$$|\overline{MC}| = 34.6m$$

Question 6

- (a) $M = \{n: 2n - 3 \leq 37\}$, where n is a counting number.
- (i) Write down all the elements in M .
- (ii) If a number is selected at random from M , what is the probability that it is a:
- (α) multiple of 3;
- (β) Factor of 10.
- (b) A shop owner gave an end-of-year bonus to two of his attendants, Kontor and Gapson in the ratio of their ages. Kontor's age is **one** and half times that of Gapson who is 20 years old. If Kontor received Le 200, 000.00, find:
- (i) The total amount shared;
- (ii) Gapson's share.

Comment:

The question demanded of the candidates to solve the inequality and write down the elements of Set M . they were then to use the result to find the multiples of 3, and factors of 10.

The ambiguity nature of the question stem pose problem to the candidates

Solution:

$$2n - 3 \leq 37$$

$$2n \leq 40$$

$$n \leq 20$$

$$M = \{1, 2, 3, 4, \dots, 20\}$$

$$(\alpha) \text{ Prob (multiples of 3)} = \frac{6}{20}$$

$$= \frac{3}{10}$$

$$(\beta) \text{ Prob (factors of 10)} = \frac{4}{20}$$

$$= \frac{1}{5}$$

If Kontor's age is one and half times that of Gapson

Kontor: Gapson = 3: 2

Let amount shared be x

$$\frac{3}{5}x = 200,000.00$$

$$x = \text{le}333333.33$$

$$\text{Gapson's share} = 333333.33 - 200,000.00$$

$$= \text{Le}133, 333.33$$

If Gapson's age is one and half times that of Kontor

Gapson: Kontor = 3: 2

Let amount shared be x

$$\frac{2}{5}x = 200,000.00$$

$$x = \text{le}500,000.00$$

$$\text{Gapson's share} = 500,000 - 200,000$$

$$= \text{Le}300, 000.00$$

Question 7

- (a) The sum of three numbers is 81. The second number is **twice** the first. Given that the third number is 6 more than the second, find the numbers.
- (b) Given the points $P(3, 5)$ and $Q(-5, 7)$ on the Cartesian plane such that $R(x, y)$ is the midpoint of \overline{PQ} , find the equation of the line that passes through R and perpendicular to \overline{PQ} .

Comments:

Most of the candidates were able to equate ' $x + y + z = 81$ ' but unable to use one variable in order to solve.

The candidates had little or no idea in finding the gradient of a line perpendicular to another line. They could not also determine the co-ordinates of the midpoint 'R'.

Solution:

$$\begin{aligned}x + y + z &= 81 \\x + 2x + (2x + 6) &= 81 \\5x + 6 &= 81 \\x &= 15\end{aligned}$$

The numbers are 15, 30, and 36.

$$\begin{aligned}\text{Midpoint} &= \left(\frac{3-5}{2}, \frac{5+7}{2}\right) \\&= (-1, 6)\end{aligned}$$

$$\begin{aligned}\text{Gradient of } \overline{PQ} &= \frac{5-7}{3-(-5)} \\&= -\frac{1}{4}\end{aligned}$$

Gradient perpendicular to $\overline{PQ} = 4$

$$\begin{aligned}y &= 6 + 4[x - (-1)] \\y &= 6 + 4x + 4 \\y &= 4x + 10\end{aligned}$$

Question 8

(a) Copy and complete the table of values for $y = 2x^2 - x - 4$ for $-3 \leq x \leq 3$.

x	-3	-2	-1	0	1	2	3
y	17			-4			

(b) Using a scale of 2 cm to 1 unit on the x -axis and 2 cm to 2 units on the y -axis, draw the graph of $y = 2x^2 - x - 4$ for $-3 \leq x \leq 3$.

(c) Use the graph to find the:

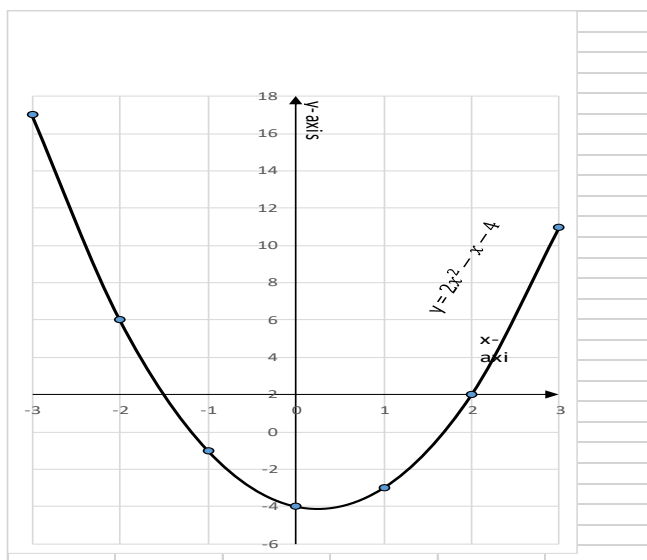
- roots of the equation $2x^2 - x - 4 = 0$;
- values of x for which y increases as x increases;
- minimum point of y .

Comment:

Most of the candidates were able to copy and complete the table of values, but found difficulty in the plotting of the points. Hence, they could not determine the roots of the equation. The candidates also could not differentiate between 'minimum value of y ' and 'minimum point of y ' the coordinates must be stated.

Solution:

x	-3	-2	-1	0	1	2	3
y	17	6	-1	-4	-3	2	11



$$x = -1.2, x = 1.7$$

Values of x for which y increases as x increases.

$$0.2 < x \leq 3$$

$$(iii) (0.2, -4.1)$$

Question 9

Height (m)	3	4	5	6	7	8
No. of trees	4	6	4	5	6	2

The table shows the height of teak trees harvested by a farmer.

- Find the median height
- Calculate, correct to one decimal place the:
 - mean;
 - standard deviation.

Comment: most of the candidates were able to find the total number of trees i.e. 27. They were able to calculate the mean but could not recall or apply the formula for standard deviation.

Solution:

$$\text{Total number of trees} = 4 + 6 + 4 + 5 + 6 + 2 = 27$$

$$\begin{aligned} \text{Median position} &= \left(\frac{n+1}{2}\right) \\ &= \frac{27+1}{2} \\ &= 14^{\text{th}} \text{ position} \end{aligned}$$

$$\text{Median height} = 5\text{m}$$

x	f	fx	Fx ²
3	4	12	36
4	6	24	96
5	4	20	100
6	5	30	180
7	6	42	294
8	2	16	128
	$\sum f$ = 27	$\sum fx$ = 144	$\sum f x^2 = 834$

$$\text{Mean} = \frac{144}{27}$$

$$= 5.332$$

$$= 5.3\text{m}$$

$$\text{Standard deviation} = \sqrt{\frac{834}{27} - \left(\frac{144}{27}\right)^2}$$

$$= \sqrt{2.444}$$

$$= 1.563$$

$$= 1.6$$

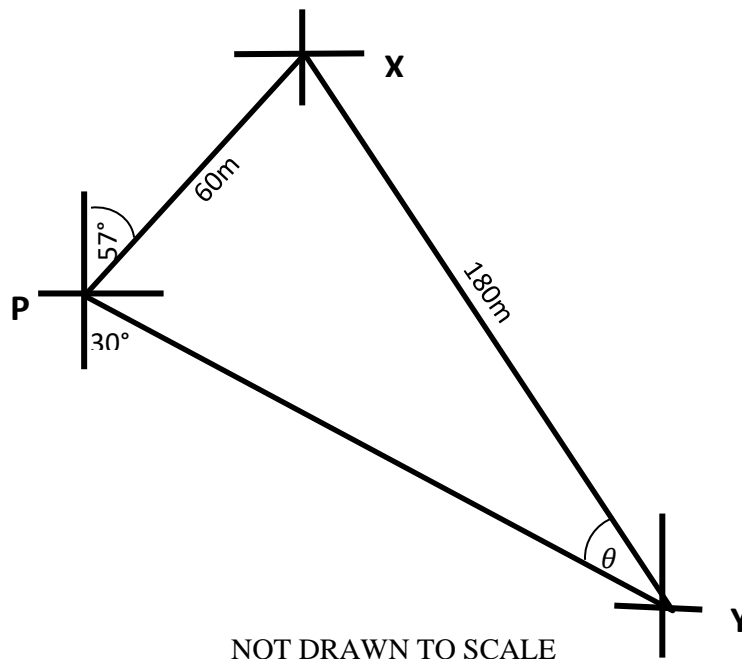
Question 10

In a town, chief **X** resides 60m away on a bearing of 057° from the palace **P**; while **Y** resides on a bearing of 150° from the same palace **P**. the residence of **X** and **Y** are 180m apart.

- (a) Illustrate the information in a diagram.
 (b) Find, correct to three significant figures, the:
 (i) bearing of **X** from **Y**.
 (ii) distance between **P** and **Y**.

Comment: this question was challenging. The candidates were expected to illustrate the given information in a diagram and find to 3 significant figures the bearing of residence 'X' from residence 'Y'. They were also required to find the distance between the Palace 'P' and residence 'Y'.

Solution:



$$\begin{aligned} \text{(i)} \quad \frac{\sin Y}{60} &= \frac{\sin 93^\circ}{180} \\ \sin Y &= 0.33287 \\ Y &= 19.44^\circ \\ \text{Bearing} &= 270^\circ + 60^\circ + 19.44^\circ \\ \text{Bearing of X from Y} &= 349^\circ \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad \frac{\sin (180 - 93 - 19.44)}{|PY|} &= \frac{\sin 93}{180} \\ |PY| &= \frac{166.3703}{0.998629} \\ &= 166.598 \\ &= 167\text{m} \end{aligned}$$

Question 11

- (a) Two regular polygons P and Q are such that the number of sides of P is twice the number of sides of Q . The difference between the exterior angle of Q and P is 45° . Find the number of sides of P ?
- (b) The area of a semi-circle is $32\pi\text{cm}^2$. Find in terms of π , the perimeter of the semi-circle?

Comment

Lack of knowledge of exterior angles of a polygon as $\frac{360}{n}$ posed problem to the candidates.

The candidates were expected to equate the area of the semicircle to $32\pi\text{cm}^2$ to determine the radius of the circle, which could be substituted into simple formula to find the circumference, and hence the perimeter of the semicircle.

Solution:

$$\begin{aligned}\frac{360}{x} - \frac{360}{2x} &= 45 \\ 2(360) - 360 &= 45(2x) \\ 90x &= 360 \\ x &= 4\end{aligned}$$

$$\begin{aligned}\text{Number of sides of } P &= 2 \times 4 \\ &= 8\end{aligned}$$

$$\frac{\pi r^2}{2} = 32\pi$$

$$r^2 = 64$$

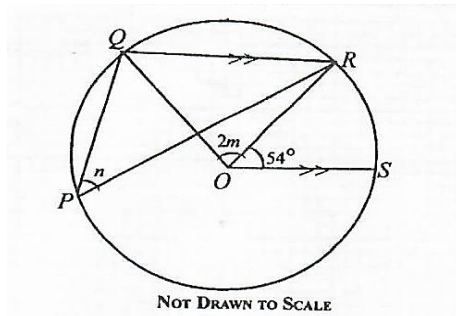
$$r = 8$$

$$d = 16$$

$$\begin{aligned}\text{Perimeter of semicircle} &= \frac{2\pi r}{2} + d \\ &= \frac{2\pi \times 8}{2} + 16 \\ &= (8\pi + 16) \text{ cm.}\end{aligned}$$

Question 12

(a)



In the diagram, $PQRS$ are points on the circle with centre O . find the values of M and N .

- (b) The length of a rectangle is 4cm more than the width. If the perimeter is 40cm, find the area.

Comment

Most of the candidates were able to identify the alternate angles. $\angle RQ$ and $\angle OS$. they were also able to identify $\triangle OQR$ as isosceles.

Most of the candidates were able to substitute to find the area – i.e. 96 cm^2 .

Solution:

$$\angle SOR = \angle QRO = 54^\circ$$

From $\triangle ORQ$

$$2m + 54^\circ + 54^\circ = 180^\circ$$

$$2m = 72^\circ$$

$$m = 36^\circ$$

Angle at centre is twice angle at circumference

$$\therefore n = 36^\circ$$

$$2w + 2(w+4) = 40$$

$$4w = 32$$

$$w = 8\text{cm.}$$

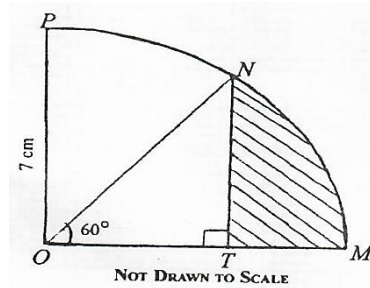
$$\text{Area} = (4+8)(8)$$

$$= 12 \times 8$$

$$= 96\text{cm}^2.$$

Question 13

(a)



In the diagram, the radius of the sector of circle centre O , is 7cm and $\angle MON = 60^\circ$. Find, correct to one decimal place, the area of the shaded portion. [Take $\pi = \frac{22}{7}$].

(b) The X and Y intercepts of a straight line are $-\frac{3}{4}$ and $\frac{2}{7}$ respectively. Find the equation of the line.

Comment:

Majority of the candidates were able to find $|OT|$ and $|NT|$ but could not reach at the areas of sector ONM and $\triangle ONT$ to find the difference.

As the word 'intercept' was not understood by most candidates, they could not find the equation of the line.

Solution:

$$\begin{aligned} \text{Area of sector ONM} &= \frac{60}{360} \times \frac{22}{7} \times 7^2 \\ &= 25.67\text{cm}^2 \end{aligned}$$

equation of a line

$$y - y_1 = (x - x_1)$$

$$\text{From } \triangle ONT \cos 60^\circ = \frac{OT}{7}$$

$$y - 0 = \frac{8}{21} (x - (-\frac{3}{4}))$$

$$OT = 7 \cos 60^\circ = 3.5\text{cm}$$

$$NT = 7 \sin 60^\circ$$

$$= 6.062\text{cm}$$

$$y = \frac{8}{21} (x + \frac{3}{4})$$

$$\begin{aligned} \text{Area of } \triangle ONT &= \frac{1}{2} \times 3.5 \times 6.062 \\ &= 10.61\text{cm}^2 \end{aligned}$$

$$21y = 8x + \frac{24}{4}$$

$$21y - 8x - 6 = 0$$

$$\begin{aligned} \text{Area of shaded portion} &= 25.67 - 10.61 \\ &= 15.1\text{cm}^2 \end{aligned}$$

The coordinates $(-\frac{3}{4}, 0), (0, \frac{2}{7})$

$$\begin{aligned} \text{Gradient} &= \frac{(\frac{2}{7}-0)}{(0-(-\frac{3}{4}))} \\ &= \frac{2}{7} \times \frac{4}{3} \\ &= \frac{8}{21} \end{aligned}$$

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
FURTHER MATHEMATICS/MATHEMATICS (ELECTIVE) 2

1. GENERAL COMMENTS ON THE PAPER

The paper's instructions are straight forward and free from any form of ambiguity. The questions were set from the syllabus and the marking scheme was quite comprehensive and unbiased to the candidates.

However, majority of the candidates' performance was good when compared to the previous year. The marks ranges from 85, 84, 79, 78, etc.

It can be observed that the general performance of the candidates is below average.

2. CANDIDATES' STRENGTHS

A good number of the candidates demonstrated understanding in statistics, so they scored above average in questions 12. Concepts like inverse of a functions, linear sequence and solving a system of equations of motion in uniform acceleration seems to be well-understood by more than 50% of the candidates. The concept of probability seems to be averagely understood.

3. CANDIDATES' WEAKNESSES

I. Most candidates failed to provide the right answer to questions 1, 2, 3b, 5, 6, 8, 9, 10, 11, 12b, 12c, 14 and 15. That is:

- Combination or combinatorial equation and probability
- Application of differentiation using chain rule and first principle
- Histogram with an unequal class interval using frequency density
- Resultant Vector
- Polynomial function (remainder and factor theorem)
- Binomial probability
- Deviation from the mean
- Linear Motion expressed in unit vector notation.
- Moments of a force
- Equilibrium of forces on an inclined plane.
- Domain or condition of a rational function

II. A great deal of these has to do with the idea of simplifying or knowing how to correctly present an answer.

III. Adherence to the rubrics

IV. Poor interpretation and presentation of work.

V. Inability to identify the concepts to be used in solving a problem.

4. SUGGESTED REMEDIES

- Students need to know concepts as much as they learn computational techniques.
- Students should be accorded a special setting to learn how to write standardized exams for improved scores.
- Authorities need to ensure there are sufficient school sessions to cover syllabus effectively.
- Schools should encourage teachers to acquire sufficient background in the teaching and learning of mathematics and the subject matter for improved output.
- Authorities should initiate school-based workshops for their teaching staff to enhance effective delivery and improved output.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

If ${}^9C_x = 4 \left[{}^7C_x - 1 \right]$, find the values of x

This question appears unpopular as it tests candidates' understanding of combination that is, simplifying and solving combinatorial equation. Less than 10% of the candidates were able to solve the equation as required. However, more than 80% of the candidates attempt to simplify but could not further simplify the factorials in order to obtain a quadratic equation that is to be solved. Hence, they end up performing poorly here.

Question 2

The volume of a cube is increasing at the rate of $3\frac{1}{2} \text{ cm}^3 \text{ s}^{-1}$. Find the rate of change of the side of the base when its length is 6 cm.

This question appears to be unpopular as it tests candidates' understanding of application of differentiation using chain rule to solve rate of change problems. Less than 20% of the candidates were able to solve as required. Notwithstanding, more than 70% of the candidates attempt and were able to state the volume of a cube but could not further apply chain rule correctly in order to answer the question as required. Hence, they did not score well here.

Question 3

The inverse of a function f is given by $f^{-1}(x) = \frac{5x-6}{4-x}$, $x \neq 4$. Find the:

- (a) Function, $f(x)$;
- (b) value of x for which $f(x) = 5$.

This question appears too popular as it tests candidates' understanding of inverse of function and finding the independent variable of the function. More than 60% of the candidates performed above average. However, about 95% of them did not state or indicate the condition or domain of the rational function. On the other hand, a good number of them were able to equate the obtained function to the given constant but some have rather substitute the constant onto the obtained function.

Question 4

The first term of an Arithmetic Progression is 8, the last term is 52 and the sum of terms is 286. Find the:

- (a) number n of terms in the series;
- (b) common difference.

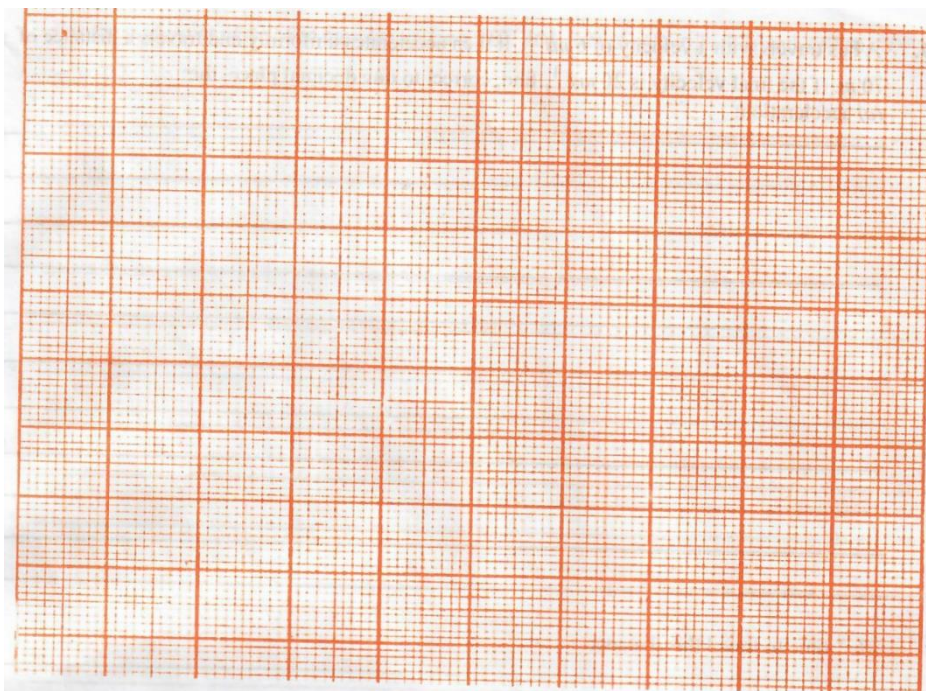
This question appears to be very common as it tests candidates' understanding of arithmetic progression and more than 60% of the candidates performed above average. However, some have used a different approach and could not further expand and simplify correctly in order to solve the question as required.

Question 5

The table shows the distribution of the heights (cm) of 60 seedlings in a vegetables garden.

Heights (cm)	0.31-0.3	0.4-0.6	0.7-0.9	1.0-1.4	1.5-1.9	2.0-2.2	2.3-2.5
Frequency	6	9	12	15	3	6	9

(a) Draw a histogram for the distribution.



(b) Use the histogram estimate the modal height of the seedlings.

This question appears to be least common as it tests candidates' understanding of a histogram with an unequal class width or size. Less than 5% of the candidates did performed above average as required. Nonetheless, more than 80% of them demonstrated insufficient knowledge of frequency density. Hence, they performed poorly here.

Question 6

There are 6 boys and 8 girls in a class. If five students are selected from the class, find the probability that more girls than boys are selected.

This question appears to be the most unpopular in this section as it tests candidates' understanding of probability and the concept of combination. The question was not well attempted by many as they used a wrong approach, that is, binomial probability instead of combinatorial probability. Hence, more than 80% of the candidates performed poorly here.

Question 7

- (a) A bus travels with a velocity of 6 ms^{-1} . It then accelerates uniformly and travels a distance of 70 m. if the final velocity is 20 ms^{-1} , find, correct to **one** decimal place, the:
- (b) time to travel this distance.

This question appears to be famous as it tests candidates' understanding of linear motion. The question is well attempted by many and more than 60% of the candidates did score above average here.

Question 8

P is the mid-point of \overrightarrow{NO} and equidistant from \overrightarrow{MN} and \overrightarrow{MO} . If $\overrightarrow{MN} = 8\mathbf{i} + 3\mathbf{j}$ and $\overrightarrow{MO} = 14\mathbf{i} - 5\mathbf{j}$, find \overrightarrow{MP} .

This question appears to be unpopular as it tests candidates' understanding of resultant vector. The question was attempted by few and about 20% of the candidates did score above average here. Some candidates find difficulty in presentation of the vector in a diagram.

Question 9

- (a) Find the derivative of $4x - \frac{7}{x^2}$ with respect to x , from first principle.
- (b) Given that $\tan P = \frac{3}{x-1}$ and $\tan Q = \frac{2}{x+1}$, find $\tan(P-Q)$.

This question appears to be famous in this part as the first part tests candidates' understanding of differentiation using the first principle. The question was attempted by many, that is about 90% of them and about 20% of the candidates did score above average here. However, a good number of them struggle to further expand and simplify the algebraic fraction correctly.

The second part tests candidates understanding of trigonometric identity. This part was attempted by many but about 5% of the candidates did score above average here. However, more than 80% of them demonstrated insufficient knowledge of the identity, that is, tangent of difference between two angles. Hence, they performed poorly in this question.

Question 10

- (a) A quadratic polynomial, $g(x)$ has $(2x + 1)$ as a factor. If $g(x)$ is divided by $(x - 1)$ and $(x - 2)$, the remainders are 6 and 5 respectively. Find:
- $g(x)$;
 - the vertex of $g(x)$.
- (b) Find the third term when $\left[\frac{x}{2} - 1\right]^8$ is expanded in descending powers of x .

This question appears to be the least famous in this part as it tests candidates' understanding of factor and remainder theorem and zeros of an unknown quadratic function. About 20% of them attempted and more than 60% of them performed below average as they struggle to solve a system of equation three unknown variables.

The second sub-question tests candidates' understanding of binomial expansion of descending powers and was also well attempted by about 20% of the candidates and most of them did score above average here.

Question 11

- (a) Express $\frac{8x^2+8x+9}{(x-1)(2x+3)^2}$ in partial fractions.
- (b) The coordinates of the centre and circumference of a circle are $(2,5)$ and 6π units respectively. Find the equation of the circle.

This question appears to be somewhat popular as it tests candidates' understanding of partial fractions and more than 60% of the candidates did not score well from about 45% of them. Hence, they struggle to resolve the partial fraction as required.

The second sub question tests candidates' understanding of co-ordinate geometry, that is under, equation of a circle and was not well attempted by many as they could not use the given circumference of the circle to find the radius of the circle. Hence, less than 20% of the candidates did score above average here.

Question 12

The table shows the distribution of marks scored by some candidates in an examination.

Marks	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Number of candidates	5	39	14	40	57	25	11	8	1

- (a) Construct a cumulative frequency table for the distribution.
- (b) Draw a cumulative frequency curve for the distribution.
- (c) Use the curve to estimate the:
 - (i) number of candidates who scored marks between 24 and 58;
 - (ii) **lowest** mark for distinction, if 12% of the candidates passed with distinction.

This question appears to be the most famous as it tests candidates' understanding of Statistical Analysis using an Ogive or Cumulative frequency curve. The question was well attempted by many and more than 60% of the candidates did score above average here. However, some find it trivial in drawing an inference from the ogive.

Question 13

- (a) A bag contains 16 identical balls of which 4 are green. A boy picks a ball at random from the bag and replaces it. If this is repeated **5 times**, what is the probability that the:
 - (i) did not pick a **green** ball;
 - (ii) picked a green ball **at least three times**?
- (b) The deviation from a mean of values from a set of data are 2, $(m - 1)$, $(m^2 + 1)$, 1, 2, $(2m - 1)$ and 2. Find the possible values of m .

This question appears to be somewhat common as it tests candidates' understanding of binomial probability. The first sub-question was not well attempted by many and less than 25% of the candidates did score above average here.

The second sub-question tests candidates' understanding of deviation from a mean and was well attempted by about 30% of the candidates and they did score above average here.

Question 14

A particle of mass 2 kg moves under the action of a constant force, F N, with an initial velocity $(3\mathbf{i} + 2\mathbf{j}) \text{ ms}^{-1}$ and a velocity of $(15\mathbf{i} - 4\mathbf{j}) \text{ ms}^{-1}$ after 4 seconds. Find the:

- (a) acceleration of the particle;
- (b) magnitude of the force F ;
- (c) magnitude of the velocity of the particle after 8 seconds, correct to three decimal places.

This question appears to be most famous in this part as it tests candidates' understanding of linear motion expressed in unit vector notation. About 80% of them attempt it but less than 20% performed above average.

Question 15

- (a) A see-saw pivoted at the middle is kept in balance by weights of Richards, John, and Philip such that only Richard whose mass is 60 kg sits on one side. If they sit at distances 2 m, 3m and 4m respectively from the pivot and Phillip is 15 kg, find the mass of John.
- (b) A body of mass 12 kg rests on a rough plane inclined at an angle of 30° to the horizontal. The coefficient of friction between the body and the plane is $\frac{2}{3}$. A force of

magnitude P Newtons acts on the body along the inclined plane. Find the value of P , if the body is at the point of moving:

- (i) down the plane;*
- (ii) up the plane.*

This question appears to be the least popular in this section as it tests candidates' understanding of moments of a force and more than 70% of them performed above average here, out of about 10% that attempt it.

The second part tests candidates' understanding of equilibrium of forces on an inclined plane. More than 60% of them performed above average here.

SCIENCE SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2023
RESUME OF CHIEF EXAMINERS' REPORTS
SCIENCES

1. STANDARD OF THE PAPER

This resume is for the sixteen (16) Papers of the seven (7) Science Subjects. Nearly all the papers were stated to be standard without any ambiguities. Nevertheless, Physical Education Paper 2 was reported to be difficult for most of the candidates and Agricultural Science Paper 2 question number (6c) was also reported to be ambiguous.

2. CANDIDATES' PERFORMANCE

Generally, the performance of candidates in **six** of these subject papers had improved and was good, performance in **one** of the subjects was average while the other **nine** subjects had declined compared to WASSCE (SC), 2022.

Summary for Individual Subject Papers

- Agricultural Science Paper 2: The performance of candidates was low, but it was better than the previous year. Candidates did well in questions 1, 2, 3 & 5.
- Agricultural Science Paper 3: The performance of candidates was average, the same as it was in WASSCE (SC), 2022.
- Biology 2: Just like the former year, the performance of candidates was unsatisfactory. Very few had an average pass.
- Biology 3: Only 20% of the total candidature of 5,000 were able to score 40 out of 80 marks. It was the same unsatisfactory performance as last year.
- Chemistry 2: The performance of candidates was not impressive. It was not different from the previous year. Majority scored below 50 out of 100 marks.
- Chemistry 3A: Candidates' performance had improved compared to the previous year. Majority were able to score 65% of the 50 marks allocated to the paper.
- Chemistry 3B: It was a satisfactory performance. Only 10% of the candidates were unable to present a good sense of practical understanding.
- Health Science 2: Satisfactory performance in the easy paper. About 30% scored good marks, 40% scored average marks and the rest scored low marks.
- Health Science 3: The performance of candidates was below average. It had declined as compared to WASSCE (SC), 2022.
- Physical Education 2: Since it was reported to be a difficult paper, the performance of candidates was not impressive. The performance in the previous year was better.
- Physical Education 3: The candidates' performance was good. Most of them demonstrated their skills well.
- Physics 2: Performance of candidates was not satisfactory. It was the same as the previous year. Although few scored zero, majority of the candidates scored below 20 marks out of 60 marks.
- Physics 3A: there was a decline in performance compared to last year. Almost 5% of the candidates scored 40 marks, many also scored less than 20 marks.
- Physics 3B: There was a slight improvement in performance from last year's. Out of 40% that sat to the paper, 10% scored 40 marks and some scored about 30 marks.
- Science 2: The performance of candidates was not encouraging but it was still better than 2022, because the number of candidates scoring zero had reduced.
- Science 3: Although the performance of candidates was better than last year's, it was generally below average.

3. CANDIDATES' STRENGTHS

- Following instructions and displaying legible handwritings.
- Correct definition of scientific words/terms.
- Ability to Interpret and answer the required number of questions.
- Use of logical approach to answer questions.
- Ability to tabulate titration results correct to two decimal places.
- Ability to take readings, measure distances, label diagrams and plot graphs.
- Supplying units for final answers.

4. CANDIDATES' WEAKNESSES

- Not following instructions, improper diagrams/illustrations
- Disorderly presentation of work and not using key words in definitions
- Inability to identify specimens, underline words and write botanical names
- Wrong use of chemical symbols of atoms/ions
- Insufficient laboratory experience, use of apparatus and chemicals
- Low knowledge of subject and misinterpretation of questions
- Repetition of answers/ideas

5. SUGGESTED REMEDIES

- Subjects to be taught by trained and specialized teachers.
- Use of recommended textbooks and syllabi.
- Revision of WASSCE past papers with students.
- Teachers to read Chief Examiners' Reports and follow their recommendations.
- Equip science laboratories with apparatus and how to handle them safely.
- Early preparedness and good writing skills.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
AGRICULTURAL SCIENCE PAPER 2

1. GENERAL COMMENTS ON THE PAPER

This year's agricultural science paper 2 was drawn to standard. However, question number six (c) should have been stated as the general characteristics of forage legumes instead of centrosome. The bedding materials for different localized areas should have been considered in the marking scheme. Candidates of remarkable abilities were challenged by this method of setting questions. The paper compared to that of the last two years was of a relatively higher standard in examination format.

This year, about 32% of the total number of the candidates were able to score above 40% of the average pass mark. Some sections of question number 1, 2, 3 and 5 were well attempted and the candidates' performance were highly impressive on these areas. The marking scheme was of recommended standard. On the contrary, most of the candidates did not perform well in other sections.

No doubt, the paper was one of the most well sett examination paper when compared to the past two years. Generally, this year's performance was by far below the expected performance as compared to last year.

2. CANDIDATES' STRENGTHS

Generally, about 30% of the candidates scored above half of the marks allocated to this paper. Some of the candidates were able to give the differences between subsidy and credit. The candidates properly answered questions on agricultural inputs, agricultural ecology, and functions of bees as well as agricultural uses of land.

3. CANDIDATES' WEAKNESSES

Broadly, about 70% of the candidates scored below the past mark. This poor performance could be because most schools do not have specialized teachers. A good number of the candidates did not know how to interpret questions correctly. It was evident that most of the candidates found it very difficult to develop points because of their unpreparedness.

4. SUGGESTED REMEMDIES

Schools should employ and regularly train specialize agricultural science teachers. Teachers should give equal weight and coverage to all the topics in the syllabuses. Schools should ensure that recommended textbooks and syllabus are used. The chief examiners' reports should be made available to subject teachers. Candidates should make extra effort in learning to better their grades.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *Differentiate between credit and subsidy in agricultural finance.*

The differences were well stated by the candidates. Nearly 70% of the candidates who attempted this question scored above the average allocated mark.

(b) *Name five agricultural inputs that are subsidized by the government.*

This question was properly answered by about 95% of the candidates who attempted it.

(c) *Mention six periodic maintenance practices on a tractor.*

Most of the candidates did not know what a periodic maintenance practice and a daily maintenance practice is. Only 20% of the candidates who attempted this question did well.

(d) *State five precautions that should be taken when operating farm machinery.*

Some of the candidates were giving daily maintenance practices as precautions when operating farm machinery. This method of answering questions was frowned at by the marking scheme. Most of the candidates i.e. above 60% of them did not do well.

Question 2

(a) *Explain **each** of the following terms:*

(i) *agricultural ecology;*

(ii) *ecosystem;*

(b) *Mention:*

(i) ***two** biotic components of a farm ecosystem;*

(ii) ***three** abiotic components of a farm ecosystem.*

Explanation of the ecological terms and concepts were well spelt out by a good number of the candidates. At least most of the candidates scored beyond 65% the mark allocated to this question.

(c) *State **five** precautions that should be taken during storage of bags of maize in a store.*

About 50% of the candidates comprehended the steps taken during storage of bags of maize.

(d) *Give **four** examples of bedding plants.*

This sub question was not properly answered by the candidates. They gave wrong answers like onion, pepper, cassava and even wood shavings.

This question was expected to be answered thus:

- Morning glory
- Amaranthus
- Sunflower
- Commelina
- Water lettuce
- Cana lily etc.

Question 3

(a) *Discuss the root knot disease of tomato plants under the following headings:*

(i) *causal organism;*

(ii) *mode of transmission;*

(iii) *two symptoms;*

(iv) *two prevention and control measures.*

Generally, this question was not well answered by the candidates. This poor performance may be due to inadequate knowledge about the agronomy of tomato or the cultivation of tomato. About 70% of the candidates could not answer this question well.

(b) *Discuss three effects each of the following farming practices on the soil:*

(i) *fertilizer application;*

(ii) *clean clearing;*

(iii) *overgrazing.*

The candidates who attempted this question did not perform very well, only about 30% of the candidates scored well.

(c) *Mention **three** agricultural uses of land.*

Almost 95% of the candidates were able to mention the agricultural uses of land.

Question 4

(a) *Outline **four** steps involved in the planting of cassava stem cuttings.*

About 75% of the candidates scored 60% of the marks allocated to this question.

(b) *State **three** uses of cassava tubers.*

At least 75% of the candidates who attempted this sub question scored 40% of the marks for the question.

(c) *If yam is cultivated at a spacing of 100 cm by 100 cm on 1.5 hectares of farmland and each yam tuber weighs an average of 3.5 kg after harvesting calculate the:*

- (i) *expected number of yam plants on the farmland;*
- (ii) *total weight of yam tubers harvested in kilogramme.*

From 75% of candidates who opted for question number 4, only 30% were able to score 35% of the mark assigned to this sub question.

(d) *Distinguish between diet and ration in animal nutrition.*

Most candidates did well, 65% were able to answer this question correctly.

Question 5

(a) *Complete the table below on diseases of farm animals.*

<i>Symptoms</i>	<i>Disease</i>	<i>Prevention and Control</i>
Constant cough and production of stringy sputum with blood or pus, in pigs	(i)	(ii) (iii)
(iv)	Ringworm	(v) (vi)
-Blood-stained diarrhea -Pale comb in poultry	(vii)	(viii) (ix)

Question 5(a) was a big challenge for the candidates. A good number of the candidates wrongly answered this sub question. About 85% of them scored below 10 marks of the total scores allocated to this question. Few of the candidates managed to complete the column of prevention and control measures of diseases of farm animals.

(b) *State **two** functions of each of the:*

- (i) *queen bee;*
- (ii) *worker bee, in a bee colony.*

On the other, candidates scored good marks in question 5(b). Nearly 75% of the candidates were able to score 50% of the marks allocated to this sub question.

(c) Give **five** reasons why a compost pit should be covered during composting.

Almost 80% of the candidates gave the answers correctly.

Question 6

(a) Using the information below, prepare a profit and loss account for Wellness Farms for the year ended 31st December 2016.

	N
Opening Valuation	400,000
Cost of point-of-lay	200,000
Cost of feed	150,000
Cost of drugs	10,000
Transportation costs	10,000
Wages paid to workers	80,000
Sale of eggs	240,000
Sale of spent layers	100,000
Eggs consumed by farmers	10,000
Closing valuation	600,000

A good number of agricultural science teachers do normally avoid this part of both the teaching and examination syllabus. This may be due to the calculation it entails. About 60% of the candidates find it difficult to post correctly. It was unanimously agreed by examiners that candidates who have attempted this question avoided using the vertical method. Almost all the candidates who attempted this sub question used the horizontal method in approaching it. However, only 20% were seen answering this question well based on the accepted accounting principles.

(b) Mention **five** problems faced by financial institutions in granting credit to crop farmers.

About 69% of the candidates who have attempted this sub question scored above 50% of the allocated marks to the question. Candidates gave answers like

Illiteracy of farmers

Abundance of pests and diseases

Inadequate collateral/ security

Inadequate farm insurance schemes among others.

(c) State **four** characteristics of *Centrosema pubescens*.

The characteristics of *Centrosema pubescens* was among the questions where candidates' performance was remarkably low. This leguminous cover crop seems to be a strange plant to the candidates. These are some of the characteristics of *Centrosema pubescens*:

Most of the candidates who attempted this sub question only managed to score about 15% of the mark assigned to the question.

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WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
AGRICULTURAL SCIENCE PAPER 3

1. GENERAL COMMENTS ON THE PAPER

The Agricultural Science 3 practical was made of four (4) questions from different fields of agriculture. The question one is on Soil science, question two on farm equipment, question three on Crop science and question four on Animal science.

The entire paper was standard for the targeted group and evenly distributed to factor in the different aspects of agricultural science.

Question 1: consists of range of questions from soil organism as they affect agricultural production and state factors that determine the population of [Specimen A] i.e. Earthworm in the soil, effects of [Specimen A] on the soil, ways in which [Specimen B] i.e. Termite effects on agricultural production and reasons why [Specimen C] i.e. Loamy soil is preferred for crop production.

Question 2: This is on Farm equipment ranging from water through, egg Candler, and scoop net. Firstly, candidates were asked to state uses, features of each equipment, mention and the substitute for [Specimen H] scoop net.

Question 3: It has a range of questions; it is about crop science and Bee keeping. The candidates were asked the botanical names, planting materials and uses of [Specimen I, J, K] i.e. Sugarcane, Pineapple, and Ginger. The class of bees that produce honey i.e. worker bee.

Question 4: This section came from poultry production of animal Science. The uses of Specimen N (Wood shavings) and Q (Charcoal Pot) in a poultry house and the materials that could perform the same function as Specimen N in a poultry house. Part of the question is asking for reasons why Specimen N is preferred to Specimen M in a deep litter house and how chicks in a brooder house respond to excessive heat toward the source of heat (Electric Bulb). The advantages of using Specimen Q (charcoal pot) in a poultry house.

2. CANDIDATES' STRENGTHS

The candidates in this year's attempt displayed their strength majorly on questions 1 and 2.

Majority of the candidates scored well in questions 1 and 2 but does not mean the other questions especially 3 and 4 were not attempted but could be seen to be a difficult for them for the reasons to be highlighted later.

3. CANDIDATES' WEAKNESSES

The weaknesses of candidates differ from one candidate to another, generally, most of the candidates did not do well in question 3 and 4 where planting materials are mistaken for tools. The greatest weakness is to write the Botanical names correctly i.e. underling, spelling mistakes. Some could not write the reasons why wood shaving is preferred to saw dust in a deep litter poultry house. Most of the candidates could not write the advantages of using charcoal pot in a poultry house.

4. SUGGESTED REMEDIES

From the performance, it showed that candidates were not well prepared for the paper. We therefore recommend the following:

Candidates should improve on their English language specifically on spellings of Agricultural terms.

They should try hard to familiarize themselves with botanical names.

They should try hard to familiarize themselves with the practical aspects of Agricultural science. Students are expected to carry out experiments on different aspects of agriculture before their final exams. Therefore, all schools should adequately equip their agricultural science laboratories for effective teaching/ learning.

The schools should endeavor to supply agricultural science practical textbooks to students to

familiarize themselves with practical agriculture.

More practical lessons/ work should be taught and fieldtrips to different poultry farms, herd of cattle, crop farms and soil samples.

The examiner's report should be made available to all schools for necessary action to be taken by schools.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) Mention **two** factors that determine the population of Specimen A in the soil.

Many candidates attempt it. About 80% did very well.

(b) State **five** effects of Specimen A on the soil.

About 05% did not do well.

(c) Mention four ways in which specimen B affects agricultural production.

About 75% of the candidates did not do well.

(d) Give **four** reasons why specimen C is preferred for crop production.

About 50% did well.

Question 2

(a) State **one** use each of specimens E, F, G and H.

Only 40% did well in this question.

(b) Mention **two** features each of specimens E, F, G and H.

About 90% did not do well in this question.

(c) Name **three** other tools that could perform similar function as specimen H.

About 65% did well.

Question 3

(a) State the botanical names of specimens I, J and K.

About 80% of the candidates did not do well in this question.

(b) Name **one** planting material that could be used to propagate **each** of specimens I, J and K.

About 20% did well in this question.

(c) Give **two** uses **each** of specimens I and J.

About 80% did well.

(d) (i) What class of bees produce specimen I?

About 80% did well.

(ii) Name **four** other produced by the class of bees mentioned in 3(d)(i).

Many candidates suffer seriously in getting this question right. About only 15% did well.

Question 4

(a) State **one** use each of specimens **N** and **Q** in a poultry.

About 65% did well.

(b) List **three** materials that could perform the same function as specimen **N** in a poultry house.

About 85% of the candidates performed well.

(c) Give **three** reasons why specimen **N** is preferred to specimen **M** in a deep litter house.

About 90% were not able to answer this question correctly.

(d) Give two ways in which chicks in a brooder house would respond to:

- (i) excessive heat from specimen **O**;
- (ii) insufficient heat from specimen **O**.

i. Only 30% did well in this question.

ii. About 70% of the candidates were not able to answer this question.

(e) State **three** advantages of using specimen **Q** in a poultry house.

About 80% of the candidates performed badly in this question.

SECTION B

This paper was of average standard by all examiners. It is quite straight forward and there were not ambiguities. The questions under each number were clear and were within the reach of candidates. For the candidates, it was expected that nearly all the candidates would emerge in very high scores. The success of the candidates was noticed in question 1 and 2, while in question 3 and 4, some had disappointments. However, candidates found the whole paper quite interesting.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
BIOLOGY 2

1. GENERAL COMMENTS ON THE PAPER

The questions for Biology paper 2 still maintain the required standard as highlighted in the individual report of the Assistant Examiners when compared to those of the previous years. All the questions were within the scope of the syllabus for Biology, designed for the West African Senior Secondary Certificate Examination (WASSCE). The overall performance of the candidates was unsatisfactory compared to previous years despite the papers having the same level of difficulty. However, some candidates performed above average in certain questions; an indication that they had prepared very well and probably covered about 80% of the topics in the syllabus with their teachers. A good number of the candidates do not have enough knowledge of the questions throughout the paper taking into consideration the way they answered some of the questions.

Some candidates misunderstood the questions; thus, writing wrong answers to those questions they attempted. Candidates must therefore read each question at least twice; understand what it requires before attempting to answer it. They included materials that were not pertinent to the questions asked; thereby wasting precious time and gaining no marks. About 80% of them were very good at answering questions that require definitions. The marking scheme was designed in such a way that any candidate, who had prepared him/herself very well for the examination, would score very good marks. There were sufficient marking points to allow candidates to demonstrate their ability to perform and some of them appeared to have sufficient time.

About 60% of the candidates found it difficult to express their meaning using appropriate scientific/biological terminologies, coupled with their inability to understand what the questions were asking for and lack of greater knowledge of the topics in the syllabus. Almost 65% of the candidates failed to score good marks because they lack the ability to spell scientific/biological terminologies.

Most of the candidates lack the ability to present their ideas in simple English and this is a key obstacle to them scoring good marks. Due to their poor understanding of English, some candidates do not follow simple instructions on the question paper because they do not really understand such instructions. Some candidates failed to follow the instructions on how many questions to answer from section A; thus, answering all the questions from section A and section B, which is the compulsory question, which gained them no marks at all thereby wasting precious time.

2. CANDIDATES' STRENGTHS

The strengths of the candidates continue to be the same when compared to those of previous years.

- Majority of them have the ability to interpret questions correctly.
- A good number of them could correctly reproduce definitions of some scientific terms.
- Ability to answer direct questions such as “what is or what are such and such”, “state the ways, roles similarities” etc.
- Neat and clear presentation of work by a good number of them.

3. CANDIDATES' WEAKNESSES

- The weaknesses of candidates also continue to be the same when compared to previous years.
- Poor level of preparation and lack of basic knowledge.

- Wrong use of scientific/biological terminologies.
- Failure to attempt the required number of questions from section A.
- Wrong spellings of biological/scientific terms.
- Inability to express ideas/knowledge in simple English.
- Disorderly presentation of answers
- Wrong numbering of questions answered
- Leaving questions unanswered and not even attempted

4. SUGGESTED REMEDIES

Teachers preparing candidates for the examination should emphasize the importance of expressing their ideas/knowledge of what they have learnt in simple, correct English.

Teachers must teach constantly using the prescribed syllabus and not just rely on pamphlets and past questions. There are a lot of topics in the syllabus where questions have never been drawn. It is therefore necessary that teachers check the syllabus as they teach to identify such topics and draw questions from them for tests and examinations.

Teachers should not only focus on teaching the subject matter but also train students how to answer questions by giving them more of practice work and revising test and examination questions with them.

Strategies should be developed to encourage more students to offer Science Subjects. There is much fear in students to opt for Science Subjects.

Teachers should lay much emphasis on spellings of scientific terms, names and concepts by giving spelling tests to students. When they are aware that they are to be graded, they will take it seriously.

Schools should be provided with well-equipped Biology Laboratory to facilitate and enhance the teaching/learning of Biology.

Qualified teachers should be employed in both Public and Private schools to teach; especially Biology.

The chief examiner for Biology 2 should be present at the preliminary coordination as it is only the chief examiner for Biology 3 who has been all the time present at the preliminary coordination over the years; for both SC and PC. This makes the general coordination a problem because there is no representation and contribution from the chief examiner for Biology 2. We are mandated to follow the final general approved marking scheme, but our candidates write correct answers which are not part of the marking scheme. It is worth to acknowledge that Biology 2 contains Biology 1 and 3 as well in its coverage of the syllabus. If the two chief examiners cannot be present at the preliminary coordination for one reason or the other, we suggest that if the chief examiner for Biology 3 is present at the SC, let the chief examiner for Biology 2 be present for the PC; let it be rotational.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

Question 1

- (a) *What is classification of living things?*
- (b) *State **four** ways each by which the following groups of organisms are of economic importance in their habitats.*
 - (i) *fungi;*
 - (ii) *plants.*

- (c) Complete the table below by stating **five major** phyla of the Kingdom Animalia and give **one** example of **each**.

Phyla of Kingdom Animalia	Example

Majority of the candidates attempted this question but their performance not encouraging. In 1 (a), the candidates were asked to define/explain: “what is classification of living things”. Most of the candidates gave what classification of living things means while some gave answers such as: classification of living things is the process in which living things go into all the process of their kingdoms”. As per the marking scheme, classification of living things is the: “grouping/arrangement of living things/organisms; with similar characteristics; based on structural/genetics/cellular/evolutionary trends; for easy identification”. This is a clear indication that the candidates have the idea but cannot expressed it in correct simple English. In (b)(i) and (ii), most of the candidates were able to state the ways by which fungi and plants are of economic importance. In their habitats. For 1 (c), about 60% of the candidates completed filling the table by correctly stating the five major phyla of the kingdom animalia and their examples. Some failed to gain marks because of wrong spellings of ether the phyla/example or both. The overall performance of the candidates for this question was slightly above average standard.

Question 2

- (a) Complete the table below.

Elements	Function in plants	Effect of deficiency in plants
Iron		
Moly bdenum		
Potassium		
Copper		
Nitrogen		

- (b) Name **three** classes of organic foods which are essential constituents in the diet of a mammal.
- (c) State **two** roles each of the following structures of the digestive system in humans:
- (i) buceal cavity;
 - (ii) duodenum;
 - (iii) stomach.
- (d) Name the end product of adding dilute hydrochloric acid to sucrose.

About 30% of the candidates who attempted this question and were unable to score good marks simply because they failed to correctly fill the table in 1 (a); stating the functions and effects of deficiency in plants for each of the elements provided in the table. 1 (b) was correctly answered by about 80% of the candidates by correctly naming and spelling the three major classes of organic foods which are essential constituents in the diet of a mammal. Some however failed to gain marks because of wrong spellings of the names of the three classes of organic foods. 1 (c) (i), (ii), (iii) and (d) were poorly answered by about 80% of the candidates. As for 1 (d), only about 5% of the candidates had it correctly answered. The general performance for this question was poor.

Question 3

Relationships **I, II, III, IV** and **V** exist among some organisms in an ecosystem. Use them to answer questions 3(a) to 3(e).

- I.** Organism **A** grows on dead organism **B**.
- II.** Organisms **C** feeds on the remnants of food left by organism **D** without affecting organism **D** negatively or positively.
- III.** Organism **F** provides shelter for organism **F** while transports organism **E** towards food.
- IV.** Organism **G** kills organism **B** for food.
- V.** Organism **H** feeds on organism **J**, causing organism **J** a disease

- (a) Name the type of relationship in **I, II, III, IV** and **V**.
- (b) In relationship **IV**, what is the biological term for each of organisms **B** and **G**?
- (c) Name one example each of organisms **B** to **J**.
- (d) (i) Name the relationship that is most beneficial to the ecosystem.
(ii) Give **one** reason for the answer in 3 (d)(i).
- (e) (i) Give **two** example of organism **A**.
(iii) Name the group to which organism **A** belongs.

This question dealt with interrelationship between organisms. However, the stem of the question was not well structured, and this accounted for the very poor performance of the candidates who attempted it. The confusion came because of using in 3 (I): organism A grows on organism B and in 3 (IV): organism G kills organism B for food. Another letter could have been used for one of the Bs. Few candidates (about 50%) attempted this question and gained very little or no mark because of either not writing the correct answer or writing the correct answer but with the wrong spellings; erg saparophitism for saprophytism, parasite for parasitism, pray for prey, etc. About 10% out of the 50% who attempted this question gained mark between 10 and 16 out of 20. The rest of the candidates scored between 0 and 5. The general performance of candidates for this question was very unsatisfactory.

Question 4

- (a) Complete the following Punnett squares of a dihybrid cross between ears. One has black fur (**BB**) and short (**tt**), the other has brown fur (**bb**) and long tail (**TT**).

X		Bt		
bT				

- (b) How many of the offspring will have:
 - (i) black fur and short tail;
 - (ii) brown fur and long tail;
 - (iii) black fur and long tail;
 - (iv) brown fur and short tail?
- (c) If there were twenty (20) chromosomes in the leaf cell of a plant, how many chromosomes would be in each of the following cells of the plant?
 - (i) pollen grain;
 - (ii) guard cell;
 - (iii) ovule;
 - (iv) root cell.

This question was based on genetics and this topic seems to be a big challenge for the candidates; especially with the use of the Punnett this year. The answers given by the students show lack of understanding of the use of Punnett; thereby affecting subsequent sub-questions as their answers

had to be derived from 4 (a), the correct filling of the Punnett. About 20% of the candidates attempted this question and their performance was extremely poor. 2% out of the 20% scored between 10 and 17 out of 20 marks. The rest scored between 0 and 7 marks; with 0 on the high side. The general performance of the candidates was extremely poor.

Question 5

- (a) (i) What are sense organs?
(ii) Name **three** sense organs that respond to the stimulus of chemicals.
- (b) List **three** animals each that exhibit the following courtship behaviours.
(i) territoriality;
(ii) pairing.
- (c) (i) State **one** differences between the eggs of toads and the eggs of birds.

Eggs of toads	Eggs of birds

- (d) Complete the table below by listing **four** organisms involved in the nitrogen cycle and state **one** role **each** of the organisms.

Four organisms involved in the nitrogen cycle	One role of organism

- (e) Complete the table below by naming **two** types of heterotrophic modes of nutrition in animals and give **two** examples **each** of the organisms that carry out the modes of nutrition.

Two modes of heterotrophic nutrition	Two examples of organisms that carry out mode of nutrition

This question falls under section B; which is compulsory for all candidates to answer. However, some candidates failed to attempt it, for reason(s) best known to them. They therefore ended up losing 30 marks out of 70 for the entire paper. The general performance of the candidates was above average. Some of the candidates performed very poorly because of wrong spelling of the three sense organs and the names of animals that exhibit courtship behavior of territoriality and pairing. 5 c, d and e were a big challenge for about 40% of the candidates, due to wrong spellings, failure to correctly state the differences between the eggs of toad and the eggs of bird and failure to correctly list the organisms involved in the nitrogen cycle and state the role for each of the organisms.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
BIOLOGY 3

1. GENERAL COMMENTS ON THE PAPER

Biology 3 June 2023 was a standard paper because all the questions were within the scope of the WASSCE syllabus. Compared with the previous years' performances, it was unsatisfactory. Out of approximately 5000 or more candidates only 20 % of the candidates have scored over 40 marks out of the total of 80 marks. Few candidates have scored over 40 marks out of 80 marks and only few have scored over 50 and above but below 60 marks. Mistakes that have been made in previous years are continuously made in spite of all the comments in the Chief examiner's reports written and published every year and for every examination.

Three important areas of the syllabus that were examined in this paper included:

1. Question 1 was about the reproductive processes and habitats of vertebrates with particular reference to the eggs of catfish, the egg of chicken and the ovary of the flower of Pride of Barbados, the classification of organisms that possess them and their habitats.
 2. Question 2 was about the observable structures and classification of the guinea grass, coco yam plant and its corn and its biological significance.
 3. This question was about succulent fruits such as a ripe orange, longitudinal section of coconut and chili pepper, their classification according to structure and origin and according to life cycle. Their mode of dispersal, placentation, and economic importance.
- The general performance was unsatisfactory due to some weaknesses shown by many candidates and some strengths demonstrated by few candidates as shown below:

2. CANDIDATES' STRENGTHS

- Few followed instructions correctly
- Some had good and clear handwritings
- Few can spell taxonomic and scientific terms correctly

3. CANDIDATES' WEAKNESSES

- Inability to fully understand the questions
- Poor handwritings
- Poor spellings of taxonomic and scientific terms
- Disorderly presentation of answers
- Wrong numbering of questions answers
- Leaving questions unanswered and not even attempted
- Just copying the questions as in the question paper

4. SUGGESTED REMEDIES

- School candidates must make sure that they engage themselves in some private syndicates around the town to make sure that the syllabus is completed thoroughly.
- School candidates must make sure that they have got up to- date textbooks or pamphlets and should not rely on their old notes from school
- To be exposed to past questions, they should contact WAEC office where all the past questions are on sale.
- The examination council needs to give the school candidates orientation or sensitization on how they can succeed in their examinations by telling them about the chief examiners report in all subjects.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Study specimens **A**, **B**, **C** and **D** and answer question 1(a) to 1(f).

- (a) State **three** observable differences between specimens **A** and **B**.
 (b) In the table below, use a tick (✓) to indicate the **appropriate** modes of reproduction of the organism that possesses **each** of specimens **A**, **B** and **C**.

Specimen	Type of fertilization		Reproductive process	
	Internal	External	Oviparous	viviparous
A				
B				
C				

- (c) (i) Name the Phylum/Division of the organisms that possess **each** of specimens **A** and **B**.
 (ii) Name the Class of organisms that possess **each** of specimens **A**, **B**, **C** and **D**.
 (d) State the biological function of specimen **B** on the organism that possesses it.
 (e) Crack open specimen **B** and carefully empty its content into a Petri dish. Complete the table below by naming three observable features of specimen **B** and state **one** function **each** of the features named.

Three observables	One function

- (f) State **one** habitat **each** of the organisms that possess specimens **A**, **B** and **D**.

This question was about the reproductive processes of some vertebrates by using the eggs of the catfish and the domestic fowl and to be able to describe the type of fertilization in each case. The questions were straight forward, and some needed one-word answers or just to tick internal or external fertilization or whether oviparous or viviparous to score.

Some candidates were not even able to identify the specimens and therefore could not state the observable differences between specimens **A** and **B**. Question 1 (a) and (b) were satisfactorily done by majority of candidates. However (c) and (d) were not well written. Phyla of organisms from which specimens **A** and **D** are obtained:

A: Chordata (Catfish) and not chordate or chordates or vertebrates

B: Angiospermatophyta (Ovary of pride of Barbados) and not angiosperms

Classes of organisms from which specimens **A** to **D** were collected from:

The greatest problem here was about correct spellings. Taxonomic terms must always start with capital letters. The correct and wrong classes written are shown below:

Specimen	Classes of vertebrates	Wrong answers written
A	Osteichthyes/Pisces	Fishes/Piesces/ chodrichtyes
B	Aves	Aves/aec/birds
C	Mammalia	Mammal/mammalian
D	Dicotyledonae/Magnoliopsida	Dicotyledoneae/dicot.

- (d) Biological function of **B** (Egg of chicken)

The correct answer is reproduction/production of offspring and not to help reproduction. Candidates must avoid putting this word help/assist/aids/enable/facilitates before some answers.

(e) The parts of the egg cracked, and their functions were not properly done. Some candidates named the parts but failed to indicate their correct functions as shown below:

Three observable features	One function
Shell	Protection Medium of diffusion of gasses
Shell membrane/vitelline membrane	Protection Medium of diffusion of gasses
Albumen/Egg white	Source of food and water for embryo
Yolk	Source of nutrients
Chalaza	Holds embryo or yolk in place.

(f) Habitats of A, B and C

Candidates are advised from using the general terms for habitat such as terrestrial, aquatic and arboreal. Candidates need to specify exactly the type of terrestrial aquatic habitat to score marks as shown below:

A: Pond/river/lake and not just aquatic habitat

B: House/garden/poultry/pen/house and not just terrestrial

D: Forest/garden/farm

Question 2

Study **one** specimens **F**, **G** and **H** and questions 2(a) to 2(f).

- Name the class to which each of specimens **F** and **G** belong.
- State **one** reason for the answers in 2(a).
- Name the root system of **each** of specimens **F** and **G**.
- Detach **one** complete leaf from specimen **F** and make a drawing, 8 cm to 10 cm long of the leaf and label fully.
 - State **one** function **each** of **three** of the labelled parts of the drawings in 2(d)(i)
- State three ways by which specimens **F** is of economic importance.
- Describe **briefly four** observable features of specimen **H**.
 - State **one** biological significance of specimen **H** to the plant from which it was obtained.

Question 2 was the worst answered question because about 60% of candidates scored below 15 marks out of 25 marks. This question delts with only 3 specimens: Whole guinea grass plant, whole cocoyam plant and the corm of cocoyam. The first question on these specimens was to classify these two plants with reasons. According to the marking scheme:

Specimen F: Monocotyledonae/Liliopsida

Specimen G: Monocotyledonae/Liliopsida

It was however not easy to give reason for classifying G (Cocoyam plant) as a monocotyledon because the observable features are quite different. Cocoyam has a broad leaf with network veins which are features of a dicotyledonous plant. The most obvious features for a monocotyledons plant are long and narrow leaves, parallel veins and fibrous root system. Cocoyam plant has adventitious root system with circular nodes present. In subsequent examinations, specimens whose classifications are doubtful must not be used.

(d)(i) Drawing or Diagram for a leaf detached from the guinea grass plant. Diagrams usually carry a lot of marks, but most candidates earn low marks because of lack of knowledge of drawing biological drawing. The total mark for this diagram was 8 but very few candidates got above 4 out of 8. For a diagram to score high marks, the following must be taken into consideration:

Title of diagram: Diagram of a leaf of specimen F

Quality

Clarity of lines (Cl) : pencil lines must be thin, not wooly

Size (SZ) must be 8 to 10 cm long

Neatness of labels (NI) All rule guide lines

Magnification (MG) All labels horizontal
 x 0.1 to 0.2

Details (D)

Parallel venation (PV)

Leaf sheath shown (LS)

(ii) Functions of parts of the leaf was poorly done

Lamina/leaf blade: Absorbs light for photosynthesis and gaseous exchange

Leaf sheath: Attach the lamina to the stem

Veins: Conduct water and mineral salts/transport manufactured food

Leaf ligule: Allows movement of lamina

Apex: Allows water drop off the leaf/prevents water retention

Mid rib: Supports the blade

(e) Economic importance of specimen F: Most candidates scored good marks here

(f). (i) Describe the observable features of corm of cocoyam:

This was poorly done because they didn't follow the instruction. The question required a description of observable features on the corm. The correct answers are as follows:

Vertical swollen stem

Brown in colour

Bears concentric rings of nodes

Bears tiny brown scale leaves

Bears tiny, broad terminal boards

Presence of long adventitious roots

(ii) Biological significance of Specimen H

Vegetative reproduction/storage organ of food/for anchorage

Question 3

*Study specimens **L**, **M**, and **N** and answer questions 3(a) to 3(f).*

(a) *Classify **each** of specimens **L**, **M** and **N** based on:*

(i) *type of fruit;*

(ii) *life cycle.*

(b) *Make a longitudinal section of specimen **L** and state **four** observable difference between specimens:*

(i) ***L** and **M**;*

(ii) ***L** and **N**.*

(c) *State **three** observable similarities between specimens **L** and **N**.*

(d) *Make a drawing, **8** cm long of specimen **N** and label fully.*

(e) *Name the:*

(i) *mode of dispersal of specimen **L**;*

(ii) *placentation of specimen **L**.*

(f) *State one economic importance of specimen **N**.*

This question carries 30 marks unlike the other two questions which carry 25 marks each. Candidates that read about fruits and seeds would not have found this question difficult. This is where a lot of candidates scored their highest marks. This question required candidates to classify fruits according to their structure and origin and according to their life cycles of the plants involved.

(a). Type of fruits

L; Berry/hesperidium and not berry

M: Drupe and not drup

N: Berry and not barry

(b) Names according to life cycles

L: Perennial and not annual or pirrenial

M: and not annual or perrenial

N: Perennial/Biennial and not binial

Spellings of the above words must be correct to score.

(b) (i). Observable structural differences between specimens L and M

Wrong answers written

L/Orange	M/Coconut
This is a berry	This a drupe
This is succulent	This is not succulent
Produced by a dicot. plant	Produced by a monocot plant

The differences must be observable to score

(ii) Observable differences between Specimens L and N

Differences must be observable to score

(c). Observable similarities

Wrong answers written by candidates

Both are berries

Both are fruits

(d). Diagram of longitudinal section of specimen N

The rule for the title and quality of diagram must be applied as in question 2.

Magnification ranges from 0.5 to 1.0 to score

Details required:

Thin epicarp must be shown in double line

At least two seeds must be shown

The apex must be elongated to score

(e) Economic importance of Chilli pepper: Most candidates scored a mark here

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CHEMISTRY 2

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper was quite appropriate for the level of the candidates. The questions selected covered a very wide range of topics across the syllabus. The rubrics were clear and without ambiguities. The marking scheme was detailed and flexible in its interpretation to accommodate the various answers provided by candidates. The performance of candidates generally was not impressive and do not vary much in comparison to the previous examination. However, very few candidates scored zero mark. But equally so, few candidates scored above 50 marks. Majority of marks were below 50 out of a total of 100 marks.

2. CANDIDATES' STRENGTHS

Candidates' performances were remarkable in the following areas:-

- Understanding the questions set,
- Using a logical approach to answering questions,
- Giving the required details to questions requiring descriptive answers,
- Recalling definitions of terminologies,
- Candidates answered questions according to the instruction given.

3. CANDIDATES' WEAKNESSES

Candidates' weaknesses were expressed in the following areas: -

- Ignoring the use of key words and expressions in defining terminologies,
- Recalling appropriate words in answering certain questions,
- Understanding and applying the steps in writing chemical symbols of atoms and ions and formulae of compounds correctly,
- Writing balanced chemical equations correctly,
- Doing calculations using the required formulae, or first principle,
- Some candidates answered more than the four questions required and this could have affected their performance, as time needed to answer relevant questions was reduced.

4. SUGGESTED REMEDIES

Improvement in candidates' performance in subsequent examinations can be enhanced by considering the following suggestions: -

- Familiarising with the syllabus and its contents
- Adequately revising all the topics in the different sections of the syllabus, rather than few selected topics
- Interpreting the questions correctly prior to answering
- Be aware of the marks allocated to each question and be guided by the marks to provide the required answer(s)
- Revise past examination papers thoroughly while preparing.
- Understanding the principles related to mathematical concepts and how each is applied in doing calculations

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

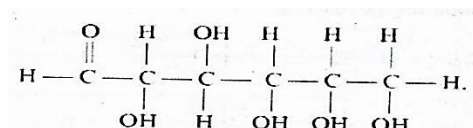
- (a) What is a transition element?
- (b) Consider electron configuration of the following elements:
 $A = 2:8:6$; $B = 2:8:2$; $C = 2:8:1$; $D = 2:8:8$.
- State the element which forms a:
- (i) doubly charged cation;
- (ii) soluble trioxocarbonate (IV).
- (c) Explain **briefly** why there is a general increase in the first ionisation energies of the elements across the period in the periodic table.
- (d) Give **two** examples of an aliphatic compound.
- (e) Explain **briefly** why alkanols are stronger bases than water
- (f) State the **major** raw materials used in the solvay process.
- (g) What is geometric isomerism?
- (h) Give a reason why water gas is a better fuel than producer gas.
- (i) Define the term heat of combustion
- (j) (i) State Faraday's second law of electrolysis.
(ii) Calculate the amount of silver deposited when 10920 coulombs of electricity is passed through
a solution of a silver salt.
[$IF = 96500 \text{ C mol}^{-1}$]

Comments

- (a) This question was well answered for less than 50% of all the candidates. Most of the errors made were due to incomplete definitions.
- (b) Most candidates stated that water and carbon dioxide are the products of the incomplete combustion of butane. Few candidates mentioned carbon monoxide.
- (c) Which exist between covalent molecules. Majority of the candidates guessed their answers, which were incorrect.
- (d) Few candidates gave the correct explanation of the Brownian motion. Majority of the candidates misinterpreted the question.
- (e) Few candidates gave the correct complete definition of condensation polymerization. Most of the answers provided by candidates were related to the general definition of polymerization.
- (f) (i), (ii), (iii) Few candidates answered this question correctly. Majority of the candidates failed to apply the IUPAC rules correctly in naming each of the compounds.
- (g) (i),(ii) Most candidates gave at least one correct oxidation number of the compounds given. There errors in including the charge which led to loss of marks.
- (h) (i)(ii) Few candidates explained correctly explained the observations related to the cathode rays. Majority of the candidates either failed to answer the question or gave an incorrect answer.

Question 2

- (a) In an experiment, 20.0 cm^3 of a solution containing 4 g dm^{-3} of sodium hydroxide was neutralized by 8.0 cm^3 of dilute tetraoxosulphate (VI) acid:
- (i) write a balanced equation for the reaction;
- (ii) calculate the concentration of the acid in mol dm^{-3} .
- (b) (i) State **two** postulates of the Kinetic theory of gases which real gases do **not** obey
(ii) Explain **briefly** why real gases do **not** obey the postulates stated in 2 (b)(i).
- (c) Consider the following compound



- (i) name the compound;
 - (ii) name the **two** structural isomers of the compound;
 - (iii) state the chemical process involved in the preparation of the compound from starch;
 - (iv) write the chemical equation for the steps involved in the process in 2 (c)(iii);
 - (v) name **two** enzymes involved in the process in 2 (c)(iii).
- (d) Explain **briefly** the term structural isomerism.

Comments

- (a)
 - (i) Few candidates correctly determined the empirical formula of the alkene using the information given.
 - (ii) Most candidates failed to answer this part of the question or gave incorrect answers.
 - (iii) Few candidates named the correct alkene from the answers obtained in the previous parts of the question.
- (b) Few candidates correctly stated at least one of the two conditions necessary for ideal behaviour of real gases in part (i). In part (ii), most candidates failed to mention the postulates of the kinetic theory that do not apply to ideal gas behaviour.
- (c)
 - (i) Few candidates wrote the correct balanced equation for the reduction of iron in the blast furnace. There were errors in writing the correct formulae of the substances involved in the reaction, which resulted in loss of mark.
 - (ii) Most candidates failed to mention the correct reducing agent in the extraction of iron.
 - (iii) Few candidates wrote the correct balanced equation for the conversion of carbon(iv) oxide to carbon(ii) oxide in the blast furnace.
 - (iv) Most candidates mentioned limestone as a substance used in the removal of impurities in the blast furnace, however, few candidates explained correctly how the impurities are removed.
 - (v) Few candidates wrote the correct balanced chemical equation for the removal of impurity in the blast furnace.
- (d)
 - (i) Few candidates correctly defined an ion. Most of the definitions provided by majority of the candidates were incomplete.
 - (ii) Few candidates correctly balanced the redox half reaction given. Majority of the candidates demonstrated lack of understanding of the concept.
 - (iii) Few candidates answered this part of the question correctly. Most of the answers provided by majority of the candidates were being guessed.

Question 3

- (a) A compound contains 52.2% C, 13.1% H and Oxygen only. The vapour density of the compound is 23.
 - (i) Determine its empirical formula;
 - (ii) Determine its molecular formula;
 - (iii) The compound reacts with sodium metal to produce hydrogen gas and when warmed with acidified $\text{KMnO}_4(\text{aq})$ gives a solution which turns from purple to colourless. It also forms a sweet smelling liquid when heated with ethanoic acid in the presence of concentrated H_2SO_4 .
 - (I) name the functional group present in the compound;
 - (II) draw the structural formula of the compound.
[H = 1.0, C = 12.0 O = 16.0]
- (b) Outline the chemical equations for the production of ethanol from cooked cassava.
- (c)
 - (i) Explain **briefly** why a piece of aluminium does **not** react with water.

(ii) *How can a pure sample of aluminium chloride crystals be prepared from aluminium.*

(d) *Describe how water can be separated from aqueous CuSO_4 .*

Comments

(i) Few candidates correctly defined the term electrode potential.

(ii) Few candidates correctly two uses of standard electrode potential.

(i) Few candidates gave the correct statement of the law of constant composition.

(ii) Few candidates correctly did the calculation, using the data provided to illustrate the law of constant composition. Most of the candidates used incorrect steps and gave wrong answers.

(i) Most of the candidates who attempted this question guessed their answer, which was largely incorrect.

(ii) Most candidates guessed their answer to this question, which were largely incorrect. Some candidates listed more than the required number of elements.

Majority of the candidates either failed to answer this question or gave incorrect explanations. Very few candidates gave partly correct explanation but failed to write the correct relevant equation.

(i) Few candidates correctly gave the explanation for the use of functional groups in classification of organic compounds.

(ii) Few candidates gave the correct major product formed when ethene reacts with acidified water. Most candidates guessed their answer.

Question 4

(a) *Starting with calcium chloride, describe **briefly** how a solid sample of calcium trioxocarbonate (IV) can be prepared in the laboratory.*

(b) *With relevant equations outline procedure for the purification of impure copper.*

(c) *Copper reacts with concentrated trioxonitrate (V) acid;*

(i) *write a balanced chemical equation for the reaction;*

(ii) *state what would be observed in the reaction;*

(iii) *state why the copper is oxidized;*

(iv) *an excess of copper is added to 25.0 cm^3 of $16.0 \text{ mol dm}^{-3} \text{ HNO}_3$. Calculate the volume of the gas formed at s.t.p.*

[H = 1.0, N = 14.0, O = 16.0, Cu = 63.0; Molar volume of gas at s.t.p. = 22.4 dm^3]

(d) (i) *Pure HNO_3 is a colourless liquid but when exposed to air, it turns yellowish-brown in colour. Explain briefly this observation.*

(ii) *Write a balanced equation for the laboratory preparation of hydrogen trioxonitrate (V) acid.*

Comments

(a)(i) Most candidates failed to correctly describe the sequence of steps in the laboratory preparation of oxygen from hydrogen peroxide.

(ii) Few candidates gave the correct balanced chemical equation for the reaction involved in the production of oxygen from hydrogen peroxide. Some candidates either stated the correct condition, or the equation without balancing.

(b) (i) Most candidates mentioned effervescence as one of the observations made when sulphur reacts with hot, conc. H_2SO_4 , but could not describe the properties of the gas being evolved. Few candidates stated that there would be no visible reaction when dilute H_2SO_4 reacts with sulphur.

(ii) Few candidates at least one corresponding difference between the bleaching action of chlorine and sulphur(iv) oxide.

(c)(i) Few candidates gave the correct method of collection of gases which are denser than air.

(ii) Few candidates wrote the correct name of two gases which can be used to demonstrate the fountain experiment. Some of the candidates gave the correct formulae of the gases, which was not required.

(iii) Most candidates mentioned that the property of the gases related to the fountain experiment is their toxicity, instead of their high solubility.

(iv) Few candidates stated that the aim of the fountain experiment is to demonstrate the high solubility of gases in water. Majority of the candidates either ignored the question or gave incorrect answers.

(v) Most of the candidates stated that carbon(iv) oxide does not support combustion as a property related to its use in fire extinguishers. Few candidates also, mentioned the density of the gas as another property.

Very few candidates wrote at least one correct balanced chemical equation to illustrate how ammonia could be converted to trioxonitrate (v) acid.

Question 5

(a) Describe how iron and aluminium reacts with **each** of the following substances:

(i) dilute H_2SO_4 ;

(ii) dilute HNO_3 .

(b) (i) Write an equation for the burning sulphur in air.

(ii) Name the catalyst used in the contact process.

(iii) In the contact process, why is an excess of air used?

(iv) Why is it necessary to cool the catalyst used in 5(b)(ii)?

(v) Give a reason why the air used in the contact process needs to be as clean as possible.

(vi) State **two** reasons why SO_2 should **not** be discharged into the atmosphere.

(c) (i) State the reagents and condition used in the laboratory preparation of chlorine.

(ii) State **two** uses of chlorine.

(d) (i) Name the drying agents for each following gases:

(I) hydrogen;

(II) sulphur (IV) oxide;

(III) ammonia

(ii) State the components of the following alloys

(I) Bronze;

(II) Brass.

Comments

(a) Most of the candidates either could not answer this part of the question or gave an incorrect explanation of why calcium chloride solution forms a white precipitate with aqueous NaOH but does not react with aqueous NH_3 .

(b) Few candidates used the appropriate correct chemical equations to show what happens when sodium metal is exposed to the atmosphere.

(c) Most candidates wrote at least one correct balanced chemical equation for the sequence of in the contact process. Few candidates gave the correct catalyst and reversibility symbol in the second step of reactions. There were errors in writing the correct formulae of substances involved in the reactions.

(d) (i) Most candidates stated at least one correct ion responsible for hardness in water.

(ii) Few candidates wrote at least one correctly balanced chemical equation to illustrate how hardness of water can be removed.

(iii) Most candidates stated that sodium chloride dissolves in water and oil does not but failed to explain why in terms of bonding.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CHEMISTRY 3 (ALTERNATIVE A)

1. GENERAL COMMENTS ON THE PAPER

- The questions were simple, and easy to understand and this has largely helped to improve candidates' performance.
- The questions were standard and within the Limits of the syllabus and Reach of the candidates.
- The answers presented by the candidates were generally quite good and majority of them were able to score 35% or more of the total allocated marks of 50.
- candidates are no more taking practical lessons for granted having at the back of their minds that they are as equally important as their Essay and Objective papers (i.e. Chemistry 2 and 1 respectively).
- Apart from a few candidates (less than 10%) who displayed a very poor sense of understanding in some questions, most of them showed much evidence of diligent in their approach towards the subject.
- It was obvious that majority of the candidates put much effort in exhibiting learned skills in the subject area.

2. CANDIDATES' STRENGTHS

Candidates' performances were remarkable in the following areas:

- Ability to average concordant titre values and ability to present work clearly and legibly.
- Ability to present precise answers to questions and ability to solve problems of mathematical nature.
- Ability to present tables of titration results with burette readings recorded consistently to two decimal places.
- Ability to carry out instructions, make good observations as well as appropriate inferences in Qualitative Analysis.

3. CANDIDATES' WEAKNESSES

The poor performance of some candidates could be attributed to:

- Misinterpretation of questions and incomplete coverage of the syllabus.
- Inadequate knowledge in the course content and facts and reasons in answers provided.
- Common spelling mistakes - words and names and lack of understanding of fundamental concepts and principles.
- Low level of preparedness for the examination.
- Inability to express themselves in clearly in simple language.
- Insufficient practice/use of laboratory apparatus or chemicals.

4. SUGGESTED REMEDIES

- Schools should endeavor to provide vital information, in the Report Form, on the volume/size of pipette used by the teacher responsible for providing the materials.
- The Report Form must be enveloped together with the Answer Scripts.

- Subject teachers must endeavor to indicate the pipette size they supplied to their candidates to help examiners in using the same yard stick to assess / measure candidates' performance. This is done by ticking or underlining it (20 cm^3 or 25 cm^3) in the Report Form.
- It's not possible for candidates of the same centre to use two different pipette sizes because every centre **must** use the same size of pipettes.
- Candidates must have obtained very good grades in mathematics and science in their junior schools before offering chemistry at higher levels.
- There should be consistency in the Marking Scheme as to how many significant figures are to be supplied to the final numerical answers and must be indicated against each answer in the marking scheme.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

A is 0.100 mol dm^{-3} of HCl.

B is 0.030 mol dm^{-3} of a trioxocarbonate (IV)salt.

- (a) *Put A into the burette and titrate it with 20.0 cm^3 or 25.0 cm^3 portion of B using methyl orange as indicator.*
*Repeat the titration to obtain **concordant** titre values.*
Tabulate your results and calculate the average volume of A used.
- (b) *From your results and the information provided, calculate the mole ratio of the acid to the trioxocarbonate (IV) in the reaction.*
- (c) *Given the B contains 5.0 g dm^{-3} of the hydrated trioxocarbonate (IV) salt, calculate the:*
 (i) *concentration of anhydrous salt in B in g dm^{-3} ;*
 (ii) *percentage of water of hydration in B;*
 (iii) *number of moles of hydrogen ions in the average titre value.*
[Molar mass of anhydrous salt in B = 106 g mol^{-1}]

Comments

Attempt at this question was a bit encouraging. Over 80% of the candidates demonstrated a high degree of accuracy in tabulating and recording results obtained from volumetric analysis. They were able to average concordant titre values. This earned them vital marks. However, vital marks were lost by a few candidates because:

In (a), they failed to:

supply consistent burette readings and supply the correct units to the table of burette readings

they: cancelled their tables of burette readings and deliberately altered their burette readings

- wrote in pencil in tabulating their burette readings made arithmetical error in finding titre values for volume of acid used in the titration

In (b),

- Attempt at this question was satisfactory but few candidates lost vital marks because they failed to find the moles of the acid and base separately using the formula:
- Moles of acid / base = $\frac{\text{conc. (mol dm}^{-3}\text{) volume (cm}^3\text{)}}{1000}$
- Instead, they used the neutralization formula as follows: $\frac{C_A V_A}{C_B V_B} = \frac{n_A}{n_B}$

In (c) (i), few candidates failed to:

- supply the correct unit (g mol^{-1}) for the molar mass the acid;
- supply the correct unit (g dm^{-3}) for the conc. of the anhydrous salt and supply their final answers to three significant figures;

In (c)(ii),

- few candidates lost marks because they calculated the percentage by mass of the anhydrous salt instead of subtracting the mass of the anhydrous salt first and then use the difference to find the percentage of water.
- only about 30% of the candidates were able to score the required marks;
- marks were mainly lost due to inability of candidates to:
- calculate through logical steps;
- understand and interpret the question.

In (c)(iii),

- a great percentage of the candidates failed to score maximum marks due to misinterpretation of the question.
- some candidates used molar volume in their calculation while others were using the Avogadro constant.

Question 2

C is an organic compound.

D is an inorganic compound. Carry out the following exercises on C and D.

*Record your observations and identify any gas(es) evolved. State the conclusions you draw from the results of **each** test.*

- (a) *Put C into a test tube and add about 5 cm³ of distilled water and shake well. Divide the resulting solution into **two** portions.*
- (i) *Test the **first** portion with a litmus paper.*
- (ii) *To the **second** portion, add about 1 cm³ of Fehling's solution, A and B and heat.*
- (b) *Divide D into **two** portions*
- (i) *Put the **first** portion into a dry boiling tube and heat and then allow to cool.*
- (ii) *Add about 5 cm³ of dilute HCl to the second portion and heat, allow it to cool and filter if necessary. Divide the resulting solution into two portions.*
- (iii) *To the **first** portion from 2(b)(ii) and NaOH_(aq) in drops and then in excess.*
- (iv) *To the **second** portion from 2(b)(ii) add aqueous NH₃ in drops and then in excess.*

Comments

This question was generally better answered by candidates, about 50% of the candidates scored over half of the allocated marks.

Loss of marks by candidates in this question could be attributed to mainly not:

- following instructions and showing evidence of dissolving the salts C in water resulting in *wrong tests*;
- testing solution C with litmus paper;
- stating wrong formulae for ions e.g. Al²⁺, AL³⁺, Z²⁺, Zn⁺, etc.;
- performing as many tests as they could before recording their observations and inferences;
- stating performed tests to correspond to the appropriate observations and inferences;

describing the *nature* of solutions when tested with litmus paper correctly. For example:

- *acidic* instead of *acid* or *acid salt*;
- *basic/alkaline* instead of *base/alkali* or *basic/alkaline salt*.

Correctly describing the *nature* and *colour* of precipitates formed during reactions by using expressions such as:

- *gelatinous* instead of *chalky* precipitate;
- *white* instead of *colourless* precipitate.

The correct presentation of the table could have been as follows:

	Test	Observation	Inference
(a)	$C_{(s)} + \text{distilled water}$	C dissolved to form a colourless solution.	C is a soluble compound
(i)	$C_{(aq)} + \text{litmus paper}$	No effect on litmus paper	Solution C is neutral
(ii)	$C_{(aq)} + \text{Fehling's solution} + \text{heat}$	A brick-red precipitate is formed	Reducing sugar / reducing agent present
b(i)	D + heat + cool	Yellow when hot White when cold	ZnO present
(ii)	D + $\text{HCl}_{(aq)}$ + heat	D dissolved to form a colourless solution	D is a base / basic oxide
(iii)	1 st portion from b(ii) + $\text{NaOH}_{(aq)}$ In drops In excess	White gelatinous precipitate. Precipitate dissolves.	$\text{Al}^{3+} / \text{Zn}^{2+}$ $\text{Al}^{3+} / \text{Zn}^{2+}$
(iv)	1 st portion from b(ii) + $\text{NH}_3_{(aq)}$ In drops In excess	White gelatinous precipitate. Precipitate dissolves.	$\text{Al}^{3+} / \text{Zn}^{2+}$ Zn^{2+}

Question 3

- (a) State what would be observed if few drops of NaOH solution is added to 2 cm³ of solutions of each of the following salts:
- $\text{Pb}(\text{NO}_3)_2$;
 - $\text{Fe}_2(\text{SO}_4)_3$.
- (b) Describe **briefly** how the melting point of benzoic acid could be determined in the laboratory.

Comments

The number of candidates who attempt at this question was very discouraging. It revealed the high level of unpreparedness of many candidates.

Expected answers to this question could have been:

- In (a) (i),
- white (chalky) precipitate is formed

In (a) (ii),
(reddish) brown (gelatinous) precipitate is formed

In (b)

Grind the benzoic acid into powder.

- Fill the capillary tube with the powder and insert into the melting point apparatus.
- Heat the set-up gradually and note the temperature at which the benzoic acid just melt.
- Read / record the temperature of the thermometer.
- Repeat the process using fresh powder until two melting points agree within 2.0°C.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CHEMISTRY 3 (ALTERNATIVE B)

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper was appropriate for the level of intended candidates. It was of a parallel standard to those of previous years. The general performance was satisfactory, and it was quite obvious that majority of the candidates put much effort in handling both the Quantitative and Qualitative aspects of the paper. This clearly indicated that their knowledge in the subject area has increased.

Apart from a few candidates (less than 10%) who displayed a very poor sense of understanding in some questions, most of them showed much evidence of diligence in their approach towards the subject.

2. CANDIDATES' STRENGTHS

Candidates showed commendable improvement in the following areas:

Writing in INK.

Clarity and legibility of work and attempting all the questions.

Using correct units to numerical answers and presenting work in correct tabular forms.

Recording burette readings to two decimal places, averaging consistent/concordant titre values.

Calculating through logical steps.

3. CANDIDATES' WEAKNESSES

Honestly, there was abundant evidence that the poor performance by some candidates was due to:

Incomplete coverage of the syllabus and inadequate knowledge in the course content.

Low level of preparedness for the examination and lack of understanding of fundamental concepts and principles.

Lack of sufficient practice of practical work and report writing of work carried out in the laboratory.

Failing to give numerical answers to 2 or 3 significant figures.

Recording burette readings to an impossible degree of accuracy e.g. 21.01 cm³, 24.68 cm³, etc.

Lack of knowledge of important practical concepts or terminologies e.g. precipitate instead of residue.

Inability to write correct formula of ions e.g. HN_4^+ , NH_4^+ , CO_3^{2-} , CO_3^{2+} , etc.

4. SUGGESTED REMEDIES

Schools should endeavor to provide vital information, in the Report Form, on the volume/size of pipette used by the teacher responsible for providing the materials.

The Report Form must be enveloped together with the Answer Scripts.

Subject teachers must endeavor to indicate the pipette size they are supplying to their candidates so as to help examiners in using the same yard stick to assess / measure candidates' performance. This is done by ticking or underlining it (20 cm³ or 25 cm³) in the Report Form. It's not possible for candidates of the same centre to use two different pipette sizes because every centre must use the same size of pipettes.

W.A.E.C. (Gambia) should endeavor to send at least one Chemistry representative attend to the Preliminary Coordination Meetings so that he/she could be part of the team preparing the Final Marking Scheme and to be able to share his experiences from his personal encounters during marking sessions.

Candidates must have obtained very good grades in mathematics and science in their junior schools before offering chemistry at higher levels.

Workshops and/or seminars be organized by W.A.E.C. or Schools so that Chief Examiners

could educate teachers and candidates alike as to what is required of them in a chemistry practical examination.

There should be consistency in the Marking Scheme as to how many significant figures are to be supplied to the final numerical answers and must be indicated against each answer.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

E is a solution containing 2.92 g of HCl per dm^3 .

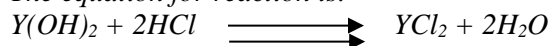
F is a solution obtained by diluting 20.0 cm^3 of a saturated solution of $\text{Y}(\text{OH})_2$ at 25°C per dm^3 of solution.

- (a) Put *E* into the burette and titrate it against 20.0 cm^3 or 25.0 cm^3 portion of *F* using phenolphthalein as indicator.

Repeat the titration to obtain **concordant** titre values.

Tabulate your results and calculate the average volume of acid used.

The equation for reaction is:



- (b) From your results and the information provided, calculate the:

- (i) concentration of HCl in *E* in mol dm^{-3} ;
- (ii) concentration of $\text{Y}(\text{OH})_2$ in *F* in mol dm^{-3} ;
- (iii) solubility of the substance, $\text{Y}(\text{OH})_2$, in mol dm^{-3} ;
- (iv) mass of $\text{Y}(\text{OH})_2$ that would be deposited if 1 dm^3 of saturated solution is evaporated to dryness. [$H=1.0$; $O=16.0$; $Cl=35.5$; $\text{Y}(\text{OH})_2=74.0$]

Comments

Candidates attempt at this question was a bit encouraging. Over 80% of the candidates demonstrated a high degree of accuracy in tabulating and recording results obtained from volumetric analysis. This earned them vital marks.

However, good marks were lost by a few candidates because:

In (a),

they failed to:

- supply consistent burette readings and supply the correct units to the table of burette readings

some:

- cancelled their tables of burette readings and deliberately altered their burette readings
- used pencils in tabulating their burette readings
- made arithmetical error in finding titre values for volume of acid used in the titration

In (b) (i) few candidates failed to:

- supply the correct unit (g mol^{-1}) for the molar mass of the acid;
- supply the correct unit (mol dm^{-3}) for the molar concentration of *E*.

In (b) (ii), few candidates failed to:

- supply the correct mole ratio (of 2:1) of the acid to the base;
- change subject substitute and evaluate correctly;
- supply their final answers to three significant figures;
- supply the correct unit (in mol dm^{-3}) to the molar concentration of *F*.

In (b)(iii) some candidates lost vital marks because they failed to:

- use the 20 cm^3 stated in the question. They rather use the 25 cm^3 volume of base pipetted
- supply the correct unit (*in mol dm^{-3}*) for the solubility of the salt / base.
- The simplest and correct formula for calculating the solubility of the base / salt should have been:
- Solubility of base =
$$\frac{\text{conc. (mol dm}^{-3}\text{) volume (cm}^3\text{)}}{1000}$$

In (b)(iv) some candidates lost marks due to their failure to:

- understand the question or
- supply correct unit to the answer.

Question 2

G is an inorganic salt. Carry out the following exercises on *G*

Record your observations and identify any gas(es) evolved.

State the conclusions you draw from the results of **each** test.

- (a) Dissolve all of *G* in about 10 cm^3 of distilled water in a boiling tube.
- (b) (i) Test the resulting solution with litmus paper.
- (ii) To about 2 cm^3 portion of the solution in a test tube, add $\text{NaOH}_{(\text{aq})}$
Then warm the resulting mixture gently.
- (iii) To another 2 cm^3 portion of the solution, add dilute HNO_3 .
- (iv) To 2 cm^3 portion of the solution, add $\text{BaCl}_{2(\text{aq})}$ followed by excess dilute HNO_3 .

Comments

This question was generally well answered by candidates in many centers. About 50% of the candidates scored over half of the allocated marks.

The loss of marks by candidates in this question was attributed to mainly not:

- following instructions;
 - showing evidence of dissolving the salt in water resulting in *wrong tests*;
 - stating wrong formulae for ions e.g. SO_3^- , SO_4^- , SO_4^+ , CO_3^- , SO_4^{2+} , CO_3^{2+} , etc.;
 - performing as many tests as they could before recording their observations and inferences;
 - stating performed tests to correspond to the appropriate observations and inferences;
 - describing the *nature* of solutions when tested with litmus paper correctly. For example:
 - *basic/alkaline* instead of *base/alkali* or *basic/alkaline salt*;
- describing the *nature* and *colour* of precipitates formed during reactions correctly by using expressions such as:
- *gelatinous* instead of *chalky* precipitate;
 - *white* instead of *colourless* precipitate.

The table could have been better presented as follows:

	TEST	OBSERVATION	INFERENCE
(a)	$G_{(s)} + \text{distilled water}$	Colourless solution formed.	
(b)(i)	$G_{(aq)} + \text{litmus paper}$	Turns red litmus blue.	Solution G is basic
(ii)	$G_{(aq)} + \text{NaOH}_{(aq)}$ + heat	No visible reaction / precipitate formed. Colourless gas with pungent smell evolved. Gas turns damp red litmus paper blue / forms dense white fumes with HCl.	Gas is NH_3 from NH_4^+
(iii)	$G_{(aq)} + \text{dil. HNO}_3$	Effervescence occurs. Colourless, odourless gas evolved. Gas turns lime water milky.	Gas is CO_2 from CO_3^{2-} / HCO_3^-
(iv)	$G_{(aq)} + \text{BaCl}_{2(aq)}$ + dil. HNO_3 (excess)	White (chalky) precipitate. Precipitate soluble.	$\text{S}^{2-}/\text{SO}_3^{2-}/\text{SO}_4^{2-}/\text{CO}_3^{2-}$ CO_3^{2-} present

Question 3

- (a) Determine the volume of water that should be added to 100 cm^3 of 0.5 mol dm^{-3} HCl in order to obtain 0.3 mol dm^{-3} HCl.
- (b) Describe **briefly** a chemical test to distinguish between dilute HCl and dilute HNO_3 . Support the test with relevant equation.

Comments

Most candidates who attempted at this question was fairly satisfactory.

Expected answers were:

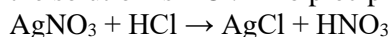
$$C_1V_1 = C_2V_2$$

$$0.5 \times 100 = 0.3 \times V_2$$

$$V_2 = \frac{0.5 \times 100}{0.3} = 166.67 \text{ cm}^3 \text{ or } 166.7 \text{ cm}^3 \text{ or } 167 \text{ cm}^3$$

$$\text{Volume of water } 166.67 - 100 = 66.67 \text{ cm}^3$$

Add AgNO_3 to each of the solutions in a test tube. Formation of a white precipitate indicates that the solution is HCl. If no precipitate is formed, then the solution is HNO_3 .



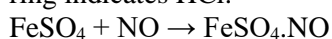
OR

Heat each sample in a test tube. Formation of brown gas / fumes indicates HNO_3 . No brown gas / fumes indicates HCl.



OR

To each sample in a test tube, add freshly prepared $\text{FeSO}_{4(aq)}$ followed by conc. H_2SO_4 along the side of the test tube (in a slanting position). Formation of brown ring indicates HNO_3 . No brown ring indicates HCl.



WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
HEALTH SCIENCE 2

1. GENERAL COMMENTS ON THE PAPER

The questions for the essay paper were standard and were within the scope of the syllabus set for the West African Senior secondary school certificate examination (WASSCE). The overall performance of the candidates was satisfactory. The candidates performed well in over 65 % of the syllabus brought for the examination. The few candidates who were not well prepared represent a small percentage, who did not answer all the questions and as a result scored very low marks.

Looking at the answers given by the candidates, it can be concluded that most candidates did not understand the questions asked. The candidates therefore need to read the questions thoroughly to understand what it requires before answering it. This shown more in questions 8 and 9 where the question uses scenarios.

The marking scheme was explicit, for candidate who prepared themselves well for the examination to score good marks. About 30% of the candidates scored good marks, 40% with average scores and the rest with poor marks. Some candidates were unable to express themselves in simple English whilst others have very scanty scientific/biological terminologies. Due to the above deficiencies most ideas were wrongly presented.

There was a great difference in the performance of candidates at different centers, and urban and rural schools.

2. CANDIDATES' STRENGTHS

The candidates showed improvement in their ability to:

- Give straight forward answers;
- List the levels of disease prevention;
- List five factors that affect population dynamics;
- State what is drug addiction?
- State the types of fundamental body postures;
- Mention three preventive measures of postural defects;
- Briefly explain the terms antenatal and artificial insemination;
- Naming of two examples of glands and their secretions;
- Name the three main types of neurons;
- State six social effects of drinking and smoking;
- Name three components of tobacco;
- Suggest two likely reasons why the student engages in the habit;
- Name four safety equipment that the machine operator could use to prevent accidents;
- Name three organs in the body that could be damaged because of individual habits.

3. CANDIDATES' WEAKNESSES

The candidates' weaknesses include their inability to:

- Write good and simple English Language;
- Spell words and biological terms correctly;
- Use terms correctly in a sentence;
- Arrange ideas in a logical order;
- Logically present their ideas;
- Give enough appropriate answers without repetition;
- Comprehend question beginning with scenarios.

4. SUGGESTED REMEMDIES

- Candidates should improve on their spelling skills;
- Basic scientific terms should be understood by the students;
- Candidates need to follow the instructions of the question;
- Candidates should endeavour to cover the syllabus;
- Candidates should understand the question before answering them;
- Candidates should read the chief examiners report to improve their technique of answering questions.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

Question 1

(a) *What is orthodox medicine?*

This question was wrongly answered by 60% of the candidates. 30% of the candidates wrongly answered it as the use of traditional medicine to cure patients.

(b) *List **two** levels of diseases prevention.*

Half of the candidates wrote wrong answered to this question as environmental sanitation, taking vaccination, eating balanced diet, avoiding self-medication etc. 20% of those who answered the question wrote only primary and secondary levels thereby losing points.

Question 2

(a) *What is population dynamics?*

This question was wrongly answered by 40% of the candidates as the number people living in habitat at specific period.

(b) *List **five** factors that affects population dynamics.*

45% of the candidates lost points due to repetition of their answers as i) migration and immigration; ii) high birth rate and high fertility rate; iii) morbidity and disease prevalence etc.

Question 3

(a) *Definition of personality.*

This question was wrongly defined by 45% of the candidates.

(b) *What is drug addiction?*

30% of the candidates wrongly answered this question whilst 20% gave incomplete answers.

Question 4

(a) *What is school health programme?*

This was one of the poorly answered questions by the candidates. 70% of them scored no mark for this question.

(b) *Mention **three** components of school health programme.*

This question was also poorly answered by the candidates with 45% of them scoring no mark.

Question 5

(a) State **three** types of fundamental body postures.

60% of the candidates wrote wrong answered for this question as i) lordosis; ii) kyphosis; and iii) scoliosis. 25% of the candidates who answered this question loose points due repetition.

(b) Mention **three** preventive measures of postural defects.

This question was well answered by 65% of the candidates.

Question 6

Explain **briefly** the following terms:

(a) *antenatal*;

Half of the candidates correctly answered this question. 15% wrongly explain it as the care given to a mother and bay before and after delivery.

(b) *artificial insemination*.

25% of the candidates gave incomplete explanation. Whilst 15% gave explanation of as artificial respiration.

SECTION B

Question 7

(a) State **three** differences between endocrine gland and the exocrine gland.

This question was poorly answered by 30% of the candidates who could not differentiate between endocrine and exocrine glands. 20% of the candidates who attempted the question loosed points as their answers did not correspond.

(b) Complete the table by naming **two** examples of glands and one secretion of each example.

	Two examples of gland	One secretion of each gland
<i>Endocrine gland</i>		
<i>Exocrine gland</i>		

40% of the candidates wrote wrong secretions for the glands named.30% as well loosed points wrong spellings of glands and secretions mentioned.

(c) Name the **three** main types of neurons.

55% of the candidates scored more than half the mark allocation for this question.

(d) Give **three** examples of reflex actions.

60% of the candidates scored more than half the mark allocation for this question. 20% loosed marks due repetition: i) withdrawal of hand from hot object; and ii) Withdrawal of foot when prick by ^ nail/sharp object.

Question 8

*A student drank **two** litres of an alcoholic beverage and smoked **two** sticks of cigarette before attending classes.*

(a) *State **six** social effects of the habit.*

55% of the candidates score more than half the mark allocation for this question. 25% loosed marks due repetition of points.

(b) *Mention **four** ways by which the student could control the habit.*

This question was well answered by half of the candidates.

(c) *Name **three** disorders or diseases that the student could be exposed to.*

60% of the candidates did not score more than half the mark allocation for the question. 20% loosed points for writing answers like: i) lung cancer; ii) liver cancer; iii) heart cancer.

(d) *Name **three** components of tobacco.*

60% of the candidates lost points for wrong spelling of the components of tobacco.

(e) *State **two** other ways by which tobacco could be consumed.*

The word *other ways* posed a big problem for 60% of the candidates, as they named smoking as a point which does which does score them any mark. 20% of the candidates lost points due to repetition as: i) chewing, drinking, and putting it on the gum, which are all oral ways of tobacco consumption.

(f) *Suggest **two** likely reasons why the student engages in the habit.*

This question was well answered by 70% of the candidates.

Question 9

A machine operator working in a manufacturing industry usually disregards all safety rules. Use the information to answer the question that follow.

(a) *Mention **three** hazards that the machine operator could be exposed to.*

Half of the candidates did not score more than half the mark allocation for this question.

(b) *Name **four** safety equipment that the machine operator could use to avoid accidents.*

55% of the candidates answered this question well by scoring more than half the mark allocation of the question.

(c) *State **three** ways of controlling the habit.*

This question was poorly answered by half of the candidates scoring less than half the mark allocation of the question.

(d) *Name **three** organs in the body that could be damaged as a result of the habit.*

40% of the candidates wrote wrong answers like kidney and liver which make them loose points.

(e) *Mention:*

- (i) **four** types of injuries that the machine operator might suffer if the operator falls during manufacturing;

30% of the candidates loosed points due repetition as i) cuts, ii) wounds and iii) bruises which are all the same. 40% also wrote wrong answer like scalds and burns.

- (ii) **three** advantages of industrial health education.

This question was poorly answered with more than half of the candidates scoring less than half the mark allocation of the question.

SECTION B

The questions were standard and derived from the syllabus. The candidates' poor performance emanated from their ill preparations. The questions were straight forward and unambiguous. The marking scheme as well provided enough correct answers for candidates that prepared well for the examination.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
HEALTH SCIENCE 3 (PRACTICALS)

1. GENERAL COMMENTS ON THE PAPER

As established in the WAEC syllabus for the West African Senior Schools Certificate Examination, the Health Science Paper Three (3), Test of Practical was a composition of the two sections: A and B. Candidates were simply required to answer all of the questions from both sections for 80 Marks.

The scope of the questions for both sections A and B were proportionately met premier standards for the examination. The general performance of the candidates was to a certain extent below average and looked to ring the bell of the signs of a depleting performance generally. In actual fact, the performance of some candidates was good, showing a comfortable coverage of the syllabus. The depleting performance was demonstrated by candidates' inability to clearly understand the requirements of the questions leading to their poor performance contrasting the previous in retrospect.

From the nature of candidates' script content, it was noticed that there was a couple of quite excellent scripts from candidates, it was noticed that some candidates demonstrated preparedness for the examination especially in the way they answered some of the questions. These candidates demonstrated a clear understanding of the scope of the syllabus. It tells the level of precise understanding of the questions.

On the other hand, also; based on the answers that were given, it was detected that a wrong understanding of the questions by candidates led to wrong interpretation of questions hence leading to poor performance. In addition, all the questions were attempted by almost all the candidates. There was a real show of knowledge by candidates.

2. CANDIDATES' STRENGTHS

Generally, the performance of candidates was below average. The candidates who did well in their attempt to:

- Answer all the questions in both Sections A and B.
- Present answers in well-constructed sentences.
- Identified diagrams/structures and labelled the parts correctly.
- Demonstrate knowledge in the subject.
- Read and interpret questions correctly
- Write within the available writing space according to the page margin for each question.
- Spelling terms and definitions correctly.
- A good number of candidates were able to answer questions 5, where they named health conditions that could be developed from smoking, mention the likely reasons why people smoke daily, mention the organs in humans that could be affected by smoking, mention ways of preventing tobacco smoking among children.

3. CANDIDATES' WEAKNESSES

From close observation, the candidates' weaknesses include their inability to:

- Correctly spell simple words and certain terminologies.
- Write legibly for examiners to read.
- Struggle to express themselves well in English Language.
- Correctly interpret the questions.
- Correctly use biological/scientific terminologies

4. SUGGESTED REMEMDIES

- Teachers should strictly use and complete the prescribed WASSCE syllabus for Health Science and text books must be compatible to the nature of the exams.
- Teachers of the subject should endeavour to heighten the sense of grammatical correctness in writing answers. This is key.
- The correct use of the English Language in this discipline must gain prominence.
- Schools should invest in appropriate teaching aids and learning equipment.
- The examination body, West African Examination Council (WAEC) should maintain a livelier collaboration with the Ministry of Education, regarding any relevant or educationally compelling modification are made in the syllabus as and when expedient.
- Trained and qualified teachers should be employed and well monitored in classroom delivery.
- Teachers must motivate students and make the subject more of an attraction to heighten pupils' interest in the subject.
- Schools should genuinely design programmes and support teachers to embark on field trips/excursions to broaden the scope of the students for better performance.
- Different types of relevant teaching methodologies should be employed to cater for the different ability categories of learners.
- Subject terminologies should be correctly taught, understood, used and spelt correctly.
- Teachers should really endeavour to actually complete the syllabus prior to the slated dates for exams for the sake of convenience on the part of the candidates.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

The diagram below illustrates of an industry that is located in a residential area. Study it and answer questions 1(a) to 1(d).

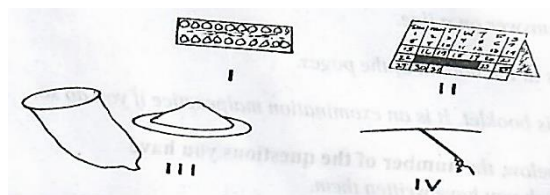


- (a) Mention **two** types of pollution that would be caused by the industry.
- (b) Mention **four** sense organs in humans that could be negatively affected by the types of pollution mentioned in 1(a).
- (c) Suggest **one** solution to the problem caused by population in the area.
- (d) State **three** health implications of siting the industry in a residential area.

This question was answered correctly by up to 52.7% of the candidates. However, the remaining 47.3% of the candidates were either jumbling up the answers, not writing out answers correctly or stating answers that were not related to the question, thus leading to poor grades.

Question 2

The diagram below illustrate types of contraceptive devices. Study it and answer questions 2(a) to 2(d).



- (a) Name the contraceptive devices labelled **I**, **II**, **III**, and **IV**.
- (b) Name **one** part of the female reproductive system where the devices labelled **III** and **IV** are placed.
- (c) State **two** advantages of using **III** over **IV**.
- (d) Mention **two** types of permanent contraceptive methods.

About 45% of the candidates were able to answer question 2 correctly as was required by the marking scheme. Some of the candidates were giving wrong spellings of important vocabulary and terminologies that make up the answer thus, resulting to poor grades. It was discovered that 55% of the candidates were able to answer the question correctly.

Question 3

The diagram below illustrates a child suffering from a nutritional deficiency disease. Use it answer question 3(a) to 3(d).

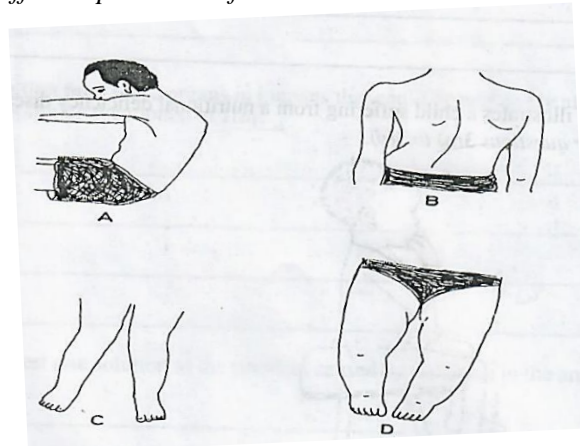


- (a) Identify the disease that the child is suffering from.
- (b) Name **three** symptoms of the disease mentioned in 3(a).
- (c) (i) Mention **one likely** situation that encourages the prevalence of the disease mentioned in 3(a) in humans.
(ii) State **two** reasons for the answer in 3(c)(i).
- (d) Name **three** food items that could be recommended for the proper growth and development of the child.

About 56.6% of the candidates answered question 3 (three) correctly as was required by the marking scheme. The remaining 43.4% of candidates were seen: not being able to use the English language to construct sentences correctly misunderstood the context of the question or had no idea or constructive question answering approach; hence writing wrong answers and leading to poor grades.

Question 4

The diagram below illustrates different postural defects in humans. Use it to answer questions 4(a) to 4(d).

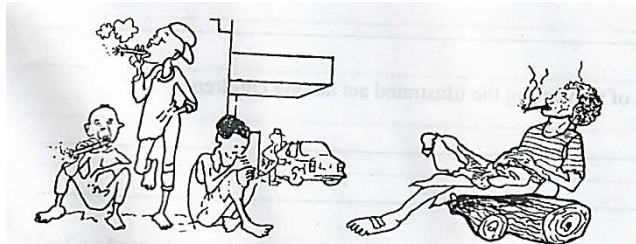


- (a) Name the defects illustrated in diagrams A and D.
- (b) State **three** causes of the illustrated postural defects.
- (c) State **two** possible effects of the illustrated postural defects on human.
- (d) State one way of correcting postural defects in humans.

This question was poorly attempted by candidates accounting for 62.8%.

Question 5

The diagrams below illustrate people that smoke daily. Study them and answer questions 5(a) to 5(f).



- (a) Name **four** health conditions that could be developed from the illustrated act.
- (b) Give **three** likely reasons for engaging in the illustrated act.
- (c) Enumerate **three** social problems that may result from the illustrated act
- (d) Mention **four** organs in humans that could be affected by the illustrated act.
- (e) Name **four** pollutants that would be identified in the environment as a result of the illustrated act.
- (f) Mention **two** ways of preventing the illustrated act among children.

It was found out that up 71.4% of candidates were able to answer the questions correctly. The candidates showed great understanding of the topic and wrote the answers correctly. However, 28.6% of the candidates were no able to answer the question correctly. They were not able write out answers in properly constructed sentences.

Question 6

The diagram below illustrates a building that collapsed in a residential area. Study it and answer questions 6(a) to 6(e).



- (a) State **four likely** causes of the building collapse.
- (b) Mention **four** ways of preventing the illustrated incidence.
- (c) State **four** criteria for good housing.
- (d) Mention **four** effects that the collapsed building would have on people living in the area.
- (e) (i) Name two types of pollution that would result from the building collapse.
(ii) Mention **two** types of pollution that are **common** in industrial areas.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PHYSICAL EDUCATION 2

1. GENERAL COMMENTS ON THE PAPER

The standard of Physical Education paper 2 for the WASSCE 2023 was a difficult one for the majority of the candidates that sat to the examination. Though, the marks allocated commensurate with the questions, the majority of the candidates were not able to satisfy the examiners in order to obtain commendable scores. In the same scenario, answers submitted by a greater percentage of candidates from quite a good number of centers were woeful due to inadequate knowledge of the majority of the set questions. However, in spite of the fact that a greater percentage of the candidates exhibited a significant decrease in the overall quality of their work, there were equally very good responses from some percentage of the candidates from different examination centers that earned them commendable marks. Generally speaking, the overall candidates' performance for this paper this year was only sat appalling. It is therefore obvious to place on record that candidates performed better in physical education paper 3 than paper 2.

2. CANDIDATES' STRENGTHS

Majority of candidates portrayed a high degree of legibility and clarity of work.

3. CANDIDATES' WEAKNESSES

Unsatisfactory performance of candidates could be attributed to the following:

- Lack of seriousness in the approach and output of several candidates due to poor preparation for the examination or inadequate coverage of the syllabus on time
- Poor understanding of basic definitions, principles and concepts of Physical Education.
- Inability to apply correct operational terms.

4. SUGGESTED REMEDIES

Candidate's performance shall improve if:

They are advised to develop the reading culture.

Qualified teachers in physical education are employed to teach the subject at all levels.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *A school organized a sport competition among classes in the school, after which the winner competed with the winner from another school.*

(i) *Name the type of sport competition:*

- I. Among the classes in the school;*
- II. Between the winners from the schools.*

(ii) *State three benefits of the types of sports competition named in 1 (a)(i).*

(b) *State the full meaning of each of the following sports governing bodies:*

- (i) *FASU;*
- (ii) *WAFU;*
- (iii) *IAAF;*
- (iv) *FISU;*
- (v) *FIFA.*

Candidates were able to gain high marks in question 1 (a) (i). There were some good answers to this part of this question. In the same vein, (the ii of the question was also well answered by over 70% of the candidates. The (B) part of the question was generally not well answered as the majority of the candidates were unable to write correctly the full meaning of the given acronyms.

Question 2

(a) State **six** similarities between a discus event and a shot-put event.

<i>Discus event</i>	<i>Shot Put event</i>

(b) State **two** rules that an athlete should obey at the start of a 100 m race.

(c) Mention **two** phases in sprint races.

This was a popular question and was attempted by over 82% of the candidates. Well over 70% of those who attempted this question scored commendable marks. In fact, Question (2) (a) was well answered while question 2 (b and C) were unsatisfactorily attempted by over 50% of those who opted for them. In any case, and for candidates to obtain a good mark; they were expected to put the phases in sprint races as thus:

Start
Take-off
Acceleration
Finish

Question 3

(a) List **five** types of fouls in basketball game.

(b) Name **five** parts of a hockey stick.

Over 68% of the candidates attempted question 3 with satisfactory performance. In any case, well over 15% of those who attempted this number scored high mark. The (b) part of the question was not well answered by majority of the candidates. Due partly to the fact that they misinterpreted it for a tennis racket.

Question 4

(a) Outline **five** benefits of recreation to the general well-being of an individual.

(b) State **five** aims of Physical Education in Greece.

Question 4 was attempted by many of the candidates and slightly above 60% of those who opted for it scored very good marks. At the same time, few marks were lost due to wrong answers supplied by some candidates from different examination centers. The (b) part of the question was a big problem to most of the candidates as they were always not familiar with questions on the history and philosophy of Physical Education, hence, there scores were woeful.

Question 5

- (a) State **three** main types of tournaments.
- (b) State **seven** importance of the Modern Olympics Games.

Question 5 was attempted by over 75% of the candidates with commendable marks at the same time marks scored by the majority of the candidates in relation to the importance of Modern Olympic Games were very good due to competent responses from a greater percentage of the candidates that attempted the question.

Question 6

- (a) State **one** function each of the following organs during respiration in humans:
 - (i) Nose;
 - (ii) Lung;
 - (iii) Diaphragm;
 - (iv) Bronchus.
- (b) Name **three** types of bones in the human body.
- (c) Outline **three** ways by which first aid care could be given to a victim of fracture.

Candidates who opted for question 6 could not do well because most of the examination centers portrayed the true fact that candidates lack adequate knowledge of Basic Human Anatomy and Exercise Physiology. On that note, it has been discovered that the majority of the teachers teaching Physical Education do not teach this aspect of the syllabus at all.

Question 7

- (a)
 - (i) What is a slightly movable joint?
 - (ii) Give **two** examples of a slightly movable joint in humans.
- (b) State **six** benefits of regular exercise in sports.

Generally speaking, candidates' submissions were woeful as they were unable to define slightly movable joints and their examples. In fact, candidates' submissions showed that they were not well informed about the topic in place. Indeed, an insignificant percentage of the candidates only scored few marks. However, few good marks were gained due to candidates' submissions in relation to Question 7 (b).

Question 8

- (a)
 - (i) What is traditional sports?
 - (ii) List **five** traditional sports.
- (b) Name **three** major games that are played without time limit.

Question 8 was a very popular question that attracted very good responses from over 80% of the candidates that attempted it. The marks scored by most of the candidates in relation to Question 8 (a) and (b) were highly commendable. In fact, there was a significant evidence of candidates' thorough knowledge of this aspect of the syllabus; hence, they earned excellent marks.

Question 9

- (a) List **five** functions of a sports administrator.
- (b) Name **five** individual sports.

Question 9 (a) was not well answered by over 68% of those who opted for it and their marks were not encouraging. On the other hand, marks scored by a greater percentage of candidates in connection with Question 9 (b) were highly encouraging as the answered submitted by them were commendable.

Comments on Difficulty of the Questions:

The questions were well framed and reflected the length and width of the syllabus. The questions were difficult for most of the candidates to tackle because most candidates were not well prepared before the examination.

Comments on Incorrect or Ambiguous Questions or Questions outside the Requirements of the Syllabus

The questions were structured in such a manner that they were all correct and within the requirements of the syllabus. Indeed, they were free from ambiguity.

Comments on the Suitability for the Level Being Examined Vis-a-Vis the Level for the Syllabus

The questions were suitable for the level being examined. Candidates' inability to perform very well centered on the following reasons.

Poor knowledge of the basic concepts and principles in relation to physical education

Inability to apply correct terminologies.

Lack of seriousness in the approach and output of several candidates.

Lack of professionally trained personnel to handle the subject at all levels.

Lack of adequate instructional materials.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PHYSICAL EDUCATION 3

1. GENERAL COMMENTS ON THE PAPER

Physical education 3 (Performance Test Examination) for school candidates 2023 was hitch-free and successfully conducted. Generally speaking, candidates were expected to apply their knowledge of kinesiology to normal practical demonstration. Too also, they were required to exhibit some basic principles of movement engineering for awesome demonstrations. Indeed, the format of the paper followed established pattern. Besides, the questions were all within the range of the syllabus and were direct and simple. Obviously, the majority of candidates were very conversant with the required skills needed in the demonstrations; with many addressing frankly the specific issues raised in the questions.

However, no candidate seemed unable to complete the practical test and there was no element of confusion over the rubrics of the paper: except in a few circumstances where, perhaps; due to administrative lapses, the materials required were either provided too late or not provided at all. Above all, there is an up-tick in the number of entrants this year than yester year.

2. CANDIDATES' STRENGTHS

A good number of candidates demonstrated a very good level of positive performance due to the following reasons:

- desire to do well was exhibited from even the weak candidates;
- progressive sequence in skills demonstration.

3. CANDIDATES' WEAKNESSES

The areas of weaknesses among candidates include:

- Lack of adequate preparedness for the examination;
- Lack of keen interest towards Athletics and games.

4. SUGGESTED REMEDIES

The following suggestions have been put forward for future improvement.

The candidates should be introduced to intensive practical work early enough to enable them to acquire the required basic fundamental skills before the examination.

As a matter of absolute necessity, adequate provisions **MUST** be made for the ADAPTED / ATYPICAL PHYSICAL EDUCATION PROGRAMME.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

In a 4 x 100 m relay race, skillfully demonstrate the grip, carriage, take-over and receipt of the baton within the take-over zone.

An interesting question attempted by most candidates that sat to the examination. Appropriate skills were applied by slightly above 85% of the candidates that opted for it and their scores were highly commendable.

Question 2

Choose any crouch start method and demonstrate the positions of the legs, hands, running from and finish to run a distance of 100 m.

This question allowed candidates a choice of it and the majority attempted it with excellent performance. Frankly speaking, the performance of candidates in relation to this question was generally good with many scoring commendable marks.

Question 3

In a 400m hurdles race, demonstrate the start, take off, running form and finish to return in a good time.

This was not a popular activity; only few candidates ventured into it; although their performance was equally good.

Question 4

*From the baseline of a volleyball court, serve a ball to the opponent's court, **5 times** using the underarm service.*

Very unpopular among the candidates but the few who opted for it obtained valuable marks.

Question 5

*In a standing position, execute a bounce pass to a team mate in a basketball game, **five** times.*

Very popular among the candidates with excellent demonstrations. Many candidates portrayed outstanding high skills with regard to this question and their scores were high.

Question 6

*Using **appropriate** techniques from a position behind the end line of the table tennis board, place the ball in an open palm. Using the forehand grip, deliver forehand service **five** times over the net to the opponent's side.*

This was very popular among the candidates. Most candidates that opted for it did very well.

Question 7

At a point behind the service line in a badminton game, serve the shuttle five times into the opponent's court, executing skillfully, the stance, the grip and execution of the service.

Another unpopular number that attracted lower percentage of the candidates. Indeed, a very low level of skills were exhibited from most candidates and their scores were only satisfactory.

Question 8

*With the use of appropriate techniques, skilfully perform the backward roll, demonstrating the stance, hand placement, head placement, roll backward and finish. **Three** trials are allowed.*

This was very popular and attracted very good approaches from the majority of candidates. Hence, their scores were highly commendable.

Question 9

Skilfully demonstrate body position, hand position, head position, execution and recovery in the performance of headspring.

This question was very unpopular among the candidates and the majority demonstrated the required skills inaccurately.

Comments on Difficulty of the Questions:

The questions were of good standards and reflected the length and breadth of the syllabus

Comments on Incorrect or Ambiguous Questions or Questions outside the Requirements of the Syllabus

The questions were structured in such a manner that they were all correct and matched with the requirements of the syllabus.

Comments on the Suitability for the Level Being Examined Vis-a-Vis the Level for the Syllabus

The questions were suitable for the level being examined.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PHYSICS 3 (ALTERNATIVE A)

1. GENERAL COMMENTS ON THE PAPER

Generally, the paper was within the scope of the syllabus. The instructions were clear relevant and explicit. The three areas covered in Alternative A were Mechanics, Optics and Electricity. General performance of candidates shows a decline compared to last year examination. The statistics shows that almost 5% of the candidates scored at least 40 marks, 25% within the range of 30-39 marks. Nearly 40% scored between 20-29. The rest scored less than 20 marks

2. CANDIDATES' STRENGTHS

- Sufficient knowledge in stating precautions
- Strength in computing mathematical data
- Systematic laying out of the composite table

3. CANDIDATES' WEAKNESSES

- Inadequate preparation and poor handwriting
- Insufficient scientific knowledge and fail to pay attention to instructions
- Poor Mathematics background and drawing and scaling the graph

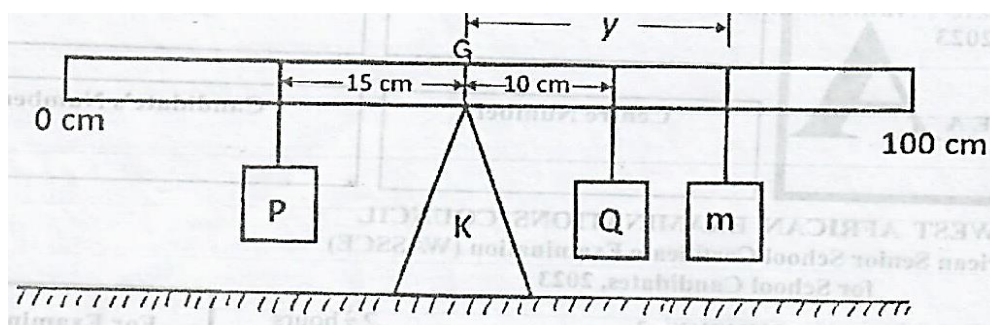
4. SUGGESTED REMEDIES

- Schools should be well equipped with relevant scientific apparatus.
- Specialized and qualify teachers should be encouraged to teach the subject matter
- Teachers' practical skills should be enhanced by organizing more on the job training.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a)



*You are provided with a metre rule, two loads, **P** and **Q**, a knife edge, **K**, a set of masses, **m**, and a piece of string.*

Use the diagram above as a guide to perform the experiment.

- (i) *With no loads hanging on the metre rule, balance the metre rule horizontally on the knife edge. Record the position, **G**, of the knife edge on the balanced metre rule.*
- (ii) *Suspend **P** securely at 15 cm from **G**, and **Q** securely at 10 cm from **G**. The positions of **G**, **P** and **Q** should not be altered throughout the experiment.*

- (iii) Using a mass, $m = 40$ g, balance the metre rule horizontally. Measure and record the distance, y , of m from G .
 - (iv) Evaluate m^{-1} .
 - (v) Repeat the procedure for $m = 50$ g, 60 g, 70 g and 80 g. In **each** case, record the distance, y , and evaluate m^{-1} .
 - (vi) Tabulate the results.
 - (vii) Plot a graph with m^{-1} as ordinate and y as abscissa.
 - (viii) Determine the slope, s , of the graph.
 - (ix) Determine the value of m_p given that $15m_p = s^{-1} + 200$.
 - (x) From the graph, deduce the mass, m , that would produce a balance distance, $y = 27.5$ cm.
 - (xi) State **two** precautions taken to ensure good results.
- (b) (i) State the **two** conditions necessary for a body to be in equilibrium.
- (ii) Two forces 4 N and 3 N act at right angles to **each** other, calculate the equilibrant of the system of forces.

Comments

This was the most popular question attempted by nearly all the candidates. The performance of the candidates in this question was generally good. About 50% of the candidates scored between 15-24 marks. About 35% of the candidates scored between 10-14 marks. While 15% of the candidates scored less than 10 marks.

COMPOSITE TABLE

Nearly, 75% of the candidates scored at least 4 out of 8 marks. The main challenges were recording the values to their required decimal places or significant figures. This attracts loss of marks.

GRAPH

The graph was marked out of 6marks. Nearly 30% of the candidates scored at least 4 marks. The challenges in this area include improper scaling, plotting, and failing to label the axes properly. Nearly 60% of candidates had above difficulties.

SLOPE

The slope was marked out of 2 marks. Nearly 30% of the candidates scored at least 1 mark. At least 70% scored $\frac{1}{2}$ or zero mark due to the challenges mentioned above.

PRECAUTION

Nearly 60% of the candidates scores at least 1 mark. Most of the candidates mentioned above 'parallax error' without giving the name of the instruments.

DETERMINATION

Nearly 30% of the candidates score full mark. However, 65% of the candidates directly substitute the value of the slope without taking the inverse of the slope. The substitution and calculation attract zero mark.

DEDUCTION

Nearly 5% of the candidates correctly find the value of m^{-1} corresponding to $y = 27.5$ using the graph M was correctly evaluated. However, almost 75% of the candidates fail to use the graph to find m^{-1} .

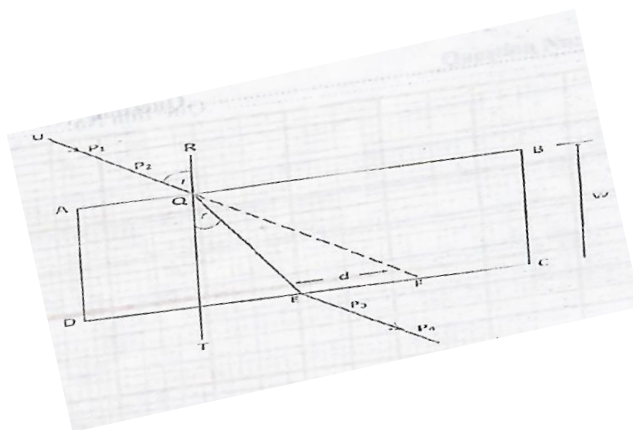
b(i)

Atmost 20% of the candidates scored at least one mark. 75% of the candidates define the stable condition of a body under gravity (i.e., a body once slightly displace tend to come back to its original position)

b(ii)

Nearly 55% of the candidates correctly computed the resultant force of the two coplanar forces. However, 40% of the candidate wrote $R = F_1 + F_2 = (3+4)$ N = 7N instead of $R = \sqrt{F_1^2 + F_2^2} = \sqrt{3^2 + 4^2} = 5$ N.

(a)



Use the diagram above as a guide to perform the experiment.

- ## Comments

Precautions were clearly and explicitly stated by 35% of the candidates. However, candidates still mentioned parallax error without indicating the instrument.

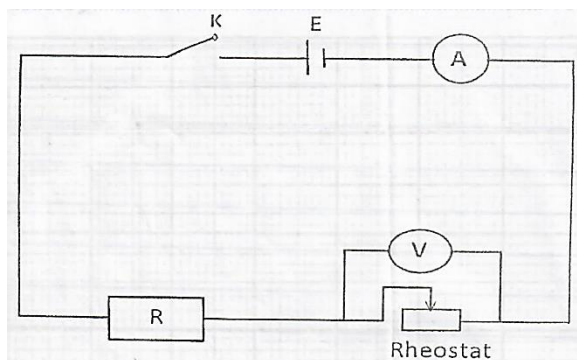
The condition for total internal reflection at air to glass was a general challenge for individual candidates. Nearly 80% of the score at least zero mark. At most 5% score of the candidates scored 1 mark.

There were nearly 15% of the candidates that openly stated that Snell's law instead of the required answers.

Snell's law was poorly stated by nearly 40% of the candidates as the ratio of angle of incident to the angle of reflected instead of refraction.

Question 3

(a)



You are provided with a rheostat, an ammeter, a voltmeter, $1\ \Omega$ standard resistor, a key, a source of electricity of emf, E and connecting wires.

- (i) Use the electrical components provided to connect the circuit as shown in the diagram leaving the circuit open.
 - (ii) Connect the voltmeter to the terminals of the battery and record the voltmeter reading V_0 .
 - (iii) Close the key and adjust the rheostat so that the ammeter reads, $I = 0.3\text{ A}$. Record the corresponding voltmeter reading, V .
 - (iv) Evaluate I^{-1} and $G = \frac{V}{I}$.
 - (v) Repeat the experiment for **four** other values of $I = 0.5\text{ A}$, 0.7 A , 0.9 A and 1.1 A . In **each** case, record the corresponding value of V , and evaluate I^{-1} and G .
 - (vi) Tabulate the results.
 - (vii) Plot a graph with I^{-1} on the vertical axis and G on the horizontal axis.
 - (viii) Determine the slope, s , of the graph.
 - (ix) Using the graph, determine the value of V for $G = 2.5$.
 - (x) State **two** precautions taken to ensure good results.
- (b)
- (i) A battery of emf 4.5 V has a voltmeter connected to its terminals. If the combination is connected in series with a standard resistor and a key, it is observed that the voltmeter reading is less than 4.5 V when the key is closed. Explain the observation.
 - (ii) An electric device draws 0.50 A in a 120 V circuit. Calculate the cost of using the device for 24 hours if the rate is $\$ 0.25$ per kWh.

This was the least popular question attempted by the candidates. It shows that about 15% opted for this question. About 23% of those who attempted this question scored between 15-25 marks. The composite able was fairly drawn by nearly 65% of the candidates. Nearly 45% of the candidates scored 6 marks on the graph but majority had problem in scaling the axes.

Nearly 50% stated the precaution clearly and about 40% got the evaluation correctly. (bi). The analysis of the voltage drop across the battery in a close circuit was a challenge for at least 40% of the candidates. The computed values for the power of the device were an added challenge for nearly 55% of the candidates that opted for this question. At least 5% of the candidates scored full mark, and about 10% didn't attempt this section.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PHYSICS 3 (ALTERNATIVE B)

1. GENERAL COMMENTS ON THE PAPER

The general performance of candidates slightly improved in Alternative B compared to Alternative A. Nearly 40% of the candidates sat to Alternative B in which at least 10% scored 40 marks, 30% scored between 30-39 marks. 50% scored between 20-29 marks while 10 % scored less than 20 marks

2. CANDIDATES' STRENGTHS

- Sufficient knowledge in stating precautions
- Strength in computing mathematical data
- Systematic laying out of the composite table

3. CANDIDATES' WEAKNESSES

- Inadequate preparation and poor handwriting
- Insufficient scientific knowledge and fail to pay attention to instructions
- Poor Mathematics background and drawing and scaling the graph

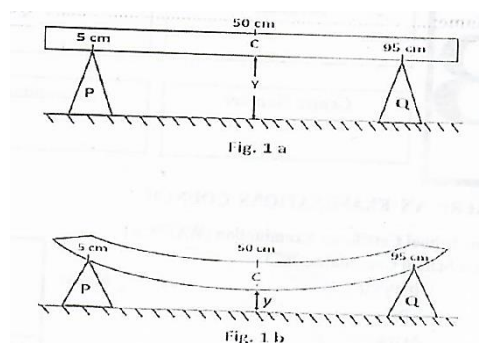
4. SUGGESTED REMEDIES

- Schools should be well equipped with relevant scientific apparatus.
- Specialized and qualified teachers should be encouraged to teach the subject matter
- Teachers' practical skills should be enhanced by organizing more on the job training.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a)



You are provided with **two** knife edges of **equal** height, a set of masses, a short piece of string with a loop at **each** end, a metre rule and a half-metre rule.

Carry out the following instructions using the diagram above as a guide.

- (i) Slide the loop of strings onto the metre rule and place it symmetrically on the **two** knife edges, **P** and **Q**, as shown in **Fig. 1a**.
Do **not** change the positions of **P** and **Q** throughout the experiment.
- (ii) Measure and record the height, **Y**, of **C** above the surface of the bench as shown in **Fig. 1a**.
- (iii) Use the loop of string to hang a mass, $m = 50\text{ g}$ at **C**. Measure the new height, **y**, as shown in **Fig. 1b**.

- (iv) Evaluate the depression, $d = (Y - y)$ of C.
 - (v) Evaluate $\log d$ and $\log m$.
 - (vi) Repeat the procedure for **four** other masses, $m = 100 \text{ g}$, 150 g , 200 g and 250 g . In **each** case, measure y and evaluate $d = (Y - y)$, $\log d$ and $\log m$.
 - (vii) Tabulate the results.
 - (viii) Plot a graph with $\log d$ as ordinate and $\log m$ as abscissa.
 - (ix) Determine the slope, s , of the graph.
 - (x) Given a mass, $m = 170 \text{ g}$, use the graph to determine the value of y .
 - (xi) State **two** precautions taken to ensure good results.
- (b) (i) Define the term elasticity.
- (ii) A piece of wood 1.5 m long has cross-sectional area of $2.0 \times 10^{-5} \text{ m}^2$ with one end of the wood fixed to a wall. Calculate the force required to produce a depression of $2.5 \times 10^{-2} \text{ m}$.
 [Young's modulus of wood = $1.1 \times 10^{10} \text{ N m}^{-2}$]

Comments

Nearly 75% of the candidates opted for this question out of which 40% scored at least 15 marks. Nearly 35% scored within the range of almost 14 marks. The rest scored less than 14 marks.

OBSERVATION

About 55% of the candidates scored at least 5 marks for the observation. However nearly 50 % of the candidates were face with difficulties of plotting values to the required significant figures.

GRAPH

A significant number of candidates scored full marks for the graph and determining of the slope as well. However nearly 30% of the candidates label their axes properly. There were almost 10% of candidate who scored zero mark on the graph for directly plotting and matching of point from the table.

PRECAUTIONS

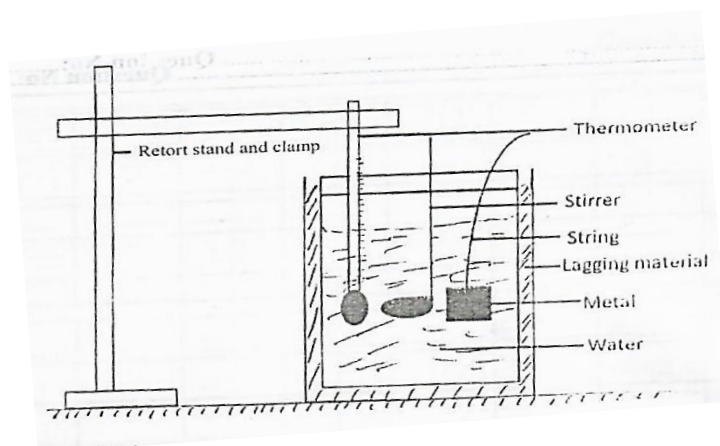
They were clearly stated, although some were incomplete statements like avoid parallax error.

b(i) nearly 25% of the candidates' clearly defined elasticity, however, 35% of the candidates left the question unanswered.

b(ii) Calculation of young modulus clearly presented and evaluated using the formula by nearly 30% of the candidates

Question 2

(a)



You are provided with a lagged calorimeter with a stirrer, a metal block, a measuring cylinder, a thermometer, a retort stand, clamp and other materials.

Use the diagram above as a guide to perform the experiment.

- (i) Measure a volume, $v = 50.0 \text{ cm}^3$ of cold water into the calorimeter, assuming the density of water is 1 g cm^{-3} , determine the mass, m_w of cold water in the calorimeter.
 - (ii) Measure and record the temperature θ_i of the cold water in the calorimeter.
 - (iii) Place the metal block in the beaker and pour sufficient water to cover the metal in it.
Heat the water to boil for **at least two** minutes.
 - (iv) Quickly transfer the heated metal into the calorimeter. Stir quickly and record the **highest** temperature, θ_f of the mixture.
 - (v) Evaluate $(\theta_f - \theta_i)$, $(100 - \theta_i)$ and $R = \frac{(100 - \theta_f)}{(\theta_i - \theta_f)}$.
 - (vi) Repeat the procedure for **four** other volumes, $v = 100.0 \text{ cm}^3$, 120.0 cm^3 , 150.0 cm^3 and 200.0 cm^3 . In **each** case, record m_w , θ_i , θ_f , $(\theta_i - \theta_f)$, $(100 - \theta_f)$ and R .
 - (vii) Tabulate the results.
 - (viii) Plot a graph with R as ordinate and m_w as abscissa.
 - (ix) Determine the slope, s , of the graph.
 - (x) Calculate the value of C_b in the equation $s = \frac{4.2}{m_b C_b}$.
 - (xi) Using the graph, deduce θ_f when $m_w = 55 \text{ g}$.
 - (xii) State **two** precautions taken to ensure good results.
- (b) (i) Explain the statement the specific heat capacity of copper is $385 \text{ J kg}^{-1} \text{ K}^{-1}$.
(ii) A copper ball at 25°C is placed in a vessel of water boiling at 100°C until equilibrium is attained. If the mass of the ball is 500g , calculate the thermal energy absorbed by the ball.
[Specific heat capacity of copper = $385 \text{ J kg}^{-1} \text{ K}^{-1}$]

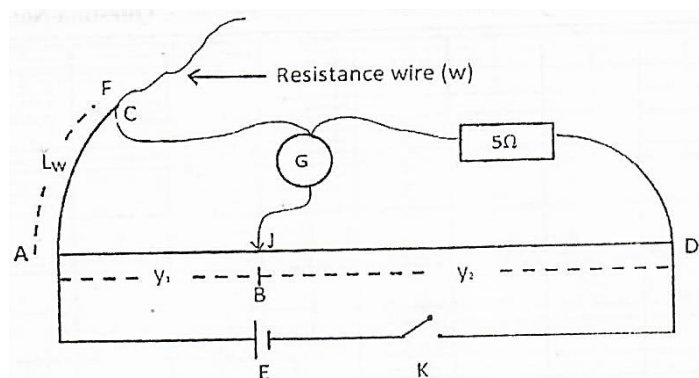
This was the least popular question attempted by the candidates. Nearly 25% of the candidates attempted this question out of which at least 15% score at least 18 marks out of 25 marks.

In the composite table 18% fail to indicate the value of θ_i . they directly compute the value associated θ_i . almost 10% of the candidates didn't round off to the required number of decimal places. Nearly 30% of the candidates have challenges in the plotting of the graph obtaining the slope from the graph. Almost 5% of the candidates use free hand to draw their graphs and nearly 15% wrongly label the axes of their graph.

Precautions were clearly stated by 60% of the candidates while some used incomplete statements like 'avoid parallax error. Calculations of C_b value was a very big challenge for nearly 75% of the candidates. The value simply substitute of m_b was unknown by most candidates they their own value for m_b .

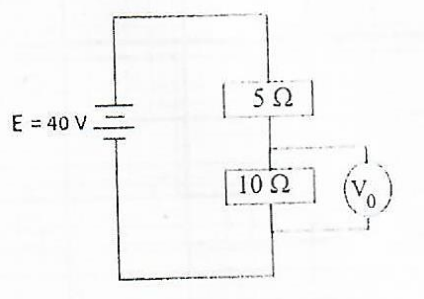
Question 3

(a)



You are provided with a source of electricity of emf, E , a centre-zero galvanometer, a metre rule, a key, K , a potentiometer of wire, AD , a standard resistor $R = 5\Omega$ a crocodile clip, C , a bare resistance wire, W , a jockey, J and connecting wires.

- (i) Using the electrical components provided, connect the circuit as shown in the diagram leaving the circuit open.
 - (ii) Connect the crocodile clip at a point, **F**, on the resistance wire such that $AF = L_w = 20.0 \text{ cm}$.
 - (iii) Close the circuit and use the jockey to determine the balance point, **B**.
 - (iv) Record the balance lengths, $AB = y_1$ and $BD = y_2$.
 - (v) Evaluate $P = \frac{y_1}{y_2}$ and $Q = \frac{L_w}{R}$.
 - (vi) Repeat the procedure for **four** other values of $L_w = 40.0 \text{ cm}$, 60.0 cm , 80.0 cm and 100.0 cm . In **each** case, record y_1 , y_2 and evaluate **P** and **Q**.
 - (vii) Tabulate the results.
 - (viii) Plot a graph with **P** on the vertical axis and **Q** on the horizontal axis.
 - (ix) Calculate the slope, *s*, of the graph.
 - (x) What is the significance of the slope?
 - (xi) State **two** precautions taken to endure good results.
- (b) (i) Two standard resistor A and B have resistances R_A and R_B respectively such that $R_A > R_B$,
using the same axes of a graph, show the relationship between the voltage and current for A and B.



- (ii) The diagram above is a potential divider circuit;
- I. Determine the value of V_0 , leaving your answer as a fraction.
 - II. Determine the ratio of the output voltage to input voltage.

The question was on electricity. Nearly 45% opted for this question. The observation was properly presented by at least 20% of the candidates. The values were properly computed and presented in the composite table. Nearly 15% face a very big challenges in determine decimals and significant figures. Similar challenges were face by at least 20% of the candidates in drawing the graphs and obtaining the slope. Some candidates didn't label the axes properly and used an unreasonable scale.

Precautions were clearly stated by nearly 60% of the candidates. But significance of the slope was neglected by a number of candidates. The illustration of the R_A and R_B diagram was clearly shown by 30% of the candidates. The computation of the output voltage and input voltage was clearly shown by 18% of the candidates.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PHYSICS 2

1. GENERAL COMMENTS ON THE PAPER

The Standard of the paper was quite appropriate for the level of the candidates. The questions selected covered a wide range of topics across the syllabus. The questions were clear and without ambiguities. The marking scheme was detailed and flexible in its interpretation to accommodate the various answers provided by candidates. The performance of candidates generally was not impressive and do not vary much in comparison to the previous examination. However, very few candidates scored zero mark. But equally so, few candidates scored above 40 marks. Majority of marks were below 20 out of a total of 60 marks

2. CANDIDATES' STRENGTHS

The scripts of the candidates did not show any notable strength. However, the few well prepared candidates were able to earn good marks in most of the questions in the paper.

3. CANDIDATES' WEAKNESSES

About 80% of the candidates scored below 20marks out of a total of 60marks which shows candidates' weakness in the following areas:

- Ignoring the use of key words and expressions in defining terminologies
- Doing calculations using the required formulae,
- Recalling appropriate words in answering certain questions
- Some candidates answered more than the required number of questions, and this could have affected their performance, as time needed to answer relevant questions was reduced.

4. SUGGESTED REMEDIES

Improvement in candidates' performance in subsequent examinations can be enhanced by considering the following suggestions:

- Familiarising with the syllabus and its content
- Adequately revising all the topics in the different sections of the syllabus,
- Interpreting the questions correctly prior to answering
- Revise past examination papers thoroughly while preparing for the exam
- Understanding the principles related to mathematical concepts and how each is applied in doing calculation.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

The force, F , acting on the wings of an aircraft moving through air of velocity, v , and density, p , is given by the equation $F = kv^x p^y A^z$, where k is a dimensionless constant and A is the surface area of the wings of the aircraft. Use dimensional analysis to determine the values of x , y and z .

This question was popular. About 80% of the candidates attempted it. However, about 5% of them substituted the correct dimensions and had the correct values of X , Y , and Z .

Question 2

- (a) Define strain energy.
- (b) Write an expression for the energy stored, E , in a stretched wire of original length, L , cross-sectional area, A , extension, e , and Young's modulus, Y , of the material of the wire.

About 85% of the candidates answered this question. Most of them could not define the term strain energy and state the expression for E in terms of L , A , e and Y .

Question 3

- (a) A projectile is fired at an angle, θ , to the horizontal with velocity, u . show that at any time, t , during the motion, the:
 - (i) horizontal component of the velocity is independent of t ;
 - (ii) vertical component of the velocity depends on t .
- (b) State the assumption on which projectile motion is based.

This question was not popular. About 30% of the candidates who attempted this question could state the horizontal component $V_x = u \cos \theta$

However, majority of them could not find the vertical component, $V_y = u \sin \theta - gt$

In the (b) part of the questions, about 10% state the assumption that is only the force of gravity that is acting on the body.

Question 4

State **three** differences between geostationary satellites and polar satellites.

About 40% of the candidates attempted this question. However, majority of them could not state the differences between geostationary and polar satellites.

Question 5

- (a) Using the kinetic theory, explain the term diffusion of fluid molecules.
- (b) Name **one** phenomenon that demonstrates that light behaves as a:
 - (i) wave;
 - (ii) particle.

This question was popular. Most of the candidates could define diffusion but failed to explain it in terms of kinetic theory. About 60% of these candidates could at least state a wave phenomenon and that of a particle.

Question 6

- (a) State **one** difference between an intrinsic and an extrinsic semiconductor.
- (b) Draw a circuit diagram to illustrate full-wave smoothing rectification.

This question was not popular. From those who attempted it, only 5% of them could state the difference between intrinsic and extrinsic semiconductors.

Nearly all who attempted this question could not draw the diagram correctly for a full wave smoothing rectification.

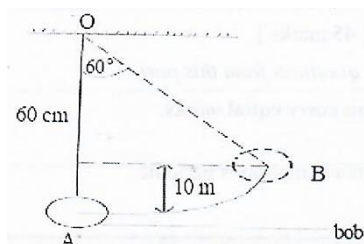
Question 7

- (a) What is fibre optics?
- (b) State **two** reasons why optical fibres are preferred to copper cables in the telecommunication industry.

This Question was popular. However, only about 10% of the candidates could describe what fibre optics is and gave reasons why optical fibres are preferred as to copper cables

Question 8

- (a) (i) State the reason why simple harmonic motion is periodic.
(ii) State **two** factors that affect the period of oscillation of a simple pendulum.
(iii) Sketch a graph of the total mechanical energy, E , against displacement, y , for the motion of
a simple pendulum from one extreme position on the other.
- (b) The diagram below illustrates an oscillatory pendulum



Calculate the work done in raising the pendulum to point **B**, if the mass of the bob is 50 g.
 $[g = 10 \text{ ms}^{-2}]$

- (c) A spiral spring spring constant, k , and natural length, l , has a scale pan of mass 0.04 kg hanging on its lower end while the upper end is firmly fixed to a support. When an object of mass 0.20 kg is placed on the scale pan, the length of the spring becomes 0.055 m and when the object is replaced with another object of mass 0.28 kg, the length of the spring becomes 0.065 m. Calculate the values of k and l . $[g = 10 \text{ ms}^{-2}]$.

About 70% of the candidates attempted this question. In this group, only 8% of them could state a reason why simple harmonic motion is periodic.

About 15% the candidates gave the factors that affects the period of oscillation of a simple pendulum. A few of them sketch the graph of Energy and distance well and about 10% of the candidates got the calculations right for the work done in (b) and the value of K in (c)

Question 9

- (a) Define **each** of the following terms used with simple machines:
(i) pivot;
(ii) load;
(iii) efficiency.
- (b) A truck of mass $1.2 \times 10^3 \text{ kg}$ is pulled from rest by a constant horizontal force of 25.2 N on a levelled road. If the maximum speed attainable in the process is 60 km h^{-1} . Calculate the:
(i) work done by the force;
(ii) distance travelled by the truck in reaching the maximum speed.
- (c) State **two** differences between absolute zero temperature and ice point.
- (d) An uncalibrated liquid-in-glass thermometer was used in determining a Celsius temperature. The readings are tabulated below:

Temperature $^{\circ}\text{C}$	-6	0	100
Length of column/cm	L	2.0	15.0

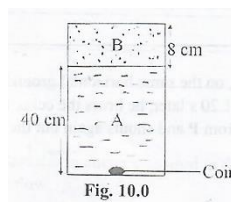
Determine the value of L .

This question was very popular. About 75% of the candidates who answered this question could define pivot, load, and efficiency of a machine.

Around 5% of them could solve the calculation in (b). Majority of them could not state the difference between absolute zero temperature and ice point.

Question 10

- (a) (i) Why are parabolic mirrors **suitable** for use in headlamps of vehicles?
(ii) Draw a ray diagram to illustrate the answer in 10(a)(i).
- (b) (i) State **two** applications of echoes.
(ii) An observer standing at a point, **P**, on the same horizontal ground as the foot, **H**, of a tower shout and 1.20 s later, he hears the echo. He then moved to another point **Q**, 40 m from **P** and shouts again but the echo was heard after 1.45 s. Calculate the:
I. distance between **P** and **H**;
II. Speed of sound in air.
- (c) (i) Define the term absolute refractive index of a medium.
(ii) A piece of coin falls accidentally into a tank containing two immiscible liquids **A** and **B** as illustrated in Fig. 10.0

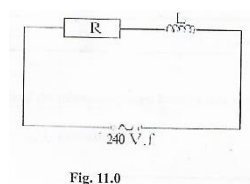


Calculate the displacement of the coin when viewed vertically from above.
[refractive index of **A** = 1.3, refractive index of **B** = 1.4]

About 60% of the candidates answered this question. However, majority of them could not give a reason for using a parabolic mirror in cars. Most of them gave an application of echo, use the formula $V = \frac{2d}{t}$. About 5% of them could define absolute refractive index and solved the problem

Question 11

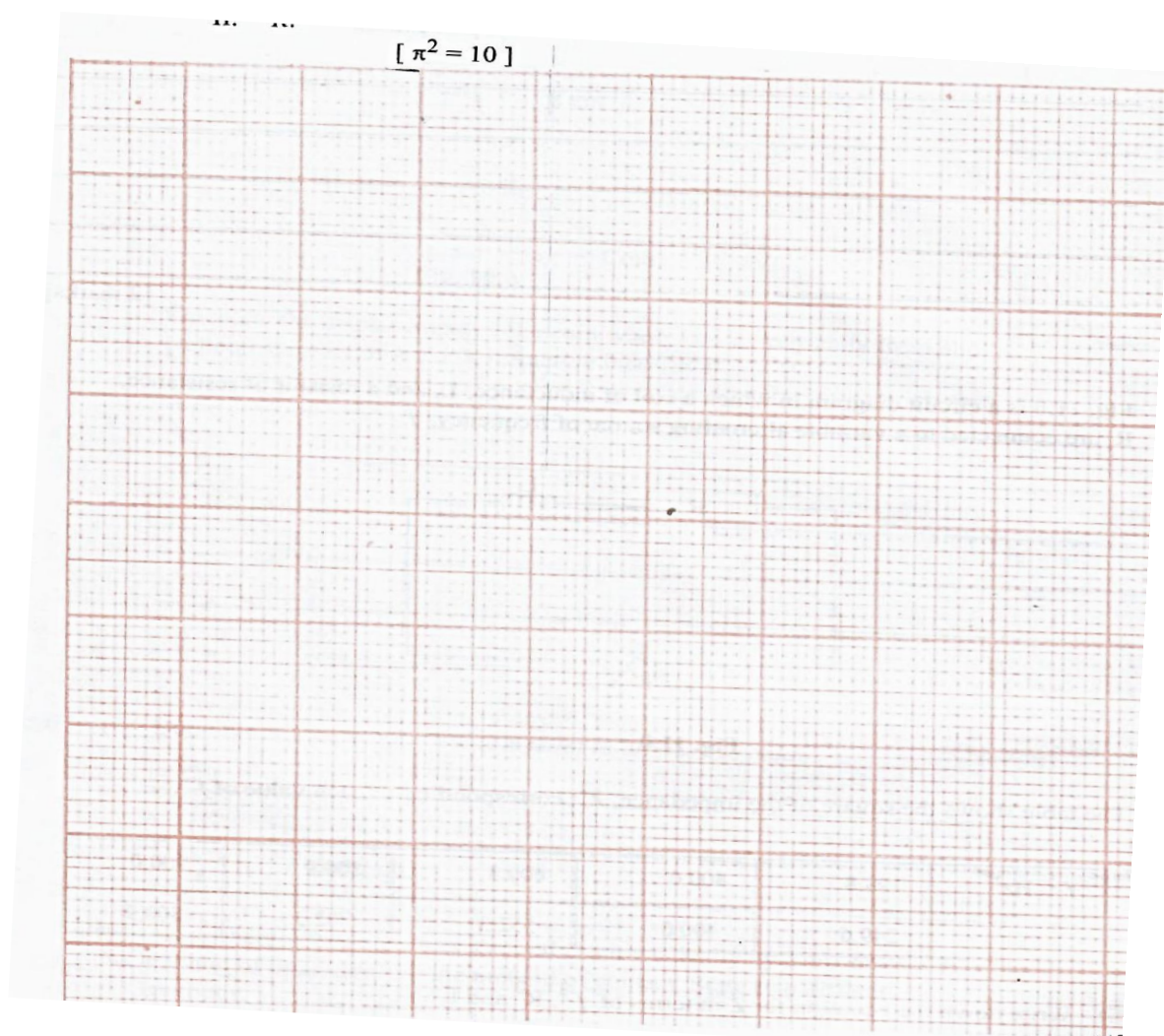
- (a) (i) Define the electric potential at a point in an electric field.
(ii) An uncharged body, **A**, was charged electrostatically by a test charge, **B**, using the method of induction and the method of contact. State **two** differences between the two methods.
- (b) An important precaution during an electricity experiment is to open circuit when readings are being taken. Give **two** reasons for the stated precaution.
- (c) Fig. 11.0 is a circuit diagram in which a coil inductance, **L**, and a resistor of resistance, **R**, are connected to a variable alternating source of frequency, **f**.



The table shows the square of the impedance, Z^2 ; corresponding to each value of f^2 .

F^2 / Hz^2	198.8	400.0	600.3	800.9	900.0
Z^2 / Ω^2	249.6	400.0	552.3	702.3	800.9

- (i) Write down the equation for Z in terms of f^2 , R^2 and L^2 .
- (ii) Plot a graph of Z^2 against f^2 and use it to determine the values of:
 - I. L ;
 - II. R .



This question was not popular. Majority of the candidates who attempted this question could not define Electric potential, state the difference between induction and contact method of charged bodies. However, few candidates plotted the graph correctly.

Question 12

- (a) State the function of **each** of the following parts of a modern x-ray tube:
 - (i) heater;
 - (ii) high tension source;
 - (iii) cooling fins.
- (b) State **one** reason for **each** of the following design features of a modern x-ray tube:
 - (i) the glass envelope is highly evacuated;
 - (ii) the target is a metal of very high melting point;
 - (iii) the cooling fins are located outside the glass envelope.

- (c) In a nuclear fission reaction, a nuclide ${}^{235}_{92}\text{U}$ is bombarded with a neutron to produce ${}^{93}_{36}\text{Kr}$ and ${}^{141}_{56}\text{Ba}$ with additional neutrons, the energy involved in the process is Q .
 [mass of ${}^{235}_{92}\text{U} = 235.044\text{ u}$, mass of ${}^{93}_{36}\text{Kr} = 91.898\text{ u}$, mass of ${}^{141}_{56}\text{Ba} = 140.914\text{ u}$, mass of neutron $= 1.009\text{ u}$, $1\text{ u} = 1.66 \times 10^{-27}\text{ kg}$, $c = 3.0 \times 10^8\text{ ms}^{-1}$]
- (i) Write down the balanced nuclear reaction equation for the process.
- (ii) State with reason whether Q is absorbed or released in the process.
- (iii) Calculate the value of Q in joules.
- (d) State **three** differences between nuclear fusion and nuclear fission.

About 35% of the candidates attempted this question. Only 5% of the candidates could score few marks in this question. This area of atomic and nuclear physics seemed not to be taught.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
SCIENCE (CORE) 2

1. GENERAL COMMENTS ON THE PAPER

The standard of the questions was fair, and the marking of scripts went on smoothly. The examination questions were well constructed, self-explanatory and within the scope of the syllabus. The three areas of the subject: physics, chemistry, and biology were all covered in the examination questions. This year's paper seems much cheaper compared to that of last year 2021.

The general performances of the candidates were not encouraging however the performance this year seems better than that of last year as the number of candidates scoring a total mark of zero has reduced this year.

2. CANDIDATES' STRENGTHS

The following strengths were discovered compared to that of last year.

- The percentage of candidates that attempted the calculation questions has increased about 20%.
- The percentage of candidates that scored a total mark of zero had reduced by 10% compared to last year.
- Biology related questions are still better attempted and better answered compared to Physics and Chemistry related questions which shows that biology topics are covered most.
- Candidates has shown improvement in supplying the units in the final answer of the numerical questions compared to the previous year.
- Candidates not attempting even a single question has also reduced compared to the previous year. Most of the candidates attempted the questions even if they did not score any mark.

3. CANDIDATES' WEAKNESSES

- Candidates lost many marks as a result of wrong spelling of scientist terms, not stating the formula and the units in the final answers of the calculation questions.
- Most of the candidates were unable to express their ideas clearly due to poor English.
- Most of the candidates were unable to read properly and be able to grasp the demands of the questions asked.
- About 5% of the candidates copied the questions without any answers to the questions, although there is an improvement compared to that of last year.
- Some candidates write unnecessary long answers to a question that only requires a sentence or even a single word.

4. SUGGESTED REMEDIES

- Candidates should be encouraged to read instructions thoroughly before attempting to answer the questions. Teachers should spend more time to explain numerical concepts to equip candidates to solve calculation questions.
- School should endeavour to complete the Science syllabus so that candidates are better prepared for exam.
- School should get teachers who specialized in science to teach the subject.
- As Biology related questions are still better attempted by Candidates year in year out compared to Chemistry and Physics related questions. The practices of team teaching in

schools with more Science teachers can help the students as some of the teachers may not be comfortable on all the three areas of subject.

- Science teachers should make students know that they lose valuable marks due to wrong spelling of scientific terms, not writing formula and not stating the units in the final answers of calculation questions. The teaching of spelling scientific terms during the teaching of science in school will help students greatly. Science teachers can strengthen this by organizing more spelling competition of scientific terms among students.
- The teaching of science cannot be effective without laboratories. Therefore, schools should get equipped science laboratories and avoid the teaching of science theoretically only.
- Schools should use the chief examiner's report to expose the teachers and students on issues of concern about the past exam and be better prepared for the future.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

PART I

Question 1

(a) *What is a force?*

This question was the most popular question in this compulsory part of the paper. About 90% of the candidates attempted this question and 85% of them managed to get at least a mark from the question.

This part of the question was the least popular compared to (b). Most of the candidates (about 30%) scored 1 mark out of 2 marks from this part of the question as they gave incomplete answer to the question.

Example: Instead of stating: A force is a pull or push on an object, they only gave the first part of the answer as: A force is a pull or push.

(b) *Name **four** types of forces.*

This was the part where about 85% of the candidates that attempted this question got at least a mark from the question. However, some lost marks because of spelling errors of the types of forces. Below are some of the spelling errors stated by some candidates which could not earn them marks:

Correct spelling	Wrong spelling
Frictional force	Frectional force, fritional force
Tensional force	Tentional force
Magnetic force	Mangetic force
Gravitational force	Gravtational force
Centrifugal force	Centrifigal force
Centripetal force	Centrpetal force

Question 2

(a) *What is a reversible reaction?*

This question was the least popular question in this part of the paper. About 90% of the candidates that attempted this question did not score marks.

Some of the candidates got 1 mark in this part as they stated that a reversible reaction is a reaction that proceeds in forward direction instead of giving the full answer as:

A reversible reaction is a reaction that proceeds in both forward and backward directions.

(b) *State **two** factors that affect the equilibrium position in a reversible reaction.*

The (a) part of this question was better attempted by candidates compared to (b). About 20% of the candidates that attempted this part of the question were able to state the correct factors as: Temperature, concentration, pressure/ volume.

Question 3

- (a) State the term that refer to **each** of the groups in the classification of living things:
- (i) largest group;
 - (ii) smallest group.

This question was the second least popular question in this part of the paper. However, the (b) part was better attempted by candidates compared to (a).

About 55% of the candidates instead of stating the largest group as kingdom and the smallest group as species, they gave the answer below and could not score marks:

largest group → mammals, animals, multicellular organisms, plants etc smallest group → unicellular organisms,

- (b) State **two** importance of classifying living things.

Only a few candidates (about 25%) that attempted this part of the question gave correct importance as follows below:

Enables scientists to establish ancestral relationship

For proper identification of living things

For proper study of living things

To distinguish between different groups of organisms

Question 4

An atom X has electronic configuration 2,8,2, state its:

- (a) atomic number;
- (b) group number;
- (c) valency;
- (d) period number.

This question was also popular as about 80% of the candidates attempted this question. About 45% of the candidates that attempted this question were able to score at least a mark by giving the correct answers to this question as follows below:

atomic number → 12

group number → 2

valency → 2

period number → 3

Question 5

Distinguish between a unicellular organism and a multicellular organism.

This question was a giving away question and popular for most of the candidates about 60% could distinguish between unicellular and multicellular organism as below:

A unicellular organism consist / is made up of a single/one cell whereas multicellular organism consist / is made up of many cells.

Few candidates could not score the two marks allocated to this question as they missed the answer as follows below:

A unicellular organism consist / is made up of one cell whereas multicellular organism consist / is made up of two cells.

PART II

Question 6

(a) (i) *Define pressure.*

This was the most popular question in part 11 of the question as about 75% attempted this question.

Only few candidates (about 5%) who attempted this part of the question got the two marks allocated to the question. Most could not score because they gave incomplete definition. Example of such incomplete definition is:

Pressure is a force

The above incomplete definition was what most candidates supplied instead of the correct definition as follows below:

Pressure is force per unit area / the force acting perpendicular per unit area of a surface.

(ii) *A storage tank of height 5.0 m is completely filled with kerosene. Calculate the pressure exerted on the base of the tank. (Density of kerosene = 800kgm^{-3} ; $g=10\text{ ms}^{-2}$)*

As calculation questions was not popular, this was one of them. Most of the candidates lost valuable marks for failing to write the formula and unit on the final answer. However, this was the best attempted among the calculation questions of the paper.

(b) (i) *Give three reasons why air is considered as a mixture.*

Most of the candidates that attempted this part of the question could not get the three marks allocated to it as the reasons they gave were wrong. Below are some of those reasons given:

Air is colourless

Air is odourless

Air cannot be seen

(ii) *Name the components of air that are compounds.*

About 75% of the candidates that attempted this part of the question scored at least a mark as they listed all the components of air. Example

Oxygen

Nitrogen

Carbon dioxide

Water vapour

Candidates not understanding the demand of questions was shown in this part of the question as the question was requesting for only the components of air that are compounds. Some of them do not know what a compound is. However, they scored as marks were allocated to the components that are compounds among the list they gave. This was a waste of time for them listing all the components and waste of ink.

(iii) *State the percentage composition of the components of air that are compounds.*

As in (b) (ii), candidates listed the percentages compositions of all the components of air. They again got marks as marks were given to only the percentage compositions of the components that are compounds. However, this was again a waste of time and resources to both the candidates and the examiners.

(iv) *Name the component of air that is used to make fertilizer.*

Most of the candidates that attempted this question did the same as in (b) (ii) and (iii) as they listed all the components instead of limiting it to only Nitrogen which was the correct answer.

(c) Explain **one** way in which **each** of the following specialized cells is adapted to its function:

- (i) red blood cell;
- (ii) palisade cell;
- (iii) nerve cell.

The red blood cell and nerve cell were better attempted compared to the palisade cell. Some of the candidates did not understand what palisade cell is. Less than 2% of the candidates scored 1 mark for palisade cell to absorb sunlight. About 20% of the candidates that attempted this part of the question gave wrong answer to the red blood cell instead. Below are examples:

Red blood cell transport nutrients in the body.

Red blood cell transport blood in the body.

When the correct answers were as follows:

Contains haemoglobin for binding / bonding / transporting oxygen

Absence of nucleus gives more space for carrying oxygen.

(d) (i) What are organelles?

Some of the candidates (about 70%) that attempted this part of the question could not score mark as they stated organelles as organs in the body instead of structures in cells that carry out specific functions.

(ii) Name **two** organelles found in cells.

About 25% of the candidates that attempted this question lost marks for wrong spellings or the organelles named. Below are some of the examples of the wrong spellings:

Correct spelling	Wrong spelling
Mitochondria	Mitoechondria
Nucleus	Noucleus
Ribosome	Rebosome
Chloroplast	Chlorplast

Question 7

(a) (i) What is an ion.

This question was also popular as about 60% attempted it. This question was misunderstood by some candidates as they thought ion to be the metal iron and were stating ion as a metal instead of a charged particle. Some lost 1 mark as they gave incomplete answer as below:

Ion is charged.

(ii) An ion is represented as X^w_y . State what is represented by:

- I. w;
- II. y.

Some of the candidates stated w to be the atomic number instead of Charge and therefore lost the mark.

some candidates also stated y to be atomic number instead of Number of atoms (in the ion) and therefore lost the mark.

(iii) Write the formula of each of the following ions:

- I. ammonium ion;
- II. tetraoxosulphate (vi) ion.

Instead of the correct formula NH_4^+ , some stated the formula as NH_3^+ and could not get the mark

Instead of the correct formula SO_4^{2-} , some stated the formula as HSO_4^{2-} and SO_4^{+2} and could therefore not score the mark

(b) *A motorcycle starts from rest and attains a velocity of 25ms^{-1} in 5 s. It maintains the velocity for the next 10 s and then comes to rest in further 10 s.*

(i) *Sketch a velocity – time graph for the motion.*

About 30% of the candidates that attempted this question scored at least a mark or 2 marks out of the four marks allocated to the question. However, some lost marks because of the following:

- Not labelling the axis correctly
- Not stating the points on the axis

(ii) *Calculate the average velocity.*

Marks were lost by candidates that attempted this part of the question due to the following:

Not stating the formula

Not substituting correctly

Not stating the unit in the final answer

(c) *State the part of the human digestive system where **each** of the following processes mainly occur:*

- (i) *peristalsis;*
- (ii) *mastication;*
- (iii) *storage of bile;*
- (iv) *absorption of amino acids.*

Marks were lost because of wrong spellings and wrong representation of the parts. Below are some examples:

Process	Correct spelling of part of the human digestive system	Wrong spelling	Wrong representation of the part
Peristalsis	Oesophagus / gullet / stomach / intestine	Osophagus , gullete, stormach	Gall bladder, mouth
Mastication	Mouth / buccal cavity	bucal cavity	Stomach
Storage of bile	Gall bladder	Gal bladder, gall blader	Small intestine, liver
Absorption of amino acids	Small intestine / ileum	Ilieum	Stomach

(d) *State **two** adaptations in the part of the human digestive system where each of the following processes occur:*

(i) *conversion of proteins to;*

Marks were lost because of stating the part of the digestive system instead of the adaptation.

Example: Stomach was stated as the answer instead of:

Presence of pepsin / renin / dilute HCL / low pH

(ii) *absorption of digestive food.*

Marks were also lost for starting the part of the digestive system instead of the adaptation.

Examples: Small intestine was stated as the answer instead of:

Large surface area / presence of villi / presence of numerous capillaries / rich blood supply / thin wall

Question 8

(a) (i) *What is electromotive force?*

This question was not popular as only about 25% of the candidates attempted it.

This part of the question was not popular. About 95% of the candidates that attempted this question part of the question could not get a mark.

(ii) *The potential difference across **two** resistors of 4Ω each is 10 V . calculate the current flowing through each resistor when they are connected in parallel.*

This calculation part of the paper was the most attempted compared to the other calculation questions of the paper. This may be because it was shorter in working. However, marks were lost by most candidates because of failing to state the formula and unit in the final answer.

(b) *Distinguish between ionic and covalent compounds in terms of:*

- (i) *electrical conductivity;*
- (ii) *melting points;*
- (iii) *mode of formation;*
- (iv) *solubility in water.*

A good number of candidates (about 35%) got marks on this part. However, some could not score marks because gave the opposite to the correct answers. Below are examples:

Instead of stating the correct answer: Ionic compounds conduct electricity when dissolved / molten whilst covalent compounds do not conduct electricity. They wrote: Covalent compounds conduct electricity while ionic compounds do not conduct electricity.

Instead of stating the correct answer: Ionic compound have high melting point whilst covalent compounds have low melting points. They wrote covalent compounds have a high melting point whilst ionic compounds have a low melting point.

Instead of stating the correct answer: ionic compounds are formed by the transfer of electrons of whilst covalent compounds are formed by the sharing of electrons.

Instead of stating the correct answer: Ionic compounds are soluble in water whilst covalent compounds are insoluble in water. They wrote ionic compounds are insoluble in water whilst covalent compounds are soluble in water.

(c) *State:*

- (i) *the source of energy in a food chain;*

Most of the candidates (about 50%) got marks to this part of the question by stating Sun as the source of energy in a food chain. This was the most frequent answer compared to the other answer 'producer'.

- (ii) *the energy change which occurs in a food chain;*

This was the most unpopular part of this (c) part as most got it wrong or left it not attempted.

- (iii) ***two** benefits of decomposers;*

The most frequent answer that candidates stated that earned them marks are:

- they provide nutrients to the soil
- they get rid of dead plants and animals

- (iv) ***two** examples of decomposers.*

Most of the candidates (about 40%) that attempted this question gave: Earth worm, bacteria, fungi and termites as examples and therefore got marks. These were the frequently stated examples. However, some got spelling errors as below:

Correct spelling	Wrong spelling
Earth worm	Earth warm
Fungi	Fungie
Bacteria	Bactera
Termite	Tarmite

(d) Name the chromosomes in males that brings about the birth of a:

- (i) male;
- (ii) female.

Some candidates lost marks for stating the following as answer:

Male → sperm

Female → egg, ovary

(e) State the conversion factor from:

- (i) meter to micrometer;
- (ii) gram to kilogram.

This (e) part of this question was the worst attempted part of this question 8. Only less than 1% could give the correct answers as:

meter to micrometer → 10^6

gram to kilogram → 10^{-3}

Question 9

(a) (i) State the type of joint formed at the shoulder in human.

This was the most unpopular question of this paper as only about 10% of the candidates attempted this question.

This part of the question also was successfully answered by about 40% of the candidates that attempted the question. Most of them could state the joint as: Ball and Socket

(ii) Name **two** bones that form the joint in 9 (a) (i).

Most of the candidates that attempted this part of the question could not score any mark because of spelling errors of the bones below are examples of the spelling errors:

Correct spelling	Wrong spelling
Scapula	Scatular, Scapulae
Humerus	Humarus, Humorous

(iii) Name **two** components of a movable joint.

Marks were also lost to this part of the question by many candidates because of spelling errors of the component below are some examples:

Correct spelling	Wrong spelling
Ligament	Legament, ligarment
Tendon	Tendone, tendom
Synovial membrane	Synoval membrane, synovial membran
Synovial fluid	Synoval fluid, synovial fluid
Articular cartilage	Artcular cartilage

(b) (i) *What are antagonistic muscles?*

Marks were lost to this part of the question by many candidates because they supplied one part of the answer. Example:

Instead of stating: A pair of muscles which contract and relax alternatively / opposingly to effect movement, the alternatively / opposingly was left out. This made them get one of the marks.

(ii) *State how antagonistic muscles help in bending the human arm at the elbow.*

Many of the candidates either left this part of the question not attempted or stating only the biceps and triceps and therefore lost marks. They did not state how these muscles help in bending the human arm at the elbow. The correct answer is: The biceps contract and the triceps relax.

(c) (i) *What is meant by heat capacity?*

This part was also not popular as about 98% of the candidates that attempted this question left it blank.

(ii) *The temperature of 0.25 kg of water dropped from 80 °C to 30 °C. Calculate the amount of heat energy released. (Specific heat capacity of water = 4200 J kg⁻¹ °C⁻¹).*

Some of the candidates that attempted this part of the question also lost valuable marks because of the following:

- Not writing the formula
- Not stating the unit in the final answer

Some wrote the formula correctly and substituted correctly but multiplied wrongly as in:

$$= 0.25 \times 50 \times 4200$$

$$= 52500$$

Most of them got a different figure

(iii) *List **two** sources of heat.*

About 45% of the candidates that attempted this question could get at least a mark from this question because of this part. This part of the question saved them from getting a zero from this question. The most frequent answers that were listed by most of the candidates were sun, fire, electricity. Some lost marks by stating the following examples below:

- Charcoal
- Wood

(d) *State **one** use of aluminium that is mainly related to each of the following properties:*

(i) *low density;*

Instead of manufacture of aircraft parts, some of the candidates stated manufacture of cooking utensils and could therefore not get the mark

(ii) *thermal conductivity;*

Instead of manufacture of cooking utensils, some of the candidates stated making of electrical wires so they could not get the mark allocated to it.

(iii) *ductility;*

instead of making of electrical wires, some of the candidates stated manufacture of cooking utensils and could therefore not get the mark allocated to it.

(iv) *resistant to corrosion.*

This one was better attempted as the answers that one can give are numerous. Examples: Manufacture of furniture / doors / windows / aircraft parts / cooking utensils / food packing

(e) (i) *Write the functional group of each of:*

- I. *alkenes;*
- II. *alkanols.*

About 95% of the candidates that attempted this question scored no mark on this part of the question or left it blank. The (e) II. was better than I. as few of the candidates could write the functional group of alkanols as OH

(ii) *State what could be observed if bromine water is added to each of:*

- I. *alkenes;*
- II. *alkanols.*

About 90% of the candidates that attempted this question 9 scored no mark on this part of the question or left it blank. Only about 1% of the candidates that attempted this question got marks on this part of the question.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
SCIENCE 3

1. GENERAL COMMENTS ON THE PAPER

The 2023 science paper 3 for school candidates was an excellent assessment paper, providing discrimination among candidates of different abilities. The paper was standard and provided a balanced coverage of the three main branches of science. This ensured that no candidate was disadvantaged based on their weakness in any of the branches of science.

It is however disappointing that the general performance of candidates was below average. Nevertheless, a slight improvement compared to last year was recorded.

2. CANDIDATES' STRENGTHS

- Graph plotting
- Taking readings of marked distances as in question 5
- Measuring distances as in question 3
- Labelling of parts of a diagram as in question 2

3. CANDIDATES' WEAKNESSES

- Errors in spelling labelled parts and scientific words.
- Inability to read the volume of a liquid as in question 1
- Weak practical knowledge.
- Inadequate preparation.
- Poor interpretation of questions.
- Lack of understanding of basic scientific concepts.

4. SUGGESTED REMEDIES

- Candidates should ensure adequate preparation for the examination.
- More practical lessons should be incorporated in the teaching and learning of science.
- Candidates must ensure absolute adherence to rubrics of questions.
- Correct spelling of scientific words should be emphasized during science lessons.
- Candidates should work on their understanding and interpretation of questions.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Note: [What were the requirements of the question? Did the candidates do well on this question? If not, how did they understand it? As much as possible give figures, example: "50% of the candidates performed well on this question."]

Question 1

- (a) ***Figure 1(a)** is an illustration of an experimental set-up used to investigate the strengths of two acids, A and B, 25 cm³ of sodium hydroxide solution was completely reacted with **each** of the acids and the volumes of acid used were recorded. The steps were repeated two more times for **each** of the acids. **Figure 1(b)(i)** and **figure 1(b)(ii)** illustrate a section of the burette showing the volumes of acid A and B used respectively. Study the illustrations carefully and answer the questions that follow:*

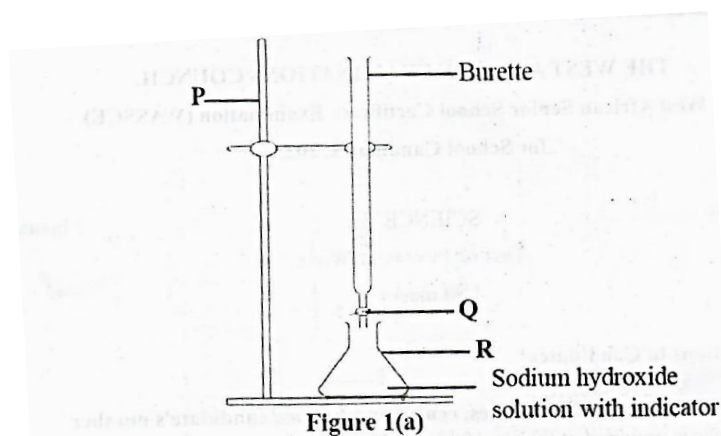


Figure 1(a)

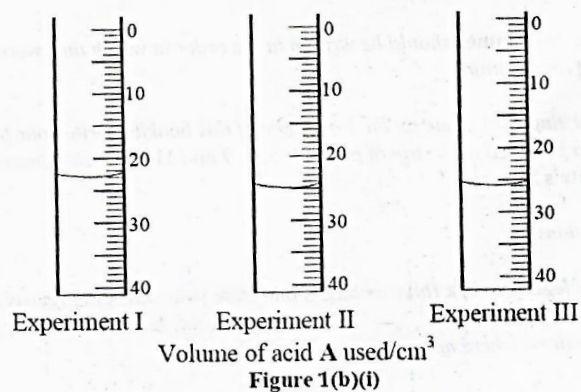


Figure 1(b)(i)

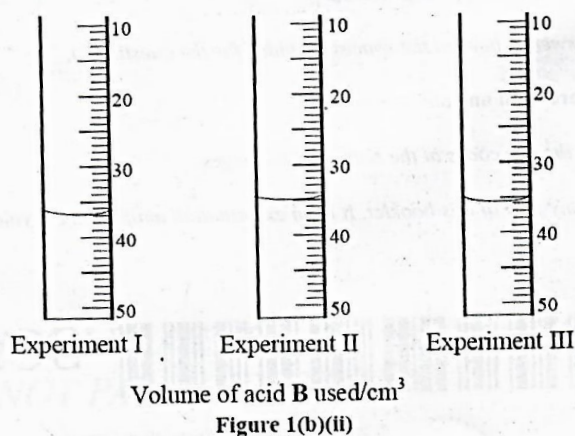


Figure 1(b)(ii)

- (i) Name **each** of the parts labelled **P**, **Q** and **R**.
(ii) What is the function of the part labelled **Q**?
- (b) Read the volumes of acid used and record the values in the table below.

	Experiments		
Volume of acid A/cm ³	I	II	III
Volume of acid B/cm ³			

- (c) (i) Why was an indicator added to the sodium hydroxide solution in the part labelled **R**?
(ii) Name a **suitable** indicator which could be used in the experiment.
- (d) Give a reason for carrying out the experiment **three** times for **each** acid
- (e) (i) Calculate the average volume of:
I. acid **A** used;

II. acid B used.

(ii) Which of the acids is stronger?

(iii) Give a reason for the answer in 1(e)(ii).

(f) (i) Name the types of products formed in the part labelled R.

(ii) Name the type of reaction that occurred in the part labelled R.

Comments

This question was about titration to find out which of two acids is stronger.

(a)(i) Many candidates were able to identify and name the tap.

Equally, candidates were able to identify the retort stand and conical flask. However, quite a good number of these candidates could not spell the names of these parts correctly. Consequently, marks were lost by these candidates. Teachers should find a solution to this chronic problem.

(ii). This revealed that a good number of candidates are not familiar with this concept of titration. This is why they failed to state the function of the tap with respect to the experiment. Many candidates simply stated that 'the tap is use to open and close'.

(b) Most candidates could not read the volumes of the acids correctly. This showed that candidates lacked the skill of reading volumes of liquids.

(c)(i) Most candidates could not state the role of the indicator in this experiment. This also indicates that candidates lacked this practical knowledge.

(ii) A good number of the candidates were able to name the indicator. However, inability to spell the names correctly denied them the marks.

(d) Due to lack of practical skills, candidates do not know why experiments of this nature are repeated. Consequently, many of the candidates scored poorly in this question.

(e)(i) Candidates showed great skill in this question, though for the wrong reason. Candidates that got the volumes in 1(b) wrong, were able compute the averages for the values they obtained.

(ii) Some candidates correctly identified the stronger acid. Most of the candidates thought that the acid with the higher average volume is stronger. Teachers should endeavour to make this idea clearer to their candidates.

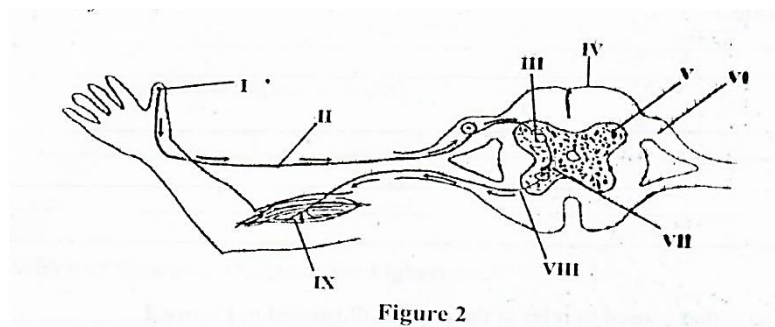
(iii) This reflected (e)(ii). Some of the candidates that stated the correct answer for (e)(ii) gave the correct explanation. There was, however, strong evidence that some of these candidates merely guessed the answer for the stronger acid. Consequently, they failed to give to the correct reason for their choice.

(f)(i) Many candidates were able to deduce the products of the reaction, even though some of them misspelt the word salt.

In (ii), candidates were often able to recall the name of the reaction (neutralisation), but a good number could not spell the name correctly.

Question 2

Figure 2 is an illustration of a process which occurs in humans. Study the figure **carefully** and answer the questions that follow:



(a) Name **each** of the parts labelled **I, II, III, IV, V, VI, VII, VIII** and **IX**.

(b) Give **one** function of each of the part 3 labelled:

(i) **I**;

(ii) **II**;

(iii) VII.

- (c) Describe **briefly** how the process illustrated in **Figure 2** occurs when the part labelled **I** is pricked with a needle.
- (d) State the term that is used to refer to the process illustrated in **Figure 2**.

Comments

This question was about the reflex arc and reflex action. A significant number of candidates did not attempt the question.

(a) Many of the candidates that attempted the question were able to identify the, but could not score all marks due to spelling errors. This is a serious cause for concern.

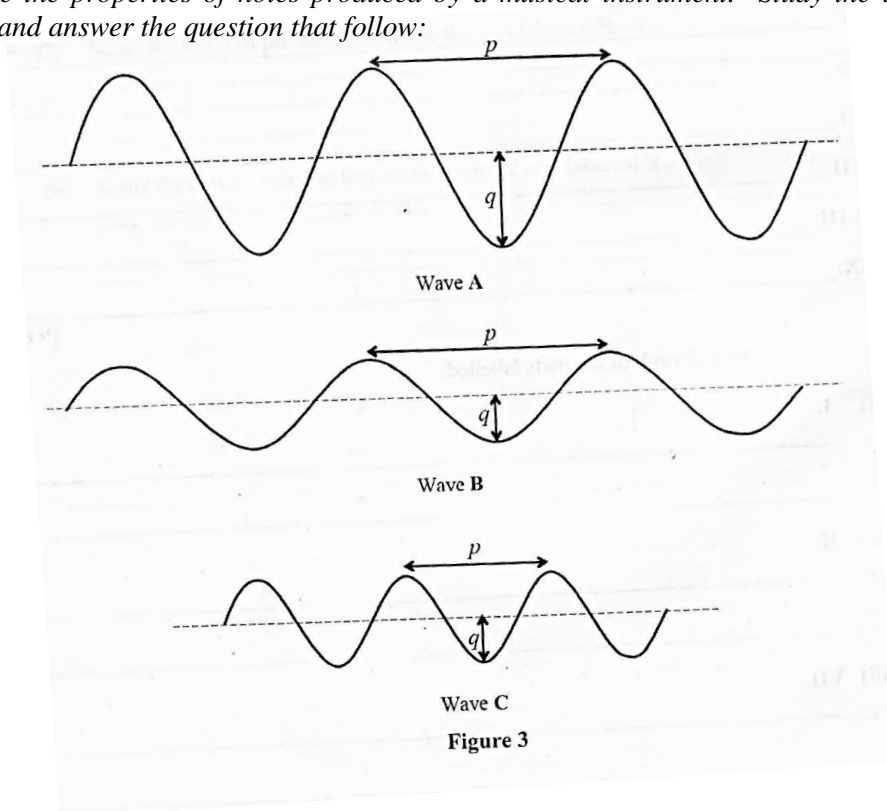
(b). Candidates did very in stating the function of parts I and II but could not do the same for part VII. This is because this part was wrongly identified in (a).

(c) This question required an explanation of reflex action and candidates found this difficult and a significant number of candidates either did not attempt it or attempted it but scored zero.

(d) The outcome of this question is a replica of (c). Those who dared, could not spell the word, reflex correctly.

Question 3

Figure 3 is an illustration of the waves produced by an oscilloscope during the experiment to investigate the properties of notes produced by a musical instrument. Study the illustration carefully and answer the question that follow:



- (a) (i) Which of the waves represents the loudest sound?
(ii) Give a reason for the answer in 3(a)(i).
- (b) (i) Which of the waves represents the highest pitch?
(ii) Give the answer in 3(b)(i).
- (c) What property of the waves is represented by **each** of:
(i) length p ;
(ii) length q ?

- (d) Measure the lengths p and q for each of the waves **A**, **B** and **C** and record the values in the table below.

	Wave A	Wave B	Wave C
Length p/cm			
Length q/cm			

- (e) State **one** observable difference between:
- waves **A** and **B**;
 - waves **B** and **C**.

Comments

This question was about the properties of sound waves. A significant number of candidates did not attempt the question. There was evidence that candidates found some aspects of this question challenging.

(a) In (i) many candidates were often able to identify the wave that represents the loudest sound. In (ii), most of the candidates could not explain why the wave identified in (a)(i) represents the loudest sound.

(b) In (i) and (ii), candidates often confused pitch and loudness within their answers. The most common mistake was the assumption that the bigger wave has the highest pitch.

(c) Many candidates also confused about what the properties the lengths p and q represented. There was hardly any clear trend in candidates' answers, which suggests that candidate had no clear understanding of what the question demanded.

(d) A good number of the candidates found this question quite favourable. Many of the learners were able to measure the lengths p and q correctly.

(e) Candidates could not use the right words or terms (such as amplitude and wavelength) to state the differences between the sound waves.

Question 4

Figure 4 is an illustration of a set-up used during an experiment to investigate the composition of inhaled and exhaled air. Air was repeatedly breathed in and out through the rubber tubing several times. Study the illustration and answer the questions that follow:

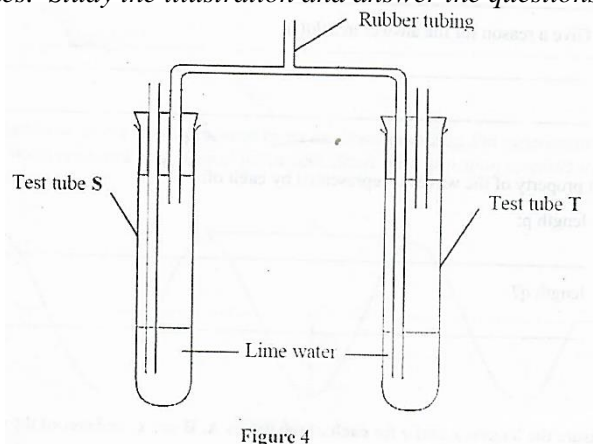


Figure 4

- Explain** why the long tubes were dipped in the lime water.
- In which of the test tubes would the colour of lime water change **first**?
- State the colour change in 4(a).
- What conclusion could be made about the experiment?
- State **one** safety precaution to be taken during the experiment.

Comments

This question was about an experiment to investigate the composition of exhaled and inhaled air. (a) This was most challenging question for candidates. About 80 % of the candidates could not explain why the long tubes were dipped into the lime water.

(b). There was evidence that candidates were not really sure about in which of the test tubes the lime water changes first. There was a split between the number of candidates who did and those who did not provide the right responses.

(c) Most candidates were able to recall the effect of carbon dioxide on lime water.

(d) Candidates also found this question a bit challenging and many times the question was left unanswered.

(e) Candidates were able to state a precaution, though some of the precautions were inappropriate.

Question 5

An experiment was carried out to determine the relationship between object distance U and image distance V using a converging lens. A pin was placed at various distance from the lens and the corresponding image distances were measured. **Figure 5(a)** shows the object distances $U = U_1, U_2, U_3, U_4$ and U_5 and **figure 5(b)** shows the corresponding image distances $V = V_1, V_2, V_3, V_4$ and V_5 .

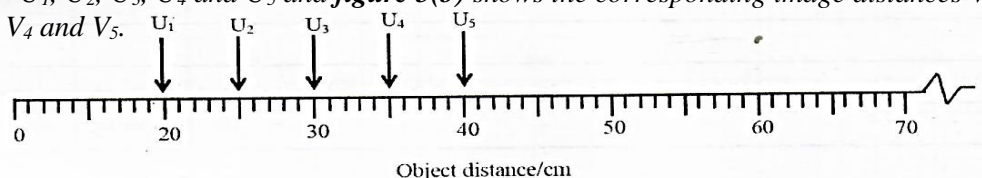


Figure 5(a)

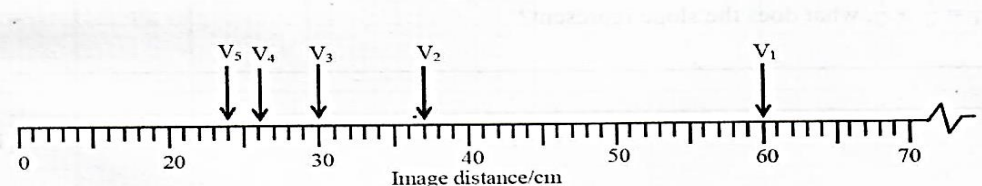


Figure 5(b)

(a) Read the object distance $U = U_1, U_2, U_3, U_4$ and U_5 and the corresponding image distances $V = V_1, V_2, V_3, V_4$ and V_5 and complete the table.

U/cm	V/cm	$U \times V$	$(U+V)/\text{cm}$
$U_1 =$	$V_1 =$	$U_1 V_1 =$	$U_1 + V_1 =$
$U_2 =$	$V_2 =$	$U_2 V_2 =$	$U_2 + V_2 =$
$U_3 =$	$V_3 =$	$U_3 V_3 =$	$U_3 + V_3 =$
$U_4 =$	$V_4 =$	$U_4 V_4 =$	$U_4 + V_4 =$
$U_5 =$	$V_5 =$	$U_5 V_5 =$	$U_5 + V_5 =$

(b) Plot a graph of UV on the vertical axis against $(U + V)$ on the horizontal axis.

(c) Calculate the slope of the graph.

(d) If $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$, what does the slope represent?

Comments

This question was about an experiment to determine the relationship between object distance and image distance of a converging lens.

(a) Candidates did extremely well in this question. This explains why about 80 % of candidates scored more than half of the marks of the question.

(b) and (c). Many candidates were able to plot the graph and calculate the slope. There were a few cases where candidates could not use the appropriate and correct scales for the axes of the graph.

(d) This was quite challenging, as many candidates could

**COMMERCIAL
SUBJECTS**

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
COMMERCIAL SUBJECTS

1. STANDARD OF THE PAPER

The chief examiners reported that the standard of the papers was within the level of the candidates tested.

2. CANDIDATES' PERFORMANCE

The chief examiner for Business Management indicated that there was improvement in candidates' performance. However, the chief examiners for Financial Accounting, Commerce and Cost Accounting observed a drop in performance

3. CANDIDATES' STRENGTHS

Candidates demonstrated strength in the following:

- High scores in questions 2, 3 and 4 in Business Management.
- Good performance in question 1 in Commerce.
- Good responses in the theoretical aspect of section A in Financial Accounting.
- High scores in questions 1, 3 and 9 in Principles of Cost Accounting.

4. CANDIDATES' WEAKNESSES

Candidates' weaknesses were reported in the following:

- Responses to questions 3, 4 and 5 in commerce were poor.
- Poor spelling, wrong numbering, and non-adherence to rubrics in Business Management.
- Inability to clearly identify the error involved in each transaction in question 2 in Financial Accounting.
- Lack of good examination planning as candidates did not take their time to read and select the questions they could answer well poor command of the English Language, poor time management and non-adherence to rubrics in Principles of Cost Accounting.

5. SUGGESTED REMEDIES

The following suggestions were given by the Chief Examiners to improve performance:

- Candidates should always read instructions and adhere to the rubrics of the paper.
- Candidates are encouraged to attempt their best questions first while also apportioning time to each question and show workings within the solution to attain maximum scores.
- Candidates should give correct headings to accounts to attain maximum scores.
- Candidates should restrict themselves to the questions asked rather than spending time to show other aspects which do not attract marks.
- Candidates are advised to read over their work before submitting their scripts.
- Teachers are advised to spend valuable time on the Practice aspect of Financial Accounting and actively involve students in solving practical exercises.
- Regular class exercises and assignments at the end of every topic taught will help assess students' level of understanding.
- Tutors should endeavour to cover all areas of the syllabus well ahead of the exams to give enough time for revision.
- Tutors are advised to revise past questions and discuss the answers with their students in class.

- The use of the internet could also be of help to acquaint students with the latest development in their subjects.
- For theory questions, candidates are advised to give examples to support answers to enhance clarity in their work. They should also show all workings leading to final answers.
- Candidates should purchase recommended textbooks and stop relying on pamphlets which are mere supplementary materials.
- It is a good idea to buy past question papers from WAEC to acquaint oneself with the format of the questions and the rubrics.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
BUSINESS MANAGEMENT 2

1. GENERAL COMMENTS

Generally, the paper was within the candidates' comprehension and within the range of the syllabus. The candidates were therefore expected to perform very well.

Compared to last year's paper, this year's paper appeared simple and unambiguous. The recurrent problem of candidates' inability to interpret the key words in the questions was a problem in about 30% of the scripts marked. Candidates were unable to write simple sentences. About 35% of the candidates were not able to demonstrate basic knowledge of the subject. Candidates' performance in this year's paper was slightly better than the previous year. The zero (0) scores reduced drastically. Questions 1b, 3a, b, 6 and 8 were well answered while 2a, 5b and 7 were poorly attempted.

2. CANDIDATES' STRENGTHS

In general, the performance of the candidates in questions 1b, 3a, b, 6 and 8 was close to excellent. About 70% of those who attempted these questions scored good marks. It showed that these candidates were well prepared for the examination. They numbered their questions correctly, adhered to instructions and correctly spelled most management terms.

3. CANDIDATES' WEAKNESSES

Several factors contributed to the poor performance of about 35% of the candidates.

a) SPELLING MISTAKES

The inability of candidates to spell key management terms, for example: Board of directors, partnership, limited liability, tariff etc. was one of the major factors responsible for their poor performance.

b) RUBRICS OF THE EXAMINATION

About 5% of the candidates did not answer question one which is always compulsory. Furthermore, 95% of the candidates answered more than a question on a page, some even answered all the questions on a single page. This practice not only made marking difficult for examiners but even the transfer of marks to the top page was very hard.

c) NUMBERING OF QUESTIONS

Wrong numbering of questions was another problem. About 15% of the candidates wrongly numbered their questions. For example, a candidate numbered question '3 but provided answers for question "8". The candidate scored zero for that question because the answers given were wrong. Examiners also observed that 20% of the candidates started a question for example on page 3 of the answer booklet and completed the answer on page 10.

d) Some candidates wrote detailed introductions which did not yield them any mark.

4. SUGGESTED REMEDIES

- Candidates should always read the instructions and adhere to the rubrics of the paper.
- Candidates should avoid writing unnecessary introductions to questions as marks are not awarded for such details.
- Question one must be answered plus any other three questions

- It is a good idea to buy past question papers from WAEC to acquaint oneself with the format of the questions and the rubrics.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Read the case below carefully and answer the following questions.

KUMASI LEATHER WORKS

Kwame, Yaw and Kofi have a lot in common. They attended the same basic school, played football together, and shared a passion for footwear and leather products in general. It did not come as a surprise to their numerous friends when the three friends decided to set up the *Kumasi Leather Works*, to translate their passion into a business. They had very limited funds with which to start the business. In order to keep operating costs low, they assigned various roles and functions to themselves.

Business picked up during the second year. The three friends therefore decided to expand the business. However, their key problem was the lack of funds to support the intended expansion. They approached Wofa Kobby, a popular trader, for financial assistance. Wofa Kobby promised to provide the needed funds in exchange for an interest in the business. He agreed with the three friends that there was no need for him to be personally involved in the day-to-day operations of the business because he was confident that they could handle it perfectly.

Following these encouraging development, Kwame, Yaw and Kofi contacted the Small Enterprises Development Authority (*SEDA*) for advice on a wide range of business issues. The three friends interacted with officers of *SEDA* for one week, during which they established rapport which meant that they could access the Authority's expertise anytime.

Out of these interactions, there emerged the realization that there was the need for a formal relationship with Wofa Kobby, the financier. They discussed the merits and demerits of all forms of business ownership, bearing in mind that Wofa Kobby had to be part of the ownership structure. They agreed that they were too inexperienced to roll out a Limited Liability Company and therefore opted to retain the current status of a partnership.

- Identify the type of business Kumasi leather works would operate when Wofa Kobby is fully on board as proposed.*
- State **four** features of the type of business being operated by Kumasi Leather.*
- What will happen to Wofa kobby's investment if the business is liquidated?*
- If you were the Small Enterprises Development Authority (**SEDA**) business advisor, what four reasons would you give to convince the three friends to opt for a limited liability company?*

This question was compulsory but 6% of the candidates did not answer it. It was a question on partnership to be converted into a private limited company in the future. Over 80% of the candidates were able to identify the type of business in 1(a) and 55% gave the features of the business. Candidates performed poorly in part "d" which required them to indicate benefits of a limited liability company. The highest mark scored was 6 out of 12 marks

Question 2

- Outline the first **three** steps in the decision making process.*
- Explain the **three** levels of management decisions.*

About 70% of the candidates attempted this question. It required a recall of the first three steps in decision making. Most of the candidates stated the steps but not in the correct order. About 20% of those who attempted this question gave the correct answers. In part "b", candidates were to explain the three levels of management decision making. However, 60% of the candidates

merely identified the levels and could not explain them or indicate the types of decisions at each level.

Question 3

- (a) State **two** functions of a computer.
- (b) Distinguish **between** data and information.
- (c) Explain **three** advantages of computer to a business.

This was a popular question answered by 90% of the candidates. However, parts “a and b” were poorly answered. 30% of the candidates obtain marks above average. Some candidates provided mixed up answers as answers for “c” were given for “a” and vice versa. This implied that candidates could not distinguish between advantages and functions of a computer to a business.

Question 4

- (a) Explain the following terms as used in the law of contract:

- Void
- Voidable
- Misrepresentation

- (b) Explain **two** elements of a valid contract.

This was another popular question. 92% of the candidates attempted it and 60% of the candidates obtained marks above average. Most of the candidates failed to realize that questions requesting for explanation required additional information apart from definition. A greater number of the candidates could not give clear explanation of the terms. Candidates scored relatively good marks. It should be noted that **offer and acceptance** are the product of an agreement. Candidates should know that the two terms collectively go for one element of a valid contract. When an offer is accepted, the result is agreement. Agreement is an unconditional acceptance of an offer, therefore offer should not be separated from acceptance.

Question 5

- (a) What is an indirect tax?
- (b) Explain four purposes for which government impose tax.

This was the most popular question and nearly all the candidates scored very good marks in the first part “5a”. On the other hand, about 30% of those who attempted “5b” scored relatively low marks as they centered their answers on income and income was just one correct purpose for taxation. There are many other purposes for imposing taxes, such as to protect local industries and to reduce or prevent the importation of harmful products.

Question 6

- (a) State **two** reasons for which countries engage in international trade.
- (b) Differentiate domestic trade from international trade.
- (c) State **three** restrictions in international trade.

This was another popular question attempted by 85% of the candidates. Parts “a and b” were well answered by over 60% of the candidates. The answers were desirable hence they scored excellent marks. Invariable, the answers produced for “6c” were not good. Candidates lost marks due to wrong spelling of the various methods of restriction in international trade. Many of them were not able to spell “quota and tariff.” Quota was spelled as qota, tariff as tarrif. Poor expression of ideas was also highly visible in their responses.

Question 7

- (a) *What is economic integration?*
- (b) *State **two** roles of the Economic Community of West African States (ECOWAS).*
- (c) *State **four** causes of globalization.*

This question was one of the least attempted questions. Part “a” required them to define economic integration. About 30% of the candidates defined globalization instead of economic integration. In part “b” candidates did not encounter many problems. In part “c”, about 40% of the candidates stated just two correct causes. It was obvious that candidates had not either read the topic or the topic was not properly taught in school.

Question 8

- (a) *State **three** advantages of internal recruitment.*
- (b) *Explain **three** importance of performance appraisal.*

This question was unpopular and poorly answered. In part “a” about 28% of the candidates attempted it. Amazingly, nearly all those who attempted it supplied correct answers and therefore scored high marks. Part “b” was not well answered. Most of the candidates explained the importance of “collective bargaining” which was not asked for. This may be due to their inability to distinguish between the two terms. Therefore, the candidates scored low or no marks.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
COMMERCE 2

1. GENERAL COMMENTS

The paper is made up of easy-to-recall, analysis and application type questions. All the questions were within the scope of the syllabus and the level of the candidates tested. Generally, the performance of the candidates was poor.

2. CANDIDATES' STRENGTHS

Candidates performed well in question 1. They were able to explain the factors that delayed the growth of commerce in West Africa and classify workers into their occupations.

3. CANDIDATES' WEAKNESSES

Candidates' exhibited weakness in question 5 as they could not differentiate between an indent and a quotation. Functions of export promotion council were also not stated adequately by majority of the candidates. There was also poor performance in questions 3 and 4.

4. SUGGESTED REMEDIES

- There is need to review the teaching syllabus to reflect the new trends in the subject.
- Regular class exercises and assignments at the end of every topic taught will help assess students' level of understanding on those topics.
- Tutors should endeavour to cover all areas of the syllabus well ahead of the exams to give enough time for revision.
- Tutors are also advised to revise past questions and discuss the answers with their students in class.
- The use of the internet could also be of help to acquaint students with the latest development in commerce.
- Authors should endeavour to revise their works regularly to match the modern trends on the subject.
- The Council should have a website where students and teachers could access past examination questions and mark schemes to help them in their revision exercises.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) Explain **five** factors that delayed the growth of commerce in West Africa.
- (b) Using appropriate headings, classify the following workers:
- (i) oil driller;
 - (ii) potter;
 - (iii) policeman;
 - (iv) brewer;
 - (v) stock broker;
 - (vi) mason;
 - (vii) farmer.

Candidates did very well in this question and scored almost all the marks allocated to it. Some of the answers most candidates produced in (1a) included "a big challenge to raise large sums of money to make commercial activities viable; political instability in West Africa negatively impact commercial activities; inadequate investment in new production techniques has greatly stalled the growth of commerce in West Africa."

Question 2

*Victor and Samba have been partners for **two** years. They have had disagreements throughout the period and Samba requested for a dissolution of the partnership so that he could start a sole proprietorship.*

- (a) State **five** problems Samba could face as a sole trader.*
- (b) State **five** benefits Samba could enjoy if he remained in the partnership.*

85% of the candidates who attempted this question performed poorly. This is partly because they found it difficult to understand and interpret the scenario leading to the questions. Candidates were required to align the advantages and disadvantages of partnership to the problems Samba could face as a sole proprietor and the benefits he could receive as a partner. Some of the responses for 2a. are inadequate capital for continuous operation and expansion, death or incapacitation might lead to the end of the business, presence of bigger businesses could result in the closure of his business due to competition, risk of unlimited liability would increase and the ideas his partner was bringing would no longer be available. Expected responses for 2b. are advantage of division of labour as both partners would concentrate on the part of the business they know better; more funds would be available to the business and joint decision making makes partnership better.

Question 3

- (a) State **four** functions of warehousing.*
- (b) State **two** features of each of the following retail outlets:*
 - (i) chain store;*
 - (ii) mobile shop;*
 - (iii) mail order business.*

Candidates' performance in this question was good as the majority were able to give good responses in part (a). Such accurate answers include provision of security for goods, providing facilities for further processing of goods and enhancing stability of prices by making products available all year round. In (bi) however, most candidates were carried away by the word "store" to mean a place where goods are kept in trying to highlight the features of a chain store. In (bii) also, they misunderstood a mobile shop as a shop that sells mobile phones.

Question 4

- (a) As an employee of the stock exchange market, explain to a group of investors five securities they could trade in.*
- (b) State **five** duties of an agent to his principle.*

This question attracted the attention of many candidates since it is drawn from a familiar topic in the syllabus. About 60% of them were able to score very good marks as they provided answers that were relevant, particularly in (b). In part (a) however, performance was not good. This was because candidates could not interpret the requirements of the question correctly and provided answers in respect to speculators instead of securities traded on the stock exchange. Some just listed the securities without explaining them or gave wrong explanations. Suggested answers included: shares- units of ownership of capital of a company, they receive dividend on their investments; debentures- documents acknowledging loans given to joint stock companies, they receive fixed rate of interest annually irrespective of the company's financial position.

Question 5

- (a) Differentiate between indent and quotation.*
- (b) State **four** functions of the following organizations:*
 - (i) export promotion council;*
 - (ii) customs and excise authority.*

This was the most unpopular question in which candidates also performed badly. About 99% of those who attempted it could not correctly distinguish between indent and quotation. Some candidates just gave the definitions of the two terms. Suggested answers are; indent is used in international trade while quotation is used in home trade; or indent is an order for goods in international trade while quotation is a reply to a letter of enquiry in home trade; or indent is sent by the buyer while quotation is sent by the seller. Part (b) was drawn from an area not examined in previous examinations and as such, it was not popular. Those who attempted it performed badly. They failed to provide an exhaustive list of each of the functions of the given organizations in the question.

Question 6

- (a) *What is tourism?*
- (b) *State **one** negative effect of tourism on **each** of the following:*
 - (i) *economy;*
 - (ii) *society;*
 - (iii) *environment.*
- (c) *State **two** positive effects of tourism on each of the following:*
 - (i) *economy;*
 - (ii) *society;*
 - (iii) *environment.*

This question was also quite popular but not well answered by the candidates. This could be because the topic was not frequently tested. Also, the way the question was set required the candidates to give separate headings for both negative and positive effects of tourism under the listed terms in the question. This created problems for most of the candidates because despite providing relevant answers, they found it difficult to place them under the appropriate headings.

Question 7

- (a) *State **two** differences between marketing and selling.*
- (b) *List **four** elements of marketing mix.*
- (c) *Country **Z** has decided to leave the Economic Community of West African States (ECOWAS). As the adviser on the regional group, explain four benefits the country could derive from remaining in the group.*

This was a popular question but very few candidates were able to score more than 50% of the marks. Most of the candidates found it difficult to distinguish between marketing and selling and this could be attributed to the unfamiliar nature of the question. Examples of correct answers are; marketing refers to activities that are used by a company to promote the exchange of goods and services while selling is a process where goods or services are exchanged for money; OR marketing focuses on the needs and wants of the customers while selling focuses on the sellers' objectives; OR marketing activities are aimed at identifying the market while selling activities are aimed at identifying the product or service. However, part (b) was well answered as 90% of those who attempted it scored almost all the marks allocated.

Question 8

The following information was extracted from the books of Lampat Ventures as at December 31, 2022.

	₦
<i>Stock as at 01/01/22</i>	<i>37,500</i>
<i>Stock as at 31/12/22</i>	<i>15,000</i>
<i>Goods bought</i>	<i>30,000</i>
<i>Sales</i>	<i>70,000</i>
<i>Wages and salaries</i>	<i>2,500</i>
<i>Rent and rates</i>	<i>3,500</i>
<i>Transportation</i>	<i>2,600</i>
<i>Debtors</i>	<i>100,000</i>
<i>Creditors</i>	<i>50,000</i>
<i>Bank overdraft</i>	<i>60,000</i>
<i>Cash at bank</i>	<i>25,000</i>

Calculate:

- (i) net profit;*
- (ii) working capital;*
- (iii) rate of stock turnover.*

This was a very popular question amongst the candidates as it was drawn from a familiar topic in the syllabus and was also straightforward. The performance of candidates was also very good as 90% of those who attempted it were able to score high marks. Nonetheless, it was observed that candidates who could not meet the pass grade were those with little or no accounting background. There were also few cases of candidates losing marks as a result of not indicating the currency symbol against the final answer of each sub question.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
FINANCIAL ACCOUNTING 2

1. GENERAL COMMENTS

The general performance of the students was poor compared to the past three years. Candidates misunderstood the requirements of the questions.

The questions were drawn from topics not familiar to the students even though they are within the scope of the syllabus.

Question 1 and 3 were the most popular questions of section A, while questions 5, 6 and 8 were the popular ones of section B. The most unpopular question in section A was question 2 and in section B, it was question 9.

2. CANDIDATES' STRENGTHS

Candidates were able to answer the theoretical aspect of section A better than the practice questions of section B.

3. CANDIDATES' WEAKNESSES

Candidates could not clearly identify the error involved in each transection in question 2 and state correctly as to either it affected or did not affect the agreement of the trial balance totals. Also, a good number of the candidates scored less than 20% of the marks in question 9.

4. SUGGESTED REMEDIES

- i. Candidates are encouraged to attempt their best questions first and show workings either within the solution or close to the solution to attain maximum scores.
- ii. Candidates should give correct headings to accounts followed boldly by date, month, year, currency and names of the persons or business enterprises used in the question to attain maximum scores.
- iii. Candidates should restrict themselves to the questions asked rather than spending time to show other aspects which do not attract marks.
- iv. Candidates are advised to read over their work before submitting their scripts. This will reduce possibility of losing marks.
- v. Teachers are advised to spend valuable time on the theory aspect of the subject. They should actively involve students in solving practical exercises in class.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) *What are incomplete records?*
- (b) *Outline **three** limitations of keeping incomplete records.*
- (c) *State **three** reasons a business keeps incomplete records.*

This question was popular, even though majority of the candidates who attempted it misinterpreted the limitations of keeping incomplete records. These included: the business cannot extract a trial balance to check the arithmetical accuracy of ledger entries; the accuracy of any accounts cannot be verified; the business cannot make good business decisions; cost control will be difficult, and it can lead to the collapse of the business.

Question 2

Identify the errors in the following transactions and state if they would affect the agreement of the trial balance total:

- (a) *Purchase of consumables posted to purchases account;*
- (b) *An invoice amount incorrectly posted to purchases day book;*
- (c) *Returns outwards posted to the personal account only;*
- (d) *The total sales of ₦ 120,000 was recorded as ₦ 102,000;*
- (e) *Payment of cheque to Ige entered on the receipt side of the cash book and credited to Ige's account.*

This question was unpopular and those who responded to it could not clearly identify the error involved in each transaction and state whether it affected or did not affect the agreement of the trial balance total.

Question 3

*List **five** users of accounting information and state their respective interest in the accounting information.*

This was a popular question and majority of the candidates were able to list five users of accounting information. The only problem was that majority of them could not clearly indicate the interest of each user in the accounting information. Suggested answers are:

- (i) Management/Managers- Their interests are to know:
 - how the business is progressing;
 - the financial position of the business.
 - whether set targets are being achieved.
- (ii) Owners/Shareholders- Their interests are to know
 - whether the business is profitable or not;
 - about the security of their investments;
 - whether the business can pay dividend;
 - whether to hold or sell their shares.
- (iii) Bankers/Financial institution- They will need accounting information to:
 - assess the credit worthiness of the business;
 - evaluate the ability of the business to pay back when the facility is due.
- (iv) Tax authorities- They need the information to:
 - assess the tax payable;
 - ensure that all relevant information has been captured in the financial statement.
- (v) Potential investors- They need accounting information to assess the viability of the business.

Question 4

- (a) *Explain accounting ratio giving one example of liquidity ratio.*
- (b) *State **three** uses of accounting ratios.*
- (c) *Outline **three** limitations to the use of accounting ratios.*

This question was unpopular and candidates who attempted it could not clearly give the uses and limitations of accounting ratios. Some uses of accounting ratios are: to show trends of business activities over a period of time; to forecast; to perform inter-company comparisons; to carry out intra-company comparisons and to interpret the financial statements. The limitations included: accounting ratios deal with quantitative information only; they can be easily manipulated; they are not good indicators for future planning

because ratios are computed based on past data; the use of different accounting policies and methods by firms makes comparison difficult and Some firms window-dress their financial statements resulting in misleading information to users.

Question 5

The following is the trial balance of Abete Trading Company as at 31 at December 2020:

	Le	Le
Depreciation of fixed assets		9,260
Stock at 1 st January 2020	3,600	
Purchases and sales	100,000	174,000
General expenses	17,000	
Fixed assets	42,000	
Returns	2,400	4,800
Discounts	400	2,000
Salaries and wages	21,000	
Suspense account	<u>3,060</u>	
	<u>190,060</u>	<u>190,060</u>

Additional information

- (i) Stock in hand on 31 st December 2020 was Le 4,000.
- (ii) Investigation revealed the following errors which necessitated the opening of suspense account:
 - Drawings of Le 1,000 was posted to salaries and wages account;
 - Furniture bought at Le 1,560 was wrongly debited to fixed asset as Le 300;
 - Purchases day book was undercast by Le 2,000;
 - Discount allowed of Le 200 to a customer had not been posted to the customer's account.
- (iii) Depreciation of fixed assets is 10% per annum,

You are required to:

- (a) Correct the errors through journal entries (**no narration is required**);
- (b) Prepare Trading, Profit and Loss Account for the year ended 31 st December 2020.

This was a popular question. Majority of the candidates who attempted it scored low marks in part (a). However, part (b) trading profit and loss account was well answered.

Question 6

The following were extracted from the books of Edum Republic for the year ended 31/12/2021.

	\$
Receipts from oil and gas	522,500,000
Imports duties	250,000,000
Exports duties	180,500,000
Receipts from agriculture	60,000,000
Permit and licence fees	92,000,000
Personal and other income taxes	230,500,000
Miscellaneous income	100,000,000

Additional information

- (i) The country is structured into six (6) Regions/States A, B, C, D, E, F.
- (ii) The population of each of the Regions/States are:
 A: 400,000; B: 350,000; C: 250,000;
 D: 100,000; E: 300,000; F: 200,000.
- (iii) Revenue is shared 30% to the Federal/Central government, 10% to education trust fund and 60% to be shared by the Regions/States on the basis of population.

You are required to compute:

- The total revenue for the country for year 2021;
- Revenue for the Federal/Central government for the year 2021;
- Revenue for the Regions/States **collectively** and **individually** for year 2012.

This was a popular question and majority of the candidates who attempted it scored good marks. The only problem was that many candidates failed to indicate the population of each state. This reduced their maximum scores.

Question 7

Taiwo, Kehinde and Alaba had been in partnership sharing profits and losses in the ratio 3: 5: 2 respectively. Their balance sheet as at 31 st October 2020 on which date they decided to dissolve the partnership was as follows:

<u>Taiwo, Kehinde and Alaba</u> <u>Balance Sheet as at 31 st October 2020</u>			
	₦	₦	₦
<u>Capital Accounts</u>			
Taiwo			5,512,500
Kehinde			9,712,500
Alaba			<u>4,987,500</u>
			20,212,500
<u>Current Accounts:</u>			
Taiwo		551,250	
Kehinde		656,250	
Alaba		<u>918,750</u>	
			<u>2,126,250</u>
			<u>22,332,750</u>
<u>Represented by:</u>			
<u>Fixed Assets</u>	<u>Cost</u>	<u>Accumulated Depreciation</u>	<u>Net Book Value</u>
Building	11,287,500	3,780,000	7,507,500
Motor vehicles	15,750,000	6,300,000	9,450,000
Furniture	<u>5,250,000</u>	<u>1,575,000</u>	<u>3,675,000</u>
	<u>32,287,500</u>	<u>11,655,000</u>	20,632,500
<u>Current Assets</u>			
Stock		3,150,000	
Debtors		<u>3,150,000</u>	
		6,300,000	
<u>Current liabilities</u>			
Trade creditors	2,490,000		
Bank overdrafts	<u>2,103,750</u>	<u>(4,593,750)</u>	<u>1,706,250</u>
			<u>22,338,750</u>

Dissolution conditions were as follows:

- Debtors paid ₦ 1,895,250 in full settlement of their debts;
- Trade discounts received was 3% and the dissolution expenses was agreed to be ₦ 656,250;
- Taiwo took over a motor vehicle with a book value of ₦ 2,835,000 for ₦ 2,625,000. The remaining motor vehicles were sold for ₦ 7,408,800;
- Other assets realized:

₦

<i>Buildings</i>	<i>11,812,500</i>
<i>Furniture</i>	<i>4,200,000</i>
<i>Stock</i>	<i><u>2,625,000</u></i>
	<i><u>18,637,500</u></i>

You are required to prepare the firm's

- (a) Realized Account;*
- (b) Partners' Capital Accounts in columnar form.*

This question was unpopular and the few candidates who attempted it used the cost values instead of the net book value of assets in the preparation of the realization account. Also, some candidates prepared partners' current account instead of partners' capital account. This eventually affected their overall performance.

Question 8

Easyway Limited produces disposable products for the health sector.

Information available for the year ended 31 st December 2021 is as follow:

	<i>GH¢</i>	
<i>Sales</i>	<i>324,000</i>	
<i>Raw materials purchased</i>	<i>140,500</i>	
<i>Direct labour</i>	<i>70,300</i>	
<i>Depreciation of plant and machinery</i>	<i>24,400</i>	
<i>Delivery expenses</i>	<i>10,000</i>	
<i>Discounts allowed</i>	<i>5,000</i>	
<i>Direct expenses</i>	<i>10,000</i>	
<i>Rent</i>	<i>12,000</i>	
<i>Electricity</i>	<i>13,000</i>	
<i>Depreciation of vehicles</i>	<i>5,000</i>	
<i>Stock:</i>	<i>01/01/2021</i>	<i>31/12/2021</i>
	<i>GH¢</i>	<i>GH¢</i>
<i>Raw materials</i>	<i>60,400</i>	<i>52,600</i>
<i>Wok-in-progress</i>	<i>45,000</i>	<i>40,200</i>
<i>Finished goods</i>	<i>39,200</i>	<i>20,900</i>

Additional information

Apportion rent, electricity and depreciation of vehicles to factory and office in the ratio 3:2 respectively.

You are required to prepare Manufacturing, Trading, Profit and Loss Account for the year ended 31 st December 2021.

This was the most popular question and majority of the candidates scored more than 75% of the mark.

Question 9

On 1 st June 2021, Iroko Plc. issue 300,000 ordinary shares of D 10 at par payable as follows:

- D 6 on Application;*
- D 3 on Allotment;*
- D 1 on First and Final call.*

450,000 applications were received with application monies. The directors decided to:

- (i) reject 50,000 applications and return the monies received;
- (ii) issue the shares to remaining applicants on the basis of **three (3)** shares for every **four (4)** shares applied;
- (iii) credit the excess application monies to allotment.

All the calls were made and monies received accordingly.

You are required to prepare the following Ledger Accounts:

- (a) Share Application Account;
- (b) Allotment Account;
- (c) First and Final Call Account;
- Bank Account;
- (d) Ordinary Share Capital Account.

This was the most unpopular question and majority of the candidates scored low mark in it. Less than 2% of the candidates scored good mark.

Solution to Question 9

(a)

IN THE BOOKS OF IROKO PLC

Share Application Account

<i>D</i>		<i>D</i>	
Bank account	300,000	Bank account	2,700,000
Allotment account	600,000		
Ordinary share capital account	1,800,000		
	<u>2,700,000</u>		<u>2,700,000</u>

(b)

Allotment Account

<i>D</i>		<i>D</i>	
Ordinary share capital account	900,000	Application account	600,000
		Bank account	<u>300,000</u>
	<u>900,000</u>		<u>900,000</u>

(c)

First and Final Call Account

<i>D</i>		<i>D</i>	
Ordinary share capital account	300,000	Bank account	300,000
	<u>300,000</u>		<u>300,000</u>

(d)

Bank Account

<i>D</i>		<i>D</i>	
Application	2,700,000	Application (refund)	300,000
Allotment	300,000	Balance c/d	3,000,000
	162		

First and final account	<u>300,000</u>	<u>3,300,000</u>
	<u>3,300,000</u>	
Balance b/d	3,000,000	

(e)

Ordinary Share Capital Account			
<i>D</i>			<i>D</i>
Balance c/d	3,000,000	Application account	1,800,000
		Allotment account	900,000
		First and final call account	300,000
	<u>3,000,000</u>		<u>3,000,000</u>
		Balance b/d	3,000,000

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
PRINCIPLES OF COST ACCOUNTING 2

1. GENERAL COMMENTS

The standard of the paper was within the scope of the syllabus and was comparable to the previous years. Performance of the candidates was generally below expectation. Presentation of solutions was poor, and the expression of English language was below standard. Most candidates were within the lower range. There were some popular questions which were well answered by many candidates while some questions were poorly answered. Candidates were examined in the following areas: Cost Classification, Costing terminologies, Material Costing, Stores & Stock Control Accounts, Standard Costing, Cash Budget, Batch Costing and Labour Accounting. The questions tested candidates in both theory and practical in a fair proportion. Noticeably, candidates performed better in the theory section than in the practice area.

The standard of presentation was good for high performing candidates. There were still some candidates who needed to take greater care with their presentations to improve their marks. Some candidates compressed their answers into one single page, rather than spreading them out in a more presentable fashion, making it difficult for examiners to read figures and calculations.

2. CANDIDATES' STRENGTHS

Some candidates performed well in questions 1, 3 & 9.

3. CANDIDATES' WEAKNESSES

- Some of the candidates appeared not to have prepared for the examination and showed little or no understanding of the costing principles. The presentation of answers was below average.
- A significant number of candidates did not perform well in the Practice section of the questions especially questions 4, 7 and 8. Their presentations were very poor and hence their poor performance. Some candidates selected questions which were quite demanding and left the straight forward ones.
- Lack of good examination planning. Many candidates did not take their time to read and select the questions they could answer well before starting the paper as evident in the several attempts and cancellations before attempting new questions.
- The poor command of the English Language also prevented some candidates from earning maximum marks especially in the essay type questions as candidates could not express the points well enough.
- Some candidates did not take their time to read and understand the exact requirements of the question before attempting them and this resulted in deviation from the responses required.
- Some candidates did not follow the rubrics and ended up answering more than the required number of questions from the different sections.
- Some candidates did not use their time efficiently leading to incomplete answers or in some cases answering less than the required number of questions.

4. SUGGESTED REMEDIES

- Candidates are advised to complete the syllabus and work through series of questions before the examinations.
- They should read and fully understand the questions before attempting them and select the ones that they are best prepared for.
- For theory questions, candidates are advised to give examples to support answers even if the question does not require them since examples clear doubts about the candidates' intentions.

- Candidates are also advised to show all workings leading to final answers because marks are mostly awarded for workings.
- Candidates are advised to manage their time well by allocating a certain amount of time for answering each question.
- Candidates should endeavour to get recommended Cost Accounting textbooks and stop relying on pamphlets which are mere supplementary materials.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

The following types of expenses are incurred in a manufacturing company

<u>Reference Number</u>	<u>Expenses</u>
XT 01	Cost of oil to lubricate production machinery
XT 02	Fuel of delivery van
XT 03	Depreciation of factory plant and equipment
XT 04	Commission paid to sales representatives
XT 05	Salary of the secretary to the finance director
XT 06	Trade discount given to customers
XT 07	Insurance of company's premises
XT 08	Development of new products
XT 09	Fees paid to advertising agency
XT 10	Rent of finished good warehouse
XT 11	Salary of supervisor working in the factory
XT 12	Cost of typewriter ribbons in the general office
XT 13	Protective clothing for machine operators
XT 14	Holiday pay for general office workers
XT 15	Salary of scientist in the laboratory

You are required to use the **reference numbers** to classify the above expenses into:

- production overheads;
- selling and distribution overheads;
- administration overheads;
- research and development overheads.

Almost all candidates who attempted this question scored at least 10 marks. Many candidates were able to categorise the expense items under the correct overhead cost centres. Candidates exhibited satisfactory understanding of the reasons for the different cost classification. The question had the highest attempt and success rate.

Question 2

Explain the following **terms** as used in analysing costs:

- marginal costing;
- absorption costing;
- contribution;
- break even point;
- period cost.

Some candidates explained Marginal Costing and Absorption Costing in a more general and simplistic manner. Few candidates however, gave good answers for Break Even Point but majority of candidates did not earn maximum marks. Likewise, less than 5% of candidates correctly explained Period Cost while the majority did not seem to understand the term.

Question 3

- (a) *What is stock control?*
- (b) *State **two** purposes of stock control.*
- (c) *Explain the following processes in stock control:*
 - (i) *Stock taking;*
 - (ii) *stock documentation;*
 - (iii) *stock valuation.*

This question sought to test candidates' knowledge on different aspects of stock control. General observation indicated that great number of candidates had good comprehension of the concept of stock control and the purposes of stock control. Similarly, majority gave accurate explanations of stock taking and stock documentation. The main challenge encountered by candidates was the (b) part in which candidates were asked to explain Stock Valuation. This was particularly challenging as most responses were either generalised or out of context of what was actually required.

Overall, this question had about 87% success rate among candidates who chose it and this indicated their understanding of the concept of stock control.

Question 4

- (a) *Explain control accounts in cost accounts.*
- (b) *State the purpose of the following control accounts:*
 - (i) *Stores Ledger Control Account;*
 - (ii) *Wages Control Account;*
 - (iii) *Production Overheads Control Account;*
 - (iv) *Work-In-Progress Ledger Control Account;*
 - (v) *Finished Goods Ledger Control Account;*
 - (vi) *Cost Ledger Control Account.*

Few candidates attempted this question making it the least selected question in section A. The performance likewise was below average. The first part required candidates to define a control account. Different definitions of a control account were given but only few made mention of relevant points about the actual meaning. Most candidates who attempted the second part of the question found it difficult to define the various control accounts as required by the question. As such, the 'b' part was not answered well. Most candidates scored less than half of the total marks. This showed that the topic was not being taught by most teachers.

Question 5

Abronoma Manufacturing Company set the following standards for its operations for the year 2021 for its product.

<i>Production</i>	<i>34,000 units</i>
<i>Materials</i>	<i>4.5kg @ GH¢ 10 per kg</i>
<i>Labour</i>	<i>3 hours @ GH¢ 12 per hour</i>

The actual results at the end of the year were as follows:

<i>Total production</i>	<i>30,000 units</i>
<i>Total materials used</i>	<i>159,000 kg costing GH¢ 1,510,500</i>
<i>Total labour hours employed</i>	<i>75,000 hours costing GH¢ 1,050,000</i>

You are required to compute for Abronoma Manufacturing Company:

- (a) *direct materials price variance;*
- (b) *direct materials usage variance;*
- (c) *direct labour rate variance;*

- (d) *direct labour efficiency variance;*
- (e) *total production cost variance.*

This was a Standard Costing question involving the computation of simple materials and labour variances from information provided. The information provided included the quantity of materials bought and the quantity of materials introduced into production. Candidates were expected to use the quantity purchased to compute actual price and the quantity introduced into production as the actual quantity. Majority of candidates computed the direct Material Price variance correctly, but many candidates could not compute the Direct Material Usage variance because they used 153,000 Kg (44.5kg x standard production units of 34,000 units) as the Standard Quantity instead flexing the standard quantity in the actual production units (i.e. 4.5kg x actual units 30,000 units). Almost all the candidates used the correct formulas for requirements a, b, c and d although none used the right formula for (e) total production cost variance. Candidates failed to flex the Standard Hours in the actual production units (i.e. 3 hrs x actual units 30,000 units). All candidates got part (e) wrong. Marks were awarded for the formulas, the substitution and the final answer for all the variances. The final answer was to be qualified as either favourable (F) or adverse (A) and this figure attracted no marks if the wrong qualification was given, or no qualification was given.

Question 6

*Yindo Limited produces **two** products, 'Bola' and 'Labo'. The following information relates to half year ending 31 st December, 2020.*

	<u>PRODUCT</u>	
	<u>Bola</u>	<u>Labo</u>
<i>Selling price (Le)</i>	60	40
<i>Direct material cost per unit (Le)</i>	14	23
<i>Direct labour cost per unit (Le)</i>	18	6
<i>Variable overhead per unit (Le)</i>	10	7
<i>Production in units</i>	2,700	8,500
<i>Sales in units</i>	2,300	7,600

Additional information:

There is no stock at the beginning of the period.

Total fixed overhead for the period is budgeted at Le 40,000.

You are required to prepare an income statement for the period using marginal costing technique.

This question, although easy, yet some of the candidates who attempted it missed some important steps in preparing the income statement using the Marginal costing principles.

Some of the mistakes identified included:

- (a) The use of production units of 2,700 and 8500 in the computation of the sales value figure for products Bola and Labo respectively.
- (b) Similarly, some candidates made a fundamental mistake of using the sales units of 2,300 and 7,600 in calculating the production costs (i.e. material cost, labour cost, and variable overheads costs) for Bola and Labo respectively.
- (c) Another issue was with regards to the combined total net profit of products Bola and Labo. Instead of combining the contribution values before subtracting the fixed overhead, all candidates were observed to have used these values separately in deriving the net profit individually which resulted in loss of marks.

Question 7

Brisk Limited provided the following information on its operation for 2024.

	<u>Dec. 2023</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
	D	D	D	D	D	D
Sales	750,000	820,000	600,000	700,000	780,000	900,000
Purchases	420,000	320,000	350,000	360,000	400,000	420,000
Other income	-	32,000	65,000	45,000	53,000	37,000
Wages	-	32,000	35,000	39,000	41,000	40,000
Operating expenses	-	39,000	36,000	32,000	40,000	36,000

- 60% of sales is for cash and credit sales are collected the next month less bad debt of 5%.
- 80% of purchases on credit and is paid in the month after the purchase.
- Included in other incomes are gains on disposal of assets of D 15,000 and D 10,000 in February and April respectively.
- Included in operating expenses are depreciation charges of D 5,000 per month.
- Opening cash balance in 1st January, 2024 is D 123,500.

You are required to prepare:

- schedule of receipts from sales;
- schedule of payment for purchases;
- cash budget for January to April 2024 to show the net cashflow for **each** month.

This question was the least attempted by candidates and the performance was very poor. Some candidates correctly presented the cash sales figures in the relevant periods although none was able to do the correct computation and presentation of the credit values in the period following the actual month of sales. Many candidates added the disposal figure to other income in February and April instead of setting off against other income as a deduction in the corresponding periods (February and April). Many failed to adhere to the principle of excluding depreciation non cash item from the main cash budget by deducting from expenses in the payment schedule or as an operating expense under the payments in the cash budget. As a result, most failed to earn easy marks.

Question 8

Paramount Industries produces machine parts called 'Bobbins' according to customers' specification. The production is done in batches and **each** production run produces a maximum of **five** batches.

Cost of production for the Bobbins are as follows:

Material	120 kg at Le per batch
Labour	300 hours at Le 10 per batch
Design	2 hours at Le 1,000 per order
Machine setting	Le 2,400 per run
Variable overheads	Le 3,600 per batch
Direct expenses	Le 1,400 per batch
Fixed expenses	Le 800 per run
Machine depreciation	Le 1,600 per run

You are required to prepare a schedule to show the cost of producing an order for:

- 1 batch;
- 4 batches;
- 10 batches.

This question was not popular among the candidates. Generally, the overall performance on this question was very disappointing and some candidates who attempted it showed that they lacked knowledge in Batch Costing. Many of the candidates succeeded in computing the various production cost items only for One (1) batch and most of the figures computed for Four (4) and Ten (10) batches were incorrect.

Question 9

Mystic Limited instituted a scheme to increase production to meet demand for its products. Production for the period is as follows:

<u>Worker</u> <u>production</u>	<u>Time Allowed</u> <u>(hours)</u>	<u>Time Taken</u> <u>(hours)</u>	<u>Production</u> <u>(units)</u>	<u>Extra</u> <u>using time</u>
<u>saved</u>				
Moses 1,000	40	30	3,000	
Koroma	40	40	3,000	-
Sheriff 1,800	40	25	3,000	

Additional information

- Rate of pay is D 180 per hour,
- Extra units produced using the time saved is paid for at D 2 per unit;
- Bonus is paid for time saved using 50 : 50 method to share between the employer and the employee respectively.

*You are required to complete for **each** worker:*

- (a) time saved;
- (b) basic wage;
- (c) extra wages using time saved;
- (d) total wages.

About 98% of the candidates attempted this question. Most candidates apparently did well in this question. Almost all the candidates were able to compute the correct number of hours saved for the three workers (i.e. Moses, Koroma and Sheriff).

However, some candidates failed to indicate the value of the Premium Bonus and Extra Wages for Koroma as Zero or Nil rather, they simply omitted it from their solution i.e. they did not write the answers. Similarly, many candidates' total wages values for Moses and Sheriff were wrong simply because the previous premium bonus and extra wages' figures they calculated for the two workers were incorrect.

HOME SCIENCE SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
HOME SCIENCES

1. STANDARD OF THE PAPERS

The standard of the papers compared favourably with those of the previous years as reported by the Chief Examiners in the Home Sciences. They also stated that the questions were within the scope of the syllabuses.

2. CANDIDATES' PERFORMANCE

The Chief Examiners' reports indicate that Candidates' performance improved in Clothing and Textiles papers 2 and 3. Performance in Foods and Nutrition 2 and 3 was below expectation. Candidates' performance in Home Management 2 and 3 was average.

3. CANDIDATES' STRENGTHS

- Most candidates were able to complete the tasks in the practical papers.
- Candidates were able to use suitable serving dishes.
- Some candidates were able to follow the instructions on the questions.
- Candidates were able to make proper use of the utensils and equipment.

4. CANDIDATES' WEAKNESSES

- Candidates had difficulty in illustrating and identifying diagrams.
- Poor construction of sentences and spelling difficulties.
- Some candidates did not finish their project works.
- Candidates had problems in interpreting the questions.
- Table setting was a challenge for most of the candidates.
- Incomplete responses to questions.

5. SUGGESTED REMEDIES

- School Administrators should ensure that Home Science Laboratories are well equipped, and candidates should be exposed to a lot of practical sessions.
- Qualified Teachers should be appointed to teach the subject.
- Candidates should use the prescribed textbooks.
- The entire syllabi should be covered.
- Candidates should be taught to understand the questions before attempting them.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CLOTHING & TEXTILES 2

1. GENERAL COMMENTS ON THE PAPER

The 2023 WASSCE Clothing and Textiles exam was fair. The questions were all drawn within the syllabus and generally there was a slight decrease in the candidature. Apparently, the candidate's performance improved slightly as compared to the previous years. More than 70% of the candidates performed above average, this might be attributed to the fact that candidates' coursework contributed a lot.

2. CANDIDATES' STRENGTHS

- Candidates were able to answer 4 out of the 6 questions
- Candidates were able to follow the instructions

3. CANDIDATES' WEAKNESSES

- Candidates had difficulty in illustrating
- Candidates had difficulty to identify diagrams
- Candidates couldn't construct proper sentences
- Poor construction of sentences
- Poor spelling

4. SUGGESTED REMEDIES

- WAEC should inspect all clothing rooms to make sure they are up to the required standards
- Principals should make sure there is a proper clothing room well furnished
- The course work requirements should be sent to schools early
- Clothing and textiles teachers should be qualified to teach the subject
- Teachers and candidates should be privy to the chief examiners report
- Candidates should be encouraged to use sewing machines.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) Suggest **three** decorative ways of improving the appearance of a pillow case.
- (b) With the aid of well labelled diagrams differentiate between the following:
- (i) bishop sleeve and puff sleeve;
 - (ii) gored skirt and panelled shirt.
- (c) Suggest **four** suitable finishes for the edge of a raglan sleeve.

This question was answered by 80% of the candidate and majority of the candidates performed well and were able to score marks ranging from 6 – 15.

Candidates were able to list decorative ways of improving the appearance of pillowcases using contrasting fabric for facing such as

Lace attachment

Embroidery

Applique

Frills

Piping

Use of bias binding

Trimmings

In the (b) part, candidates were able to distinguish between the following by illustrating
Bishop sleeve and puff sleeve
Gored skirt and panelled skirt

In (c) less than 20% of the candidates were able to name suitable finishing for a raglan sleeve. This was because of candidates not knowing what a raglan sleeve is. Raglan sleeve is a sleeve that extends in one piece.

Examples of Suitable edge finishes for a raglan sleeve

Binding
Shell edging
Crocheting
Hemming
Embroidery
Facing
Piping

Question 2

(a) State the use of **each** of the following equipment:

- (i) ironing board;
- (ii) pressing mitt;
- (iii) sleeve ham;
- (iv) sleeve board.

(b) Give **five** reasons for pressing a dress during its construction.

(c) Suggest **four** different types of fullness that can be made on a yoke in a garment.

(d) State **two** ways of concealing a stubborn stain in a garment.

50% of the candidates attempted this question but most of them performed poorly even though the question was easy and straight forward.

The answer to (a) should have read,

Uses of the following pressing equipment

- i. ironing board: a padded board use for ironing and pressing
- ii. Pressing mitt: worn on the hand when pressing difficult and small areas of a garment
- iii. Pressing ham: used for pressing shaped parts of garments.
- iv. Sleeve board: used for pressing sleeves and small areas of a garment

In (b) 80% of the candidates answered this part of the question well. Reasons for pressing a dress during its construction were well stated as

To remove creases
To transfer motifs and patterns
To flatten seams
To set in pleats and darts

In (c) the answer should have read

Darts
Tucks
Gathers
Smocking
Gauging
Shirring

In (d) less than 5% of the candidates could answer this part of the question. Candidates could not state ways of cancelling stubborn stain in a garment.

The answer should have read:

Use of motif
Using embroidery on stain areas
Fixing pocket over stain

Question 3

- (a) *Differentiate between tucks and box pleats.*
- (b) *State **two** differences between easing and shirring.*
- (c) *Your sister wants to set up a garment factory, state three points she should consider when choosing fabrics for garment production.*
- (d) *State **two** ways **each** of solving the following problems which affect the growth of a garment factory:*
 - (i) *theft;*
 - (ii) *lack of work ethics.*

Attempted by 90% of the candidates and they were able to score good marks in the c and d part of the question.

The answer to this question should read: differences between tucks and pleats

Tucks are small fold stitched. They are stitched along the whole length and are of equal distance away from the fold.

Box pleats are folds facing the opposite direction and allowed to hang free from a supporting piece or stitched along part of folds

Question 4

- (a) *Define the following:*
 - (i) *entrepreneur;*
 - (ii) *entrepreneurship;*
 - (iii) *enterprise.*
- (b) *Explain **four** qualities of an entrepreneur.*
- (c) *State **one** disadvantage of being an entrepreneur.*

Another popular question attempted by 98% of the candidates. The question was simple and straight forward and candidates were able to define

- A) i. Entrepreneur as a person owns a business and sets it on and expect to yield profit at the end of the day.
- ii. Entrepreneurship - a process of establishing and owning a business
- iii Enterprise - a business own by an entrepreneur
- b) In b, candidates couldn't explain the qualities of an entrepreneur. The answer should have read:

Efficient Management: the ability to achieve the company's goal to achieve best result

Provision of capital: the money used in the establishment of business

Hardworking: an entrepreneur must keep looking for measures to maintain quality standards, change the style of production to suit the fashion vogue

Risk bearing: to invest in business considering profit or losses in investments

Decision making: makes all decisions as to the business

Seeks opportunity: makes use of any opportunity that comes her way in the interest of the business.

Seeks information: looks out for any information that will help the business

In (c) candidates were able to score high marks in stating the disadvantages of being an entrepreneur

Question 5

- (a) Mention **three** ways of identifying textile fibres.
- (b) State **four** uses of linen fabrics in the dining room.
- (c) Give a step by step procedure for washing a dirty white towel.
- (d) Explain why cotton and linen fabrics are given crease resistance finish.

This was one of the popular question that candidates were able to answer correctly and score marks ranging from 4 – 10. 90% attempted it.

In the (c) part of the question, 30% of the candidates scored low marks as they fail to state the procedures for washing a dirty white towel. They were able to state laundry processes but failed to write the procedures and also not taking into consideration that the towel was a white one and need some special attention such as steeping, soaking, the addition of bleach etc.

Question 6

- (a) Enumerate **four** parts of garments that are to be repaired often.
- (b) State **five** ways a nursing mother should care for her clothes.
- (c) Mention **two** accessories **each** used by the following groups of people:
 - (i) sports men;
 - (ii) traditional leaders;
 - (iii) soldiers.

45% of the candidates attempted this question but unfortunately it was poorly answered by almost all the candidates. The answer in a) should have read:

Parts of garment that are likely to need repairs often:

Armhole
Neckline
Sleeve edge
Crotch of pants/ trousers
Sleeves
Cuffs
Openings
Underarm of garment
Slits in dresses/ skirts
Hems of skirts and trousers

The b) was the most difficult part that candidates couldn't score mark in. The candidates misinterpreted the question and wrongly stated laundry processes.

The answer should have read:

Ways a nursing mother cares for her clothes

Wash clothes when dirty

Mend clothes before washing

Disinfect when necessary

Remove stains as soon as they occur

Iron clothes before putting them away

Air garment well before storing

Avoid using perfumes on clothes

20% of the candidates performed well on the c) by stating the accessories used by

Sportsmen: socks, spikes, boots. Medals, bands, cap, wrist watch

Traditional leaders: working sticks, necklaces, umbrella, head scarf, beads, footwear

Soldiers: belts, muffler, beret, caps, medals, boots.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
CLOTHING & TEXTILES 3 (PRACTICAL)

1. GENERAL COMMENTS ON THE PAPER

The overall performance of candidates in the Clothing and Textiles practical examination was average. The questions were simple and the instructions were straight forward, despite that, some candidates found it difficult to follow the instructions and as a result the making up was difficult for them.

The candidature dropped when compared to last year's. Fewer candidates registered and 5% of them did not turn up for the exam.

2. CANDIDATES' STRENGTHS

- Candidates were able to separate the pattern pieces on time
- Candidates were able to make use of the other equipment
- Candidates were able to do a variety of embroidery stitches using different colours of thread.

3. CANDIDATES' WEAKNESSES





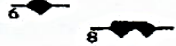
- Candidates could not distinguish between French seam and open seam
- 60% of the Candidates could not handle the scissors
- Candidates could not attach the bias binding
- 50% of the Candidates could not use the sewing machine.
- 90% of the candidates could not finish on time
- Candidates could not understand the instructions.
- Some candidates did not finish their project work

4. SUGGESTED REMEDIES

- School's should hire the services of a qualified teacher
- Teachers should help candidates do their project work
- Candidates should be encouraged to use the scissors and machine frequently
- Principals should make sure the clothing and textile room is fully furnished
- WAEC should ensure that centers are re-inspected before the next practical exam
- Candidates should be encouraged to draft and cut their own patterns
- WAEC should encouraged schools to use the correct type of carbon paper to transfer pattern markings.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

PATTERN INSTRUCTIONS PATTERN SYMBOLS

	GRAINLINE
	ADJUSTMENT LINE [Indicate where to lengthen or shorten your pattern]
	FOLD GRAIN [Place on fold fabric]
	SOLID LINE [Indicate exact cutting line]
	NOTCHES [Match up with corresponding numbers]

1.5 cm is allowed for all seams.

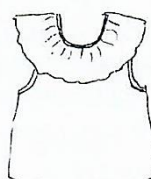
[MATERIALS]

- (a) Three pattern pieces;
- (b) Fabric: 115 cm × 100 cm plain cotton or cotton blend fabric;
- (c) Bias strip; 1.5 metres long;
- (d) Embroidery thread; three different contrasting colours;
- (e) Tacking thread;
- (f) Sewing thread;
- (g) Pencil and eraser;
- (h) Tracing wheel and dressmaker's carbon.



FRONT VIEW

Figure 1



BACK VIEW

Figure 2

Question 1

You are expected to cut and make a child's dress so that the finished article will look as in **Figure 1** and **Figure 2** below.

- (a) *Lay out the pattern pieces on the fabric economically on the fabric, pin and cut out.*
- (b) *Transfer all necessary pattern markings including the motif.*

In the separation of the pattern pieces, the candidates were able to separate them and the (c) piece of the pattern which was on a separate sheet had to be taped using either paper glue or cello tape.

Laying out, cutting and transfer of markings

The transfer of the pattern markings was also done accordingly, different methods of transfer of markings were done (though the wrong type of carbon was used by all the candidates)

Using the tracing wheel and carbon paper

Using pen/ pencil with carbon paper

Question 2

- (a) *Embroider the motif on the front dress using the embroidery threads and suitable stitches.*
- (b) *Join front and back shoulders of dress using open seam. Neaten and press.*
- (c) *Join sides of frills using open seam. Neaten and press.*
- (d) *Gather frills. Attach the wrong side of frills to the right side of dress neckline, matching notches. Tack.*
- (e) *Bind the neckline using bias strip. Press.*
- (f) *Turn a lay of 0.5 cm along edge of frills and machine stitch. Press.*
- (g) *Use bias strip as a facing on one armhole.*
- (h) *Join one side of dress using French seam. Press.*
- (i) *Attach label.*

In the making up

60% of the candidates were able to do the embroidery on the front of the dress using suitable embroidery stitches e.g. stem, chain, lazy daisy etc.

In the joining, 50% of the candidates were not able to join the front and back shoulders of the dress using open seam. Instead, the shoulders were joined without taking note of the seam specifications.

70% of the Candidates made use of the equipment like needle, sewing machine, iron, tracing wheel etc.

The gathering of the frills was poorly done by 80% of the candidates. The reason why they found it difficult was that the pattern was place on the straight grain instead of on the fold.

80% of the candidates did not attach the bias binding.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
FOODS & NUTRITION 2

1. GENERAL COMMENTS ON THE PAPER

The 2023 foods and nutrition paper was fair. The questions were all drawn from the examination and teaching syllabuses. It was unfortunate that even though the paper was fair, candidates' performance was far below expectation. There was a slight increase in the number of candidates. The increase was more in the provincial schools.

2. CANDIDATES' STRENGTHS

- Candidates were able to answer 4 out of the 6 questions
- Candidates were able to follow the instructions

3. CANDIDATES' WEAKNESSES

- Candidates had problems with the construction of statements
- Candidates had spelling difficulties
- Candidates had problems in interpreting the questions
- Candidates couldn't identify the illustrations

4. SUGGESTED REMEDIES

- In-service courses should be brought back so that teachers would benefit
- Principals should make sure schools are well equipped
- The Textbooks used by candidates should be reviewed
- Capacity building for home economics teachers should be organized
- Regular assessment should be done regularly
- Principals should make sure they employ qualified teachers.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) List the **two** classes of legumes.
- (b) Give **one** example for **each** class of legumes listed in 1(a).
- (c) Mention **four** dishes made from legumes.
- (d) State **two** advantages of legumes in a diet.

This was attempted by 65% of the candidates but unfortunately less than 20% of them were able to score marks ranging from 4 to 10. The question was misinterpreted by almost all the candidates who could not understand the difference between legumes and vegetables.

In the (b) 40% of the candidate were able to give the examples of legumes but failed to list the classes of legumes.

In (c) 45% of the candidates were able to give examples of dishes eg:

Cassava and beans," beans mbahal," "chura gerteh", "njeneh jobe" akara,

In (d) less than 10% of the candidates were able to state the advantages of legumes in the diet.

Question 2

- (a) State **four** contributions of table appointment to meal.
- (b) List **six** table appointments.

This was one of the most unpopular question. Less than 30% the candidates totally misinterpreted for table manners instead of table appointments.

In (b) candidates were able to list some examples of table appointments as Cutleries, crockeries, plates. Teacups, tongs etc

Question 3

- (a) *Define the term recipe.*
- (b) *List **two** components of recipe.*
- (c) *Explain **two** points to consider when selecting recipe.*
- (d) *Mention **two** chief ingredients in the preparation of “akara/koose”.*

This question was popular, it was attempted by 90% of the candidates. The term recipe was not properly defined by most candidates the term recipe was wrongly defined.

In (b) candidates couldn't give the components of a recipe as ingredients, method, or instructions. In (c) the candidates that attempted it were able to explain some points to consider when selecting recipes.

In (d) candidates were able to score full marks, they were able to list the chief ingredients of akara as beans/ Beans flour, oil, rice flour and banana.

Question 4

- (a) *List **two** conservative methods of cooking vegetables.*
- (b) *State **three** effects of cooking on vegetables.*
- (c) *Mention **two** purposes of cooking vegetables.*
- (d) *State **three** functions of vegetables in a diet.*

30% of the Candidates attempted this question, they couldn't explain the conservative methods of cooking

In (b) the effect of cooking on vegetables was also poorly answered by most candidates.

In (c) the purpose of cooking vegetables was also misinterpreted as reasons for cooking vegetables.

In (d) candidates stated the functions of vegetables to the body instead of the diet.

Question 5

- (a) *State **three** principles of food preservation.*
- (b) *State **five** reasons for preserving foods.*
- (c) *List **two** methods of food preservation.*

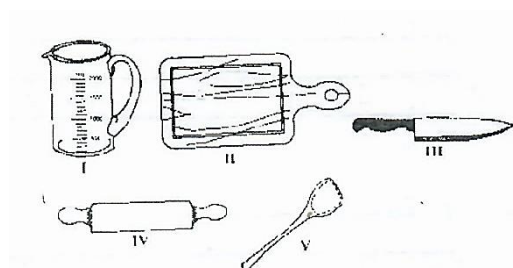
This was the most popular question but candidates did not perform well.

In (a) candidates did not understand what the principles of food preservation is

The (b) and (c) were well answered by 80% of the candidates and were able to score full marks.

Question 6

The diagram below are kitchen utensils. Study them and answer questions **6(a)** and **6(b)**.



- (a) *Identify the utensils labelled **I, II, III, IV** and **V** illustrated in the diagram.*
- (b) *State **one** use of the utensils illustrated in the diagrams.*

95% of the candidates attempted this question but unfortunately the [performance was poor. The question was simple and straight forward.

The candidates were not able to identify the illustrations. e.g.

Kettle / cylinder instead of measuring cup

Serving plate instead of Chopping board

Knife instead of cooks/chef knife

Roller instead of rolling pin

Serving spoon instead of wooden spoon/ spatula

The (c) part was wrong because the answers in the (a) were wrong.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
FOODS & NUTRITION 3 (PRACTICAL)

1. GENERAL COMMENTS ON THE PAPER

This year's WASSCE exam question was a bit ambiguous. Candidates found it difficult to comprehend the question because of the manner in which the question was framed, but despite that, some candidates were able to prepare, cook and serve suitable dishes. There was an increase in this year's candidature compared to last year.

2. CANDIDATES' STRENGTHS

- 80% of the candidates were able to finish on time
- Candidates were able to clear and make the place neat and tidy before leaving the end of the exam.
- Wrong interpretation of the question
- Most of the candidates were able to use fruits in season
- Candidates were able to use suitable serving dishes
- Candidates were able to make syrup for the drinks
- Suitable flatware were used by majority of the candidates,

3. CANDIDATES' WEAKNESSES

- Most of the candidates made the wrong choice for a three-course meal.
- The soups served for a starter were mostly unsuitable as chunks of meat were included instead of the strained soup.
- The consistency of the soups was too thick for a starter.
- The wrong use of equipment
- Table setting was a challenge for most of the candidates
- Candidates used the blender to make drinks and served instead of adding the syrup

4. SUGGESTED REMEDIES

- More examiners should be recruited to ease the practical exams
- WAEC should make sure all centers are re-inspected before the next practical exams
- Schools should ensure that candidates are exposed to practical lessons
- It should be a requirement that all labs should have a fire extinguisher.
- MOBSE should organize in-service training courses for Home Science teachers annually

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Using the following foods items:

- (i) rice
- (ii) meat
- (iii) fruits

Prepare cook and serve a three-course meal

Prepare and serve a fruit drink

Set a table for two

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
HOME MANAGEMENT 2

1. GENERAL COMMENTS ON THE PAPER

The WASSCE Home Management paper 2, Essay, for School Candidates was derived from both the theoretical and practical topics within the home management syllabus of the Senior Secondary course programme. It has also been internationally moderated by representatives of the member countries.

The Essay paper 2 consisted of six questions. Each question carried a total ten marks. Candidates had the liberty to choose any five out of the six questions for a total of fifty marks score for the paper.

2. CANDIDATES' STRENGTHS

- More than 95% of candidates attempted the above paper at the centres.
- 90% of candidates attempted five question as instructed.

3. CANDIDATES' WEAKNESSES

- 10% of candidates chose only 4 questions out of 6 instead of 5.
- Some sub-questions were not attempted
- Wrong vocabulary used
- Wrong statements provided
- Most candidates manifested incomplete coverage of the course syllabus.
- Most candidates demonstrated incompetency in the interpretation of the chosen questions.
- Misunderstood terms manifested in the candidates responses to some questions.
- Some candidates did not understand the mode of answering questions that bears key words like 'state, explain, outline, enumerate/list, factors, procedures' etc.
- Wrong spellings of words therefore giving them different meanings or pronunciation.
- Incomplete responses to questions, therefore scored very low marks.

4. SUGGESTED REMEDIES

- Schools' administrations should allow only students who had GABECE Home Economics experience to become Home Management candidates.
- School candidates should make effective use of both the WASSCE Home Management teaching and examination syllabus to acquaint themselves with all topics of the Home Management grade 10 -12 syllabi topics.
- School candidates should make effective use of both the WASSCE Home Management practical and essay passed papers to acquaint themselves with examination items
- School candidates should have access to the annual chief examiners report on Home Management to be informed with some of the observations and recommendations made on the passed exams with regard to the mode of answering questions with the key words like 'list, enumerate, state, explain, illustrate, describe' etc.
- Home Management teachers should comprehensively cover all topics both in theory and practical as stated in the grade 10 – 12 Home Management syllabi.
- Home Management teachers should also give assignments to students or research work where they could make use of their mobiles that shows explanations with pictures and illustrations to facilitates more understanding. This could help them to comprehensively cover all topics as stated in the grade 10 – 12 Home Management syllabi by providing feedback to them.

- School Administrators should acquire the revised Home Management syllabi from the Curriculum Directorate at MoBSE to be informed about the inclusion of new topics like entrepreneurship.
- Home Management personnel at the senior schools should conduct research on new topic like entrepreneurship in the Home Management syllabus and provide lessons on it.
- Senior teachers/block heads/vice principals of senior schools should regularly check the teachers' syllabus coverage on both theory and practical on topics covered and not take things for granted.
- It is high time that WAEC in collaboration with MoBSE conduct research on the state of teachers facilitating the teaching of the subject with regard to what the College had trained them on and provide in-service training programs for them to build their capacities. This would be the best way to assist both teachers and students.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) Mention **two** main groups of vitamins.
- (b) Give **one** example of each of the groups mentioned in 1a.
- (c) Name the deficiency disease of each of the following materials:
 - (i) Thiamine,
 - (ii) Iron,
 - (iii) Iodine.
- (d) State three functions of fats and oil in the body.

The above question was popular and selected by majority of the candidates. Their performance was impressive in 1 a. About 80 % of the candidates scored full 2 marks. The performance in 1b, was satisfactory. Most of the candidates scored the full 2 marks. However, candidates who scored zero in 1a., automatically scored zero in the b. section. Some got the answer for 1a. as 'water soluble vitamin and fat-soluble vitamins' but in 1b where they were asked to give an example of each group in a., some matched the water-soluble vitamins with fat soluble vitamins A & D and for fat soluble vitamins with vitamins B & C. some gave the examples of vitamins as their main groups.

In the c. section, almost all candidates got the iodine deficiency disease goitre correct, some got the iron deficiency disease anaemia correct but most of the candidates got the thiamine deficiency disease Beriberi wrong. Some left the space unattempted and others named diseases like 'scovey', 'malnutrition', 'ricket' etc.

Question 2

The diagram in **Fig. 1** is an illustration of baby's cot. Study it and answer questions 2a and b:

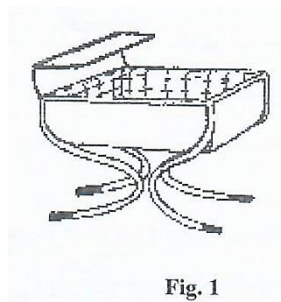


Fig. 1

- (a) State **five** points to consider when choosing baby cot illustrated in **Fig.1**
- (b) Outline **five** procedures for making the baby cot illustrated in **Fig 1**.

Candidates' strengths:

A very popular question that was selected by most candidates. In 2 a. candidates' performance was satisfactory. They were to state five points to consider when choosing baby cot which includes the following:

- It must be sturdy /strong
- The mattress should be comfortable and firm
- It should be large enough for the baby to move freely
- It should be easy to clean
- It should be easy to move around etc.
- Instead, some of the wrong answers candidates stated were:
- "It should be well balanced and furnished"
- "the legs of the baby's cot should not be long" etc.

In most cases two or more answers of a section written differently depict the same meaning as in the following cases:

"it should have handles for the baby's protection" and "there should be no holes or roughness in the bed" which are both geared towards safety.

"the cot should have large space for free movement" and "the cot should be suitable for the baby" which are both geared towards size.

Candidates performed very weak in the b. section where they were to outline five procedures for making the baby cot. Very few of the candidates scored less than 3 out of 5 marks allocation. The following procedure were to be applied:

- Remove the mattress from the cot
- Clean both mattress and cot thoroughly according to type
- Replace the mattress in the cot
- Cover the mattress with the first sheet and place the Mackintosh next to the first sheet.
- Lay the second sheet over the mackintosh and tuck in the sides properly.

Instead some candidates stated the following procedure. Instead of making the cot, candidates stated the procedure of changing bed sheets and some irrelevant statements as in the examples below:

- "remove the bed sheet on the baby's cot"
- "the bed dress should be clean"
- "Place the cot in the bedroom near the parents" etc.

Question 3

- (a) *Define Entrepreneurship.*
- (b) *List **three** entrepreneurship opportunities in Home Management.*
- (c) *Enumerate **five** advantages of starting a business.*

The above question was the least popular selected by many. However, the performance of those who selected it was satisfactory, despite scanty definition in 3a. where some candidates scored only 0.5 out of 3 marks with statements like:

- "When a person is managing or controlling of business enterprises."
- "Entrepreneurship define as the sale and distribution of goods",
- "An entrepreneurship is a person who put together all factors of production such as all factors of production such as land, labour and capital" etc.

Candidates' performance was a manifestation of untreated topic. The definition should contain key words like:

- establishing /creating innovation and
- risk taking for profit making in business.

In the 3b. Section, where candidates were to list entrepreneurship opportunities in Home Management like:

- laundry work/dry cleaning
- hair dressing
- salon management
- restaurant management

- catering services
- interior decoration
- garment making
- housekeeping etc.
- where one is
- self-employed/ employer,
- create jobs,
- be financial independence
- alleviation of poverty
- providing learning opportunity etc.

Candidates stated “teaching”, “Dietician” or “nurse”, “waiter/ waitress” etc. where individuals provide services as an employee and received rewards.

In 3c candidates performed satisfactory. Most of them scored 50 % of the awarded 5 marks. However, in most cases two or more answers of a section written differently depict the same meaning as in the following cases:

- “to gain income” and “to make profit” which are both geared towards financial independence.
- “to be your own boss” and “to be independent” which are both geared towards self-employment.

Question 4

The diagram **Fig.2** is an illustration of parents, adolescent and child relationship, study it and answer question **4a** and **b**.



Fig. 2

- Enumerate **six** factors affecting parent, adolescent and child relationship illustrated in **Fig. 2**.*
- State **four** common problems of adolescents illustrated in **Fig. 2**.*

Another very popular question that was selected by many. However, candidates performance was very poor in both 4a and 4b most of them scored 1 mark and below.

Instead of stating the following in 4 a.:

- individual differences
- home condition
- parental attitude
- communication
- family size
- crises in the family etc.

Most candidates stated two or more answers written differently but depicting the same meaning as in the following cases:

“individual differences”, “personal” individual likes and dislikes” scored only 1 mark as all three portrayed individual differences.

In 4b. candidates were to state common problems of adolescents which include:

- Adjustment
- Status

- Independence
- Need for achievement
- Physical changes
- Peer pressure/emotional problem
- Educational challenges
- Addiction to cyber space
- Increased sexual desire
- Substance abuse etc.

Instead, Candidates stated statements like ‘ ‘ sense of being grown up ‘ ‘, ‘ ‘call for freedom ‘ ‘ which are both geared towards independence and scored only 1 instead of 2 marks.

‘ ‘ too much boy/girl relationship problems’ ’ and ‘ ‘ engaging in sex and sexual activities’ ’ which are both the same in content and scored only 1 instead of 2 marks.

Instead of scoring 4 points in this section candidate scored only 2 marks.

Question 5

- (a) *What is a home accident?*
- (b) *Enumerate **five** common accidents in the home.*
- (c) *State **three** causes of accidents in the home.*

Another popular question attempted by many candidates and most of them scored all 5 points awarded in 5b. However, their performance was weak in the 5a. section where they were asked to explain home accident, candidates were expected to include key expressions like:

- ‘ unpleasant event/unintentional act’,
- ‘leads to harm. injury/resulting in damage or injury’.
- Most candidates scored zero mark on the following statements:
- ‘ ‘home accident is the problems or accident that happened in the home ‘ ‘
- ‘ ‘home accident are accidents that occur at home ‘ ‘
- ‘ ‘Home accident is the problems or accident that happened in the house’ ’

Candidates’ statements above manifested incomplete coverage of the above topic.

Their performance in the 5c section was satisfactory, although most of them scored only 1 or 2 marks only out of 3 marks.

Question 6

- (a) *State **five** factors that influence the selection of household linen.*
- (b) *State **five** procedures for maintaining household linen.*

A very unpopular question chosen by only few candidates and their performance was so poor that the topic on household linen seems to be a misunderstood term / untreated topic in the Home Management syllabus.

Candidates in 6a. regarding factors that influence the selection of household linen, supplied irrelevant statements like ‘ ‘ the size of the family’ ’ in the selection of household linen instead of ‘size of bed and pillow’, ‘ ‘ the situation of the family’ ’ instead of ‘ money available to the family’.

In the b. section where candidates were to state five procedures for maintaining household linen, which include:

- Mend tears in linen as soon as notice.
- Remove all stains during washing.
- Some linen such as napkins and floor cloths should be washed immediately after each use etc.
- Candidates stated the following wrong procedures, example:
- ‘ ‘Replace the washed linen with another’ ’
- ‘ ‘ Do not use the already washed one’ ’ etc.

In most cases also, candidates stated two or more answers written differently but depicted the same meaning. Their performance really manifested numerous gaps in both the theoretical and practical aspect of treating the topic.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
HOME MANAGEMENT 3 (PRACTICAL)

1. GENERAL COMMENTS ON THE PAPER

The 2023 WASSCE Home Management 3 (practical) examination questions for School Candidates were derived from both the theoretical and practical topics within the home management syllabus of the Senior Secondary course programme of grade 10 to 12. It has also been internationally moderated. The exams were coordinated and conducted at the registered school centers accordingly at all regions.

2. CANDIDATES' STRENGTHS

- Punctual at the centres
- Showed interest and determination in the practical exam.
- Brought along materials needed for the practical (pans, buckets, bowls, iron, brooms, ropes etc.) that the schools do not provide.
- Satisfactory adherence to instructions on activities.
- Mentioned the activities on the preparatory practical paper

3. CANDIDATES' WEAKNESSES

- Wrong vocabulary used; 'clean the dresses on the part C time plan explanation of activities instead of washing the dresses
- Used statements like 'it is suitable for the question' on the part A reasons for choice of dishes /work, 'They are materials needed for washing the dress', 'they are materials needed when cleaning' etc.
- Candidates do not understand the proportions in the cake making. Some candidates wrote the following for the ingredients used in the baking of their cakes e.g.:
- 250g fat, 120 kg sugar, 8 kg flour
- 125 kg flour, 125 kg butter, 3 eggs, 2 cups of sugar
- Limited cleaning tools and equipment making candidates to wait for each other to conduct their cleaning activities.
- Lack knowledge in operating the gas cookers fixed in their kitchen.
- Waste of resources- all candidates threw their clean soapy waters that could be used or cleaning the bedroom or sitting room.
- Some of the brought ingredients for the baking and decoration of the cakes were too much/many and that made the activities on Baking and decorating cakes for the matriculation ceremony very expensive and discouraging for future candidates.

SCHOOLS' WEAKNESSES/CHALLENGES

- Environment not made conducive (the drying area not clean and the ropes provided at some centres were too short for the number of candidates)
- Dusty and dirty classrooms identified for the conduct of the practical.
- Almost all schools do not have the ideal bed for the demonstration of bed making. It is either the mattress is too big or too small for the bed, the bed placed on a table and the corners hanging out making it very difficult for candidates to mitre the corners of their bed sheets.
- Schools provided limited cleaning tools and equipment making candidates to wait in turn for each other to conduct their cleaning activities.

- Some Schools number of candidates is too large for the available space that could be demarcated to improvise rooms with ceilings, walls/windows and floors for individual candidates.
- Some centres classrooms do not have ceilings and that made it very difficult to remove cobwebs from those heights.

4. SUGGESTED REMEDIES

- School candidates should make effective use of both the WASSCE home management teaching and examination syllabus before the WASSCE dates to acquaint candidates with practical topics of the Home Management grade 10 -12 syllabi.
- School candidates should have access to the annual chief examiners report on passed Home Management practical exams to be informed with some of the observations made.
- School candidates should learn how to multi task in managing time; to start with activities that need less attention e.g. Conducting the laundering of the oil-stained blouse. While it is being dried on the line, the chosen dish is being prepared and cooked.
- School candidates should learn how to manage resources e.g. to keep the clean soapy and rinse waters used during laundry for another cleaning activity like the cleaning of the kerosene stove and the leather bag to save time, energy and cleaning agents.
- School candidates should make use of their android phones by Goggling on the internet to learn and practice how some of the cleaning activities are conducted.
- School candidates should desist from experimenting new dishes for exam when they do not master the skills in the preparation, cooking and even serving of said dishes (“one can never fatten a pig on market day”)
- School candidates should learn how to use/operate a gas cooker to save time and prevent accidents.
- School candidates should learn how to pack meals to carry along or use their android phones and Google to know the different ways of packing meals for picnics.
- Schools should have contingency measures to tackle emergency situations like no electricity to operate electric irons then use local/box irons with charcoal.
- Candidates should be taught the quantity measurements of liquid and solid ingredients in their dish’s preparations.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Your friend is going for her son’s matriculation:

- Thoroughly clean the sitting room where she will entertain visitors when she comes back;**
- Clean and make the bed for her peaceful sleep, the night before the journey;**
- Launder a set of dress suit for her to wear to the matriculation ceremony;**
- Bake and decorate a cake for the matriculation ceremony.**

Question 1

Thoroughly clean the sitting room where she will entertain visitors when she comes back

Some candidates satisfactorily demonstrated the cleaning of their sitting rooms’ by removing cobwebs from the ceilings, dusting the walls/windows, and sweeping and moping of the floors. However, they did not wash or wipe walls according to types. Candidates did not demonstrate the use of newspapers on the window glasses to remove water marks. Candidates demonstrated the moping of their floors only once leaving dirty soapy marks on the tiled floors. No clean water was used to wipe/mop out the excess soap. Only few mops were available at some centres making

candidates to wait for each other to conduct the cleaning activity. The cleaning activities were not conducted in a logical sequence.

Most of the candidates just dust the top of their sitting rooms 'furniture leaving the under sections of the centre tables and chairs dusty with cobwebs and chewed gums and never arrange them for presentation. They had no idea that the centre table in the sitting rooms to be decorated with a centre piece to welcome visitors. A real manifestation of lack of practical activities/lessons.

Question 2

Clean and make the bed for her peaceful sleep, the night before the journey

Very few candidates dusted and wiped the sides of their bed clean. No dusting of the mattresses was conducted by all candidates. All candidates just laid the bottom sheet and tucked the sides where possible. Then then lay the second sheet and also tucked the four corners and fluffed and laid the pillow on the second bed sheet. Here also, candidates manifested lack of practice on the above activities.

Question 3

Launder a set of dress suit for her to wear to the matriculation ceremony

Most candidates brought only a dress instead a set to be laundered and lost marks for washing only one article instead of a set of two or more. During the laundry process, candidates steeped their articles directly in warm soapy water instead of cold water to loosen the dirt first. They poured hot undiluted water directly on the garments which could destroy the texture of the fabric if it is not cotton or linen to withstand that hot temperature.

They also sprinkled powdered soap and some poured liquid detergent directly on the garment instead of allowing the grains / thick liquid to dissolve in the water. The bleach particles or ingredients in the powder /liquid could damage the texture and colour of delicate-coloured fabrics. They also just washed and rinsed their blouses only once and never aired after pressing to get them completely dry and safe to be folded or hug and safe from mildew attack.

All candidates threw their clean soapy waters that could be used to clean their sitting rooms and bedrooms.

At some centres, candidates could not press their laundered articles because there was no electricity and no local iron to use charcoal.

Question 4

Bake and decorate a cake for the matriculation ceremony

Candidates' choice of ingredients and quantity manifested lack of knowledge and skill in the baking and decoration of a cake and serving. They practiced the preparation and serving from the explanation acquired from teachers and friends and made a debut preparation on the very day of the examination ("one can never fatten a pig on market day".)

The baked cake results were unsatisfactorily for most candidates. The cakes were hard in texture, burnt and irregularly in shaped.

Almost all candidates used butter icing for the decoration of their cake. Instead of using a palette knife to coat the cake, they used their fingers to plaster the icing mixture on the cakes' surfaces. All candidates have no idea in the presentations of their baked and decorated cakes. They just placed them of plates with no cake dollies and no plates and cups/glasses to be used for serving the visitors for the matriculation ceremony.

Candidates manifested lack of any idea and skill in the above activities especially the decoration of a cake.

TECHNICAL- VOCATIONAL SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2023
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
TECHNICAL AND VOCATIONAL SUBJECTS

1. STANDARD OF THE PAPERS

The Chief Examiners of the Technical and Vocational subjects reported that the papers were well balanced and compared favourably with those of the previous years. They also reported that the questions were appropriate for the level of the candidates. They covered a wide range of the syllabuses and tested wide variety of knowledge. The time allocated for each paper was also adequate.

2. CANDIDATES' PERFORMANCE

The Chief Examiners for Auto Mechanics 2 and 3 reported that the candidates performed above average while the Chief Examiner for Visual Art 3A reported that the candidates' performance improved slightly. The Chief Examiners for Metalwork 3 and Woodwork 2 and 3 reported that the performances were average. Performance in other papers were reported to be below average.

3. CANDIDATES' STRENGTHS

The Chief Examiners reported on candidates' strengths as follows:

- The use of the basic tools was properly demonstrated.
- Skills in providing good quality of line work.
- The use of correct scale and the required dimensions.
- Features needed in freehand sketches were well presented.
- Some of the candidates produced good drawings and shading techniques.

4. CANDIDATES' WEAKNESSES

The Chief Examiners reported on candidates' weaknesses as follows:

- In Visual Art, candidates' weaknesses included poor drawing and composition, inability to observe objects and to use colour or shade properly.
- In Technical Drawing, weaknesses observed were poor visualization with no awareness of what the lowest point was about. Lack of knowledge in the geometry of drawing a triangle with given specifications, poor line work and wrong dimensioning, wrong displacement of views, and poor sectioning.
- In Woodwork and Metalwork, candidates' weaknesses were poor sketching skills, questions not being fully attempted and less periods allocated to technical subjects.
- In Auto Mechanics and Applied Electricity, candidates' weaknesses were lack of enough practice to improve on their practical skills and inadequate coverage of the syllabus. They also demonstrated lack of ability to select correct tools. The responses of some candidates also indicated that some questions were not properly treated during lessons or that the teachers are not competent in those areas.

5. SUGGESTED REMEDIES

- Candidates should be allowed to use the workshops frequently to improve their skills.
- Candidates should be provided with adequate tools, equipment, and materials for use in the workshops.
- The coverage of all topics in the syllabus should be ensured.
- Proper teaching aids must be provided for the teachers, and this include textbooks and practical training materials.
- Candidates should improve on their drawing abilities.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
METAL WORK 2

1. GENERAL COMMENTS ON THE PAPER

The questions set this year (2023) were not difficult. They covered a wide range of the syllabus, but the candidates' performance was below expectation. This unsatisfactory performance could be attributed to teachers' inability to complete the syllabus before the exams. Candidates' lack of understanding of the subject or topics covered with their teachers. Questions that required candidates to draw diagrams, their performance was far better. Generally, the overall performance of candidates in this year's examination was not the least satisfactory compared to the pass years.

2. CANDIDATES' STRENGTHS

– There was no particular strength worthy of mention.

3. CANDIDATES' WEAKNESSES

This unsatisfactory performance could be attributed to the following:

Candidates choosing the subject to satisfy the examination requirements
Candidates lack knowledge of the subject.
Less periods allocated to technical subjects
Teachers rushing to complete the syllabus without candidates understanding the topics.
School principals' negative attitude towards technical subjects.

4. SUGGESTED REMEDIES

Principals should encourage the teaching of technical subjects in their schools and allocate moral periods.
Candidates should be allowed to use the workshops frequently.
Bright students should be encouraged to choose the technical subjects.
Teachers should have a good knowledge to the subject and be able to complete the syllabus on time.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) State **one** workshop operation which renders each of the following practices dangerous:
- (i) wearing long hair;
 - (ii) wearing sandals.
- (b) State **two** reasons for using grey cast iron in making machine beds.
- (c) List **three** desirable properties of cutting fluids.
- (d) (i) Name the **two** types of lathe steadies.
(ii) State **one** main use of steadies.

- (a) In this question, 75% of the candidates could not answer it. Wearing long hair they associate it with grinding and therefore could not score good marks.
- (b) 65% of the candidates stated that cast iron is hard and cannot break easily, and could not score a full mark.
- (c) 50% of the candidates were naming the cutting fluids only and scored zero.
- (d) Only 20% of the candidates got this question right and therefore scored full mark

Question 2

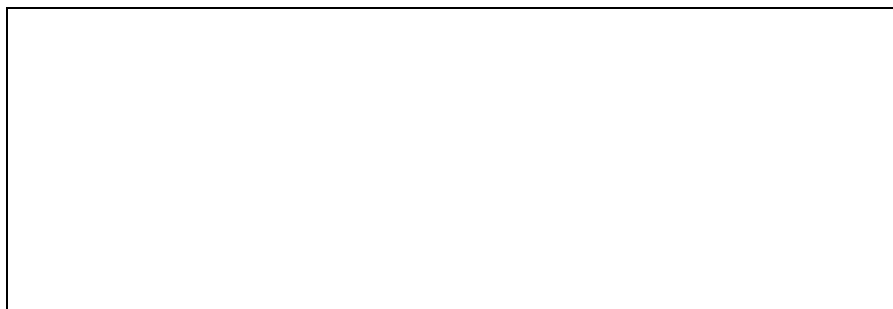
- (a) *Identify four design-related problem areas in your community.*
- (b) *State three steps involved in making a panned down seam.*
- (c) *Make a pictorial sketch of the straight soldering iron.*



- (a) Candidates were naming the differences stages in problem solving and therefore could not get any mark.
- (b) This was a difficult question for the candidates, as 60% of them were listing the tools used in sheet metal.
- (c) 95% of the candidates were able to answer this part of the question correctly and scored good marks.

Question 3

- (a) (i) *Make freehand two-dimensional sketch of a hand tap.*

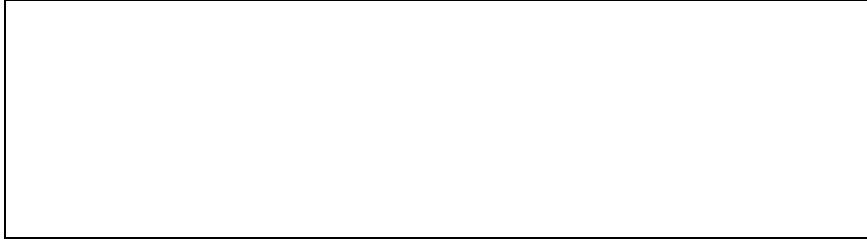


- (ii) *Label the following parts of the hand tap sketched in question 3(a)(i):*
 - I. land;*
 - II. shank;*
 - III. tang.*
- (b) *State **one** reason for using a bottom tap to finish a blind hole.*
- (c) *Explain the drop forging process.*
- (d) *State **one** reason for bending the teeth of the hacksaw blade to the right and left alternatively.*

- (a) 70% of the candidates drew the handle of a local hand-pump, and therefore scored zero.
- (b) Only 30% were able to draw and labelled the parts listed.
- (c) 45% were able to answer this part of the question.
- (d) All the candidates who attempted this question could not answer this part of the question. It was a very difficult question for them. Only 30% of the candidates were able to answer it correctly.

Question 4

- (a) Use a sketch to show the **correct** use of the hand file.

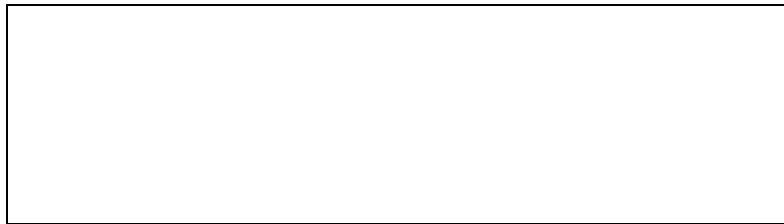


- (b) (i) State the reason for fettling a casting.
(ii) List **four** defects in sand casting.
- (c) Explain why mild steel **cannot** be hardened by heating and quenching.

- (a) 90% of the candidates were able to draw the hand file correctly with all the parts labelled, but the correct use of the handle file was not shown.
- (b) 75% were able to answer this part of the question correctly and scored a good mark.
- (b) 50% did not know what the defects are in sand casting. Instead they listed down the process involved in casting.
- (c) 40% were able to explain in detail and got full mark.

Question 5

- (a) List **three** examples of each of the following types of joint:
- (i) permanent joint;
- (ii) temporary joint.
- (b) Sketch **each** of the following types of rivets:
- (i) bifurcated rivet;



- (ii) countersink rivet;



- (iii) snap head rivet.



- (a) This was a very popular question, and candidates who opted for it did very well and scored very good marks.
- (b) 95% of them drew all the diagrams correctly and very neat. Only 5% could not differentiate between a permanent and temporal joint, bifurcated and a snap head river.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
METAL WORK 3

1. GENERAL COMMENTS ON THE PAPER

The metalwork paper 3, consists of two practical tests out of which one was to be attempted. All candidates had the option to choose either the fitting exercise or the machining exercise. The standard of the paper compared favourably with that of 2022. However, all registered candidates this year 2023 opted for the fitting exercise. The machining exercise was not chosen by any of the candidates in The Gambia. Candidates were required to study the blueprint, mark out, cut and file to shape and size and assemble the **three** parts.

The performance of the candidates was satisfactory compared to last exam. A total of 337 candidates opted for the subject. About 20 percent of the candidates did poorly. The poor performance from these candidates could be attributed to lack of tools, equipment and machines for effective teaching in and outside the workshop.

The activities covered all the basic hand tools and their uses. The sequence of operation went as follow:

I. Marking-out:

- scribing
- center punching
- measuring
- sawing
- hammering
- chiseling

II. Filing

- through filing
- draw filing operation

The use of the tools was a challenge to some of the candidates, it was reflected in the product. A good number of the candidates measured up to the task, but as always, a small number fail to understand the question.

2. CANDIDATES' STRENGTHS

- Candidates produce accurate marking-out using correct measurement.
- A good number of the candidates did cut to the required size and shape.
- The use of the tools was properly demonstrated by the candidates.
- Candidates did very well in all aspects of the exercise

3. CANDIDATES' WEAKNESSES

A few of the candidates found it difficult to:

- Reading the working drawing.
- File to the required shape and size
- Produce good finish work.

4. SUGGESTED REMEDIES

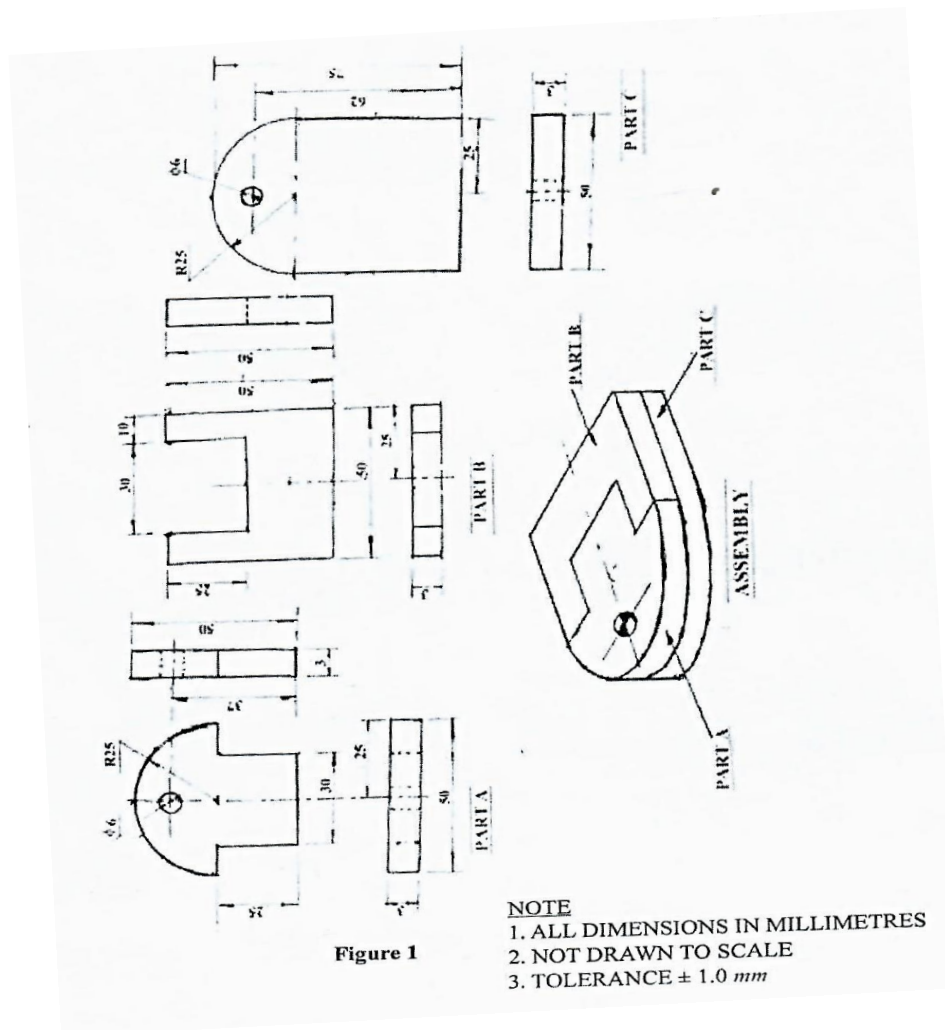
- Teachers should concentrate more on diagrams and drawing, reading, marking – out, filling and drilling operations. Accuracy of work should be emphasized. Head of schools should encourage the teaching of Technical Drawing.
- Candidates should be provided with much needed materials for used in the workshop.
- Candidates should be allowed to use the workshop frequently to improve their skills.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

All candidates had the choice to choose either the fitting or the machining exercise. However, all 336 registered candidates who opted for the 2023 metal work subject did the fitting test pieces. Candidate were required to study the working drawing, marking out the pieces, cut to shape, drill the holes, and file to size and assemble parts 'a', 'b' and 'c' by means of a dowel. About 65 – 70 percent did very well.

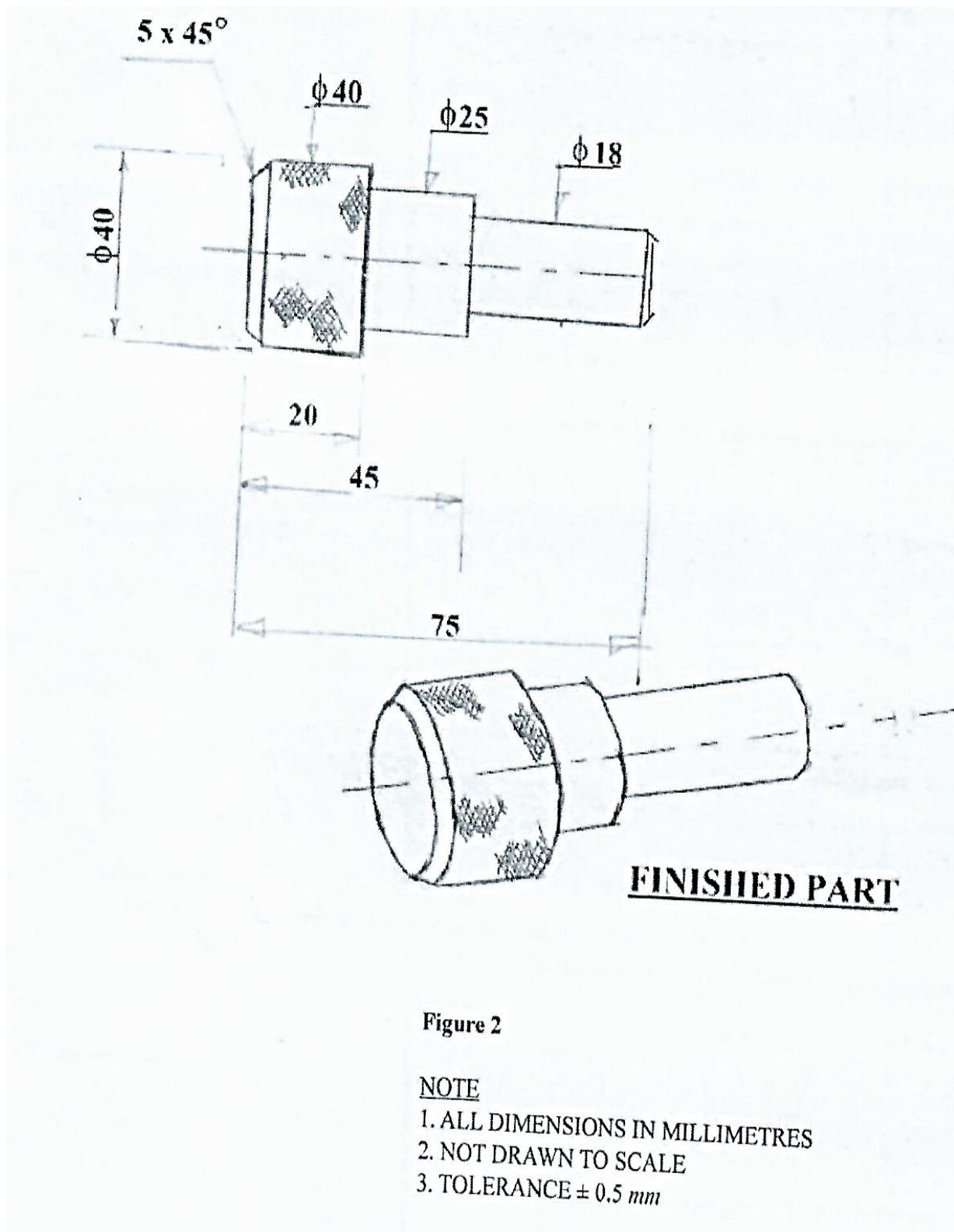
Question 1

Figure 1 shows the assembly detailed of each part of a fitting exercise. Using the materials supplied, prepare the parts and assemble the pieces.



Question 2

Figure 2 shows the detailed view of a machined part. Produce the part using the materials supplied.



WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
TECHNICAL DRAWING 2

1. GENERAL COMMENTS ON THE PAPER

In the above-mentioned Technical Drawing 2 (Essay), the questions set were according to the prescribed WAEC syllabus and the standard was to the scope of the candidates and was a well-balanced paper.

There was a drastic drop in the overall performance of the candidates compared to the past May examination, based on various reasons. Very few candidates demonstrated a good understanding of the questions while the majority appear to be ill prepared for the examination. For better performance, candidates must be well guided and coached to master the rudiments of Technical Drawing and cover the syllabus. Most especially on loci (epicycloid), circles and tangents.

2. CANDIDATES' STRENGTHS

Few candidates demonstrated some knowledge in the various aspects:

- A fair knowledge of the principles and theorem of circles, tangents and loci.
- Ability to read and interpret orthographic drawing.
- Some skills in the use of basic drawing instruments such as the compass and setsquares.
- Skills in providing good quality lines.
- Skills in drawing tangential curves.

3. CANDIDATES' WEAKNESSES

- Poor visualization with no awareness of what the lowest point is about.
- The candidates' demonstrated lack of knowledge in the geometry of drawing a triangle with given specifications.
- Majority of the candidates could not draw the given exhaust pipe gasket.
- Many candidates could not copy the given figures 3, 4 and 5.

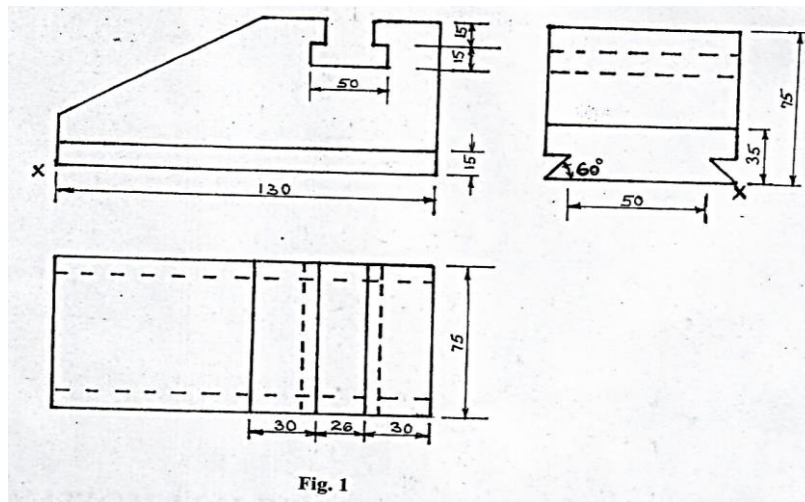
4. SUGGESTED REMEDIES

- Candidates must learn how to interpret orthographic, the concept of the lowest point.
- The topics Loci needs to be well delivered by teachers.
- Teachers should also try to cover a wide range of topics in the syllabus (i.e. loci, tangential curves and orthographic to isometric drawing).

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

*The sketch in **Fig. 1** shows a block in first angle orthographic projection. Draw, full size, the block in isometric projection, making X the lowest point.*



Draw, **full** size, the block isometric projection, making *X* the lowest points.

The above question examined the knowledge and skills of candidates in visualizing and interpreting orthographic drawing to isometric drawing using the right/required lowest point.

The performance of candidates in this question include:

Demonstrated by few candidates is good quality line work, the ability to visualize and the use of the lowest point correctly.

Well-proportioned and good resemblance manifested in the sketches of some candidates.

Some of the candidates' weaknesses in their solution include:

Poor quality line work with wrong dimensions.

The inability to visualize by the majority of candidates and the wrong concept in the interpretation of the lowest point.

Question 2

(a) (i) Construct a triangle with the following specifications:

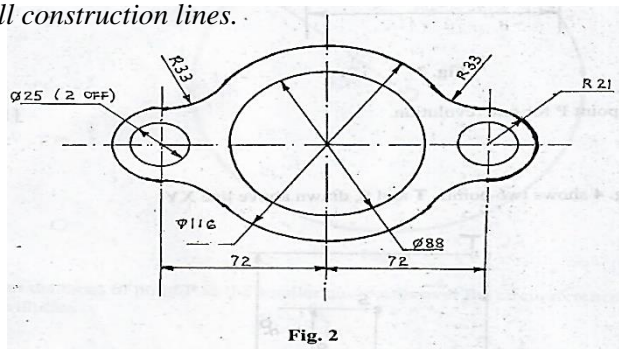
Base length=120;

Vertical angle=60°;

Altitude = 50.

(ii) Measure and state the lengths of the other two sides of the triangle.

(b) The sketch in **Fig. 2** shows an exhaust pipe gasket. Draw, full size, the given view, showing all construction lines.



Draw, **full** size, the given view, showing all construction lines

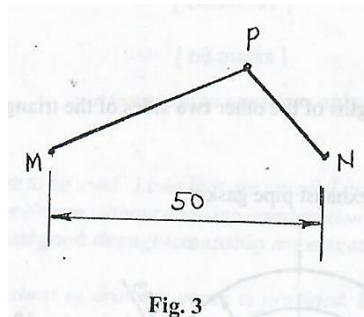
The above questions examined the knowledge and the skills in constructing a triangle and an exhaust pipe gasket. Many candidates could not draw the given frame of the exhaust pipe gasket, and those candidates who attempted it, many of them constructed with wrong dimensions.

Candidates' performance include:

- Proper dimensions using the right scale.
- Good quality of lines.
- Some candidates' weaknesses in their solution include:
- Wrong dimensions in drawing the given frame of the exhaust pipe gasket.
- Poor line work and incomplete diagrams.
- Candidates constructing a cone instead of a triangle.

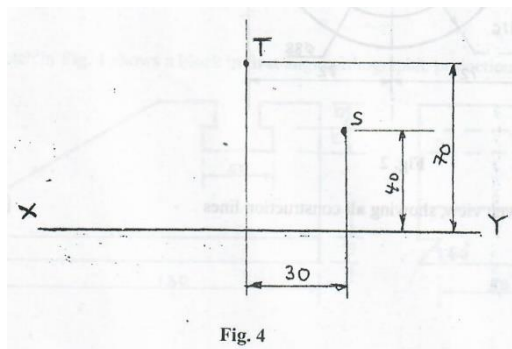
Question 3

- (a) The sketch in **Fig. 3** shows points **M** and **N**, 50 apart. Point **P** moves such that its distance from **M** and **N** is always in the ratio of 2:1.



Plot the locus of point **P** for one revolution.

- (b) The sketch in **Fig. 4** shows two points, **T** and **S**, drawn above line **XY**.



- (c) Construct a circle to touch line **XY** and pass through points **T** and **S**.
- (d) Measure and state the radius of the circle.

The above questions examined the knowledge, skills in drawing the locus of a point and that of a circle. Out of the many candidates who attempted this question, only a few did well.

The performance of candidates in this question include:

- Adequate knowledge and skills in producing the right scale/dimension.

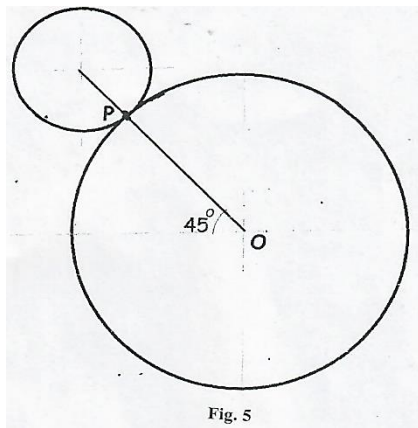
- Good marking out in joining the points for the location of different point P1-P7 using the ratio 2:1.
- Good quality of lines and the accurate joining points P into a smooth curve.

Some of the candidates' weaknesses in their solution include:

- Wrong dimensions in drawing the given layout and joining TS and extending to cut XY at C.
- Poor line work.
- Drawing rough circle.

Question 4

The sketch in **Fig.5** positioned at 45° to the circle of diameter 140.



shows of circle of diameter 40 horizontal Centre line of another

Plot the locus of point **P** as the smaller circle rolls over the circumference of the bigger circle for one revolution.

The above question examined the knowledge, skills in drawing the locus of an epicycloid. Out of the many candidates who attempted this question, only a few did well.

The performance of candidates in this question include:

- Adequate knowledge and skills in producing the right scale/dimension.
- For dividing the circle into twelve, equal parts.
- For plotting the points using the radius of the rolling circle.
- Good quality of lines and the accurate joining the points to obtain the epicycloid.

Some of the candidates' weaknesses in their solution include:

- Wrong dimensions in drawing the given circle with diameter 140 and OP at 45° .
- Poor line work.
- Drawing rough curve.
- Omission of radial lines.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
TECHNICAL DRAWING 3

1. GENERAL COMMENTS ON THE PAPER

Technical Drawing Paper 3 was generally up to standard and are to the scope of the candidates. The overall performance of the candidates in both papers was not reasonably good. The free hand sketching reveals the poor quality of lines, lack of proportionality and resemblance in candidates' answers. It is important for candidates to cover wide range of topics that will equip them for the examination.

2. CANDIDATES' STRENGTHS

A few demonstrated some skills in the various aspects:

The use of correct scale and the required dimensions.

Ability to read orthographic and the use of the lowest point to draw the isometric block.

The features needed for the freehand were well presented for each drawing given.

3. CANDIDATES' WEAKNESSES

The following were also noted in candidates' solution.

Poor line work and wrong dimensioning.

Wrong displacement of views, poor sectioning and assembling of components of the pulley bracket.

Many candidates were unable to complete the required views for both the building and mechanical drawing within the given time.

4. SUGGESTED REMEDIES

The use of correct dimensions must be emphasized.

Candidates must demonstrate the awareness of resemblance and proportionality in their freehand sketching and more practice is required of students on building and mechanical tools.

Candidates must use BS conventions with regards to line work and scale.

Candidates must be able to distinguish the various tools in both building and mechanical and the understanding of the lowest point.

The coverage of all topics in the syllabus is of great importance.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Figure 1 shows two views of a block.

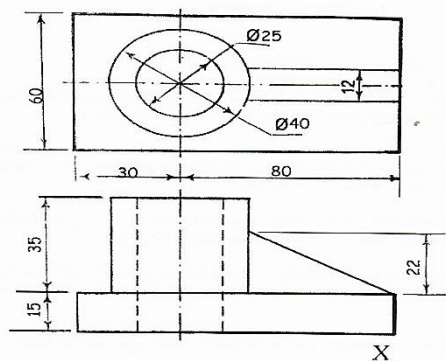


Fig. 1

Make a freehand sketch of the isometric view of the block, making X the lowest point.

Three views of an object, given in third angle orthographic projection, are shown in Fig.1.

The question above examined the knowledge and the skills in drawing an isometric block using a specific position (i.e. the right lowest point M) when presented with three views in orthographic drawing. Many candidates used the lowest point wrongly and could not present the required features of the presented drawing. Candidates also demonstrated poor ability in visualizing.

Question 2

Make a freehand sketch of the pictorial view of a combination wrench.

In this question, majority of the candidates could not present their drawing in pictorial view. The lack of proportion and resemblance is also demonstrated by the candidates' solution.

Question 3

Make a freehand sketch of the pictorial view of a pipe wrench.

In this question, many candidates produced poor quality lines, lack of good proportion and resemblance.

SECTION B – BUILDING DRAWING

Question 4

Plan

Figure 2 shows a sketch plan of a bungalow. Study the sketch plan with the given specifications and answer the questions that follow, noting that dimensions between walls are in-to-in.

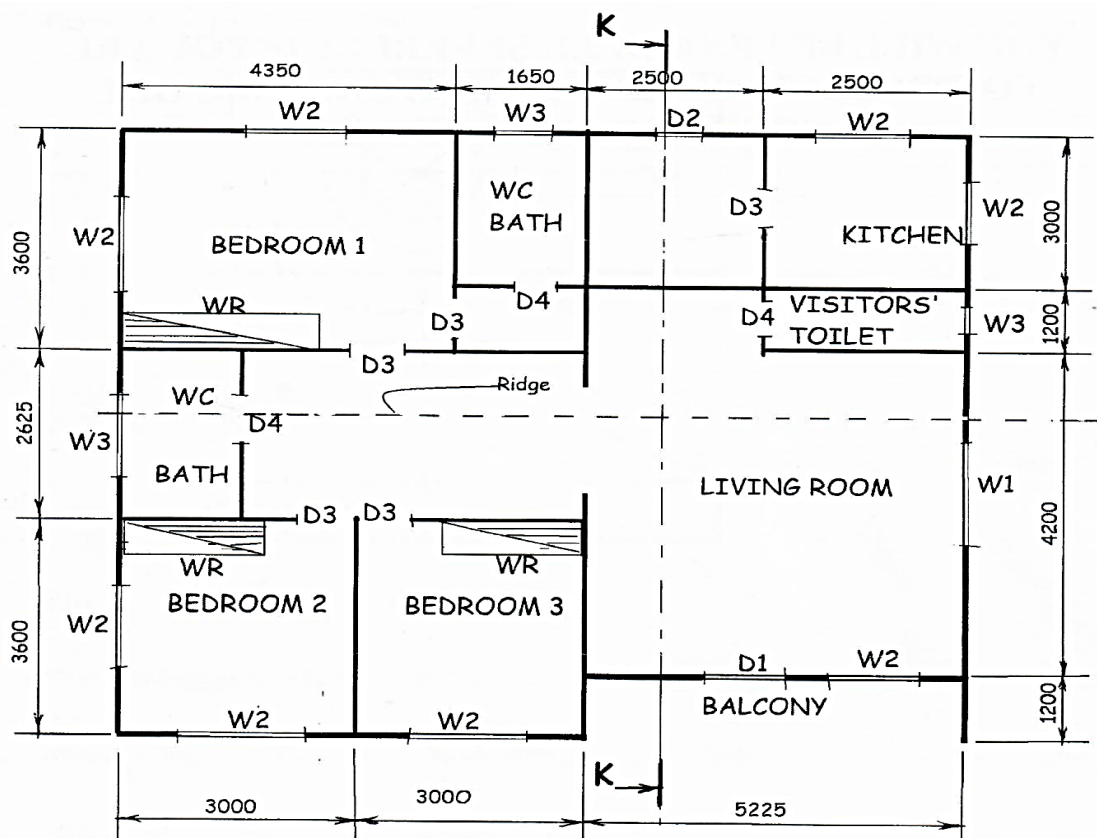


Fig. 2: SKETCH PLAN

SPECIFICATIONS

All dimensions are given in millimeters

WALLS:	<i>All walls 150 thick sandcrete hollow blocks</i>
FLOOR:	<i>Hardcore 300; Concrete slab 150; Mortar screed 25.</i>
ROOF:	<i>Double pitch 15°; Eaves projection 600; Floor-to-ceiling height 3000.</i>
BALCONY:	<i>Metal balustrade 900 high.</i>
DOORS:	<i>D₁ - 1800 × 2100 sliding aluminium door with 50 × 100 aluminium frame; D₂ - 1200 × 2100 metallic door with 50 × 100 metallic frame; D₃ - 900 × 2100 wooden flush door with 50 × 100 hardwood frame; D₄ - 750 × 2100 wooden flush door with 50 × 100 hardwood frame.</i>
WINDOWS:	<i>All windows sliding glazed with aluminium sliding frame; W₁ - 2400 × 1200; W₂ - 1500 × 1200; W₃ - 600 × 600.</i>
BEAM:	<i>300 × 300 reinforced concrete.</i>

(a) Draw, to a scale of 1:100, the following views:

- i. floor elevation;
- ii. left elevation.

(b) Draw, to a scale of 1:50, a detailed section K-K from foundation to the roof.

The above question examined the skills and knowledge in drawing a floor plan of scale 1:100. Out of the majority of the candidates who attempted this question, only a few were able to score high marks in it.

The performance of candidates in this question include:

- Good quality lines and neatness.
- Adequate knowledge and skills in producing the correct given scale.
- Good presentation of features such as walls, doors, windows, beams, eaves, the cutting plane P-P etc.

Some of the candidates' weaknesses in their solution included, failure to indicate the following in their drawing:

- Writing floor plan
- Identifying the spaces.
- The use of the right scale
- Reproducing the sketch plan in the question paper as solution.

FRONT ELEVATION

A tested knowledge and skills reveal the drawing of the required elevation of the given specifications, and the following manifested in reaction to the question given.

Candidates' strength included:

- Knowledge and skills in reading orthographic drawing.
- The presentation and reproduction of good drawing of the elevation with the windows, doors, beam, roof and eaves.
- Some candidates' weaknesses include:
- Omission of front elevation, ground line, windows and eaves.
- Wrong projection of the roof.
- Poor quality line work.

Section Y-Y

According to the given specifications, the sectional view also examined the candidates' knowledge and skills. Most candidates who attempted this question did not perform well. However, a few were able to present the features as demanded in the question.

Candidates' strength in this question include:

- The recognition in drawing the foundation, earth filling, hard core, floor slab, floor screed as well as the walls, doors and roof members.
- Weaknesses of candidates in their solution include:
- Failure to use the right conventional symbols in drawing doors and walls.
- The use of wrong scale instead of 1:50.
- Omission of beams, lintels, roof members (rafter, purlin, kingpost, struts), eaves, wall plate and ridge cap.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
VISUAL ART 2

1. GENERAL COMMENTS ON THE PAPER

The questions were of the required standard and covered various sections of the WASSCE Visual Art syllabus.

It was observed that most of the candidates (about 70%) found some of the questions difficult to answer.

2. CANDIDATES' STRENGTHS

About 85% of the candidates followed the instructions by answering the required number of questions from each section.

Some answered each of the sub- units in the respective questions and they indicated each as such;

They answered each question directly without beating about the bush even if their answers were not correct,

It was also observed that the weak candidates demonstrated some effort.

3. CANDIDATES' WEAKNESSES

About 65% of the candidates failed to score the passing marks.

Some copied questions in the spaces provided for the answers

Inability to express themselves seems to be the greatest handicap for them to perform,

Handwriting of about 20% of the candidates were illegible,

It was evident that candidates gamble the syllabus, rather every aspect should be treated well,

Students do not seem to be very much interested and enthusiastic or serious about their studies.

4. SUGGESTED REMEDIES

Visual art teachers need capacity building to refresh their knowledge.

Candidates should work harder for better performance.

The conduct of examinations should be well monitored by school authorities, and they should not be collaborators in examination malpractice.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *Explain shading in art*

(b) *List any **two** examples of shading,*

(c) *State any **five** functions of perspective in art.*

A popular question,

CANDIDATES' STRENGTHS

Shading is a popular aspect of drawing, and candidates are familiar with it. Few candidates were able to explain shading. About 70% of those who chose this question this option were also able to list two examples of shading, Functions of perspective was not a problem for them.

CANDIDATES' WEAKNESSES

Candidates are familiar with shading, but they had a lot of problems in expressing themselves in writing. About 700% of them wrote smooth shading when they should have written blurring.

Question 2

- (a) List any **five** materials used in producing a mosaic picture.
- (b) State sequentially **five** steps involved in producing a mosaic picture.

CANDIDATES' STRENGTHS

They are familiar with mosaic picture, about 70% of the candidates have either done it or witness the process of production, so it was not a problem for them to list the five materials used in producing it and to state the five steps involved sequentially.

CANDIDATES' WEAKNESSES

About 30% of candidates who attempted this question mistook it for papier mâché and they could not sequentially state the five steps involved in producing mosaic picture,

Question 3

Write on Kolade Osinowo with particular reference to:

- (a) nationality;
- (b) training;
- (c) area of specialization;
- (d) Any **two** examples of his artworks;
- (e) State any **four** of his contributions to the development of art.

CANDIDATES' STRENGTHS

About 10% of candidates who attempted this option scored good marks. They are familiar with the artist's nationality, his works and some of his contributions and achievements.

CANDIDATES' WEAKNESSES

About 80% of candidates who answered this question did not do well. Some candidates wrote Ghana as his nationality instead of Nigeria. They were unable to answer the other parts of the question correctly.

Question 4

Write on Vincent Kofi with particular reference to:

- (a) nationality;
- (b) training;
- (c) area of specialization;
- (d) List any **one** example of his artworks
- (e) State any **five** of his contributions to the development of art.

Vincent Kofi is not a popular artist in WASSCE textbooks. About 10% of candidates who answered this question wrote good points on the question. They were familiar with the artist and his achievements.

CANDIDATES' WEAKNESSES

About 80% of candidates who answered this question had no idea of the artist's achievements and contributions. Some wrote the same point on Kolade Osinowo and Vincent Kofi.

Question 5

- (a) List any **three** art media used by the Fon people.
- (b) State any **three** characteristics of Fon sculptures.
- (c) State **three** functions of Fon art.

CANDIDATES' STRENGTHS

A popular question, maybe because questions 3 and 4 were difficult for them to answer. About 60% of candidates who attempted this option scored good marks. Some were able to guess correctly.

CANDIDATES' WEAKNESSES

Some candidates wrote functions where they were to write characteristics and characteristics where they were to write functions. Some wrote the characteristics and functions of other art forms instead of Fon art. Some candidates wrote Facebook, WhatsApp, radio, television as media used by the Fon people.

Question 6

- (a) List any **seven** characteristics of Akuaba dolls.
- (b) State any **four** functions of Akuaba dolls.

CANDIDATES' STRENGTHS

Akuaba dolls is a popular artwork. They are available in almost all art textbooks. Candidates had access to the facts on Akuaba dolls. About 70% of candidates who answered this question wrote good points and scored good marks.

CANDIDATES' WEAKNESSES

Some candidates could not distinguish between characteristics and functions.

Question 7

- (a) Define the term pointillism.
- (b) List any **one** artwork produced using pointillism.
- (c) State any **six** contributions of Paul Cezanne to modern art.

CANDIDATES' STRENGTHS

About 40% of candidates answered this question. They wrote good points on the first part of the question and few points on contributions of Paul Cezanne to modern art.

CANDIDATES' WEAKNESSES

About 70% of candidates who chose this question had no idea of the topic. They scribbled irrelevant answers to fill the space meant for the answers.

Question 8

- (a) Define Byzantine art

- (b) List any **one** example of *Byzantine art*.
- (c) State any **three** characteristics of *Byzantine art*
- (d) State any **three** characteristics of *expressionism*.

CANDIDATES' STRENGTHS

It was not a familiar topic among students. About 08% of candidates attempted this option. Few of them had good knowledge of the topic.

CANDIDATES' WEAKNESSES

About 80% of candidates who answered this question had no idea of the topic. About 30% of candidates wrote notes on Egyptian art.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
VISUAL ART 3A (DRAWING)

1. GENERAL COMMENTS ON THE PAPER

This paper aims at testing the candidate's ability and skills at visually expressing themselves in the areas of drawing from a group of objects (still-life), nature drawing and life drawing. Candidates who write this exam should therefore be able to accurately represent ideas and objects on paper and enhance their drawings using the shading techniques to show three dimensionality of the objects they draw, use colour to show harmony and contrast, source of light, foreground and background among others. The performances of candidates in visual Art 3A this year have improved compared to previous years.

2. CANDIDATES' STRENGTHS

Some of the candidates produced good drawings and shading techniques.

3. CANDIDATES' WEAKNESSES

Many of weaknesses and concerns observed during this year's marking exercise were as follows, poor drawing ability and composition, ability to observe objects and inability to use colour or shade properly.

4. SUGGESTED REMEDIES

Teachers should train their candidates before allowing them to sit to this exam, because some of them cannot draw at all.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

ALTERNATIVE A: DRAWING FROM OBJECTS.

Place a chair close to a good source of light, place a T-shirt on the backrest of the chair. On the chair, place a lantern.

Candidates were asked to place an armchair close to a good source of light, a T-Shirt placed at the back rest of the chair and a lantern placed on the chair. This was the second popular question candidates answered.

WEAKNESSES

Some of the candidates answered the question poorly simply because the arrangement of the objects was not good, some of the works cannot be identified such as the T- shirt and some of the candidates did not even place the lantern on the chair.

STRENGTHS

Some candidates make good drawings, and they were well rewarded, because they scored above the average mark which is 50 marks.

Question 2

ALTERNATIVE B: DRAWING FROM NATURE

Place an uprooted cassava tuber with its stems and leaves on a low table against the wall.

Draw as composed.

For this question, candidates were to draw an up rooted cassava plant placed on a low table beside a wall with the stem and leaves. This was the most popular question answered by the candidates, about 80% of them attempted this question.

WEAKNESSES

Some of candidates did not do well simply because their drawing ability and ability to observe was generally poor. Some of the candidates did not draw the cassava tubers properly and the leaves as well. Poor colouring and shading techniques were also observed.

STRENGTHS

Some candidates produce good drawings, and they were rewarded. The shading and colouring were good and they followed instructions.

Question 3

ALTERNATIVE C: DRAWING FROM LIFE

A male model, dressed in shorts and a T-shirt is sitting on an armchair. He looks at something on the floor in front of him, resting his right hand on the armchair, while the left hand is on his thigh. His left leg is slightly bent, while the right stretched outwards.

This question demands candidates to draw a male model dressed in shorts and a T-shirt is sitting on an armchair. He is looking at something on the floor in front of him, resting his right hand on the armchair, while the left hand is on his left thigh. His left leg is slightly bent, while the right is stretched outwards. Draw the model as posed. This question was not popular only five percent of candidates answered this question.

WEAKNESSES

The human figures were not properly drawn, the proportion of the figures were not right, and poor shading techniques were observed.

STRENGTHS

Few of the candidates make good drawings and they were rewarded. Good shading and colouring were applied.

CONCLUSION: Generally, the overall performance of candidates in Visual Art 3A 2023 is better than previous years.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
VISUAL ART 3B (DESIGN)

1. GENERAL COMMENTS ON THE PAPER

Visual Art 3B is an alternative to 3C, therefore candidates are expected to answer only one paper. Paper 3B (Creative Design) comprises six questions of which candidates should answer one question only. Paper 3C which is three-dimensional comprises of four questions and candidates are required to answer one. The paper 3C is a task to be undertaken by candidates and performed within six months of the examination year and submitted to the examining body. This year's questions for both 3B and 3C are both standard and within the level of the candidates. No ambiguity on the question and the instructions are clear and easy to understand just as in the previous years. The overall performance for Creative Design this year is slightly better, as there was an improvement especially in the 3C which is three-dimensional. However, paper 3B continues to record low candidature as most candidates prefer 3C. The general performance for 3B which is on graphics is poor. Only 10% recorded quality works which is far above average whilst 60% performed poorly. In paper 3C, the question on calabash carving was well answered by 80% of the candidates with 5% presenting low quality works.

2. CANDIDATES' STRENGTHS

Use of space was very good. Over 80% of the work showed good use of space with work centred on the prescribed space.

3. CANDIDATES' WEAKNESSES

Poor use of mechanical instruments among 60% of the candidates
The choice of colour is generally poor with only 1% of the candidates actually used contrasting and harmonious colours
No candidates used paint in the picture making section
In the repeat patterns, there was evidence of poor use of motifs

4. SUGGESTED REMEDIES

Schools should be advised on packaging their works for transmission to council. Many ceramic and sculpture pieces were completely damaged
Candidates should be made to write their identification numbers correctly and in full rather than their classes. This was evident in many works and examiners found it very difficult to distinguish the owners

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

"Mamy is a new fashion line by Dzarm Company. Design a pictorial poster using EXQUISITELY UNIQUE as the slogan."

Colours; Not more than three
Size; 30cm by 40cm

About 25% attempted this question and 60% performed on average. However, there were few outstanding works.

STRENGTHS

- Composition is good in all the works.

- Ninety five percent presented a poster.

WEAKNESS

- About 60% of the works show poor colour combination.
- Lettering skills is poor for 50% of the works.

Question 2

“Using calligraphy, write the following quotation to be hung on the wall at the king’s palace;

*To those who trample upon our history,
And cuddle our fortunes,
To those who rape our patrimony,
And tickle our pride,
I bring to you the eternal good news of shame.”*

P.G. Itodo

Colours; **Not more than three.**
Size; 40cm by 30cm

This question was not popular, so only 5% of the candidates attempted it out of which 90% performed poorly.

STRENGTH

- About 98% used colour properly.
- All the candidates **wrote** the words in the quotation completely.

WEAKNESS

- Over 95% didn’t use calligraphy.
- Only few, less than 1% actually decorated the borders to show good finishing.

SECTION C: TEXTILE DESIGN

Question 3

“Using simple repeat pattern, make a design for a fabric to be worn celebrating the day of independence.”

Colours; **Not more than three.**
Size; 25cm by 15cm

This was the most popular question with 65% of the candidates attempting it. Over 70% performed above average with few very outstanding works.

STRENGTHS

- All works show good composition.
- All candidates presented simple repeat pattern.
- About 95% used colour very well.

WEAKNESS

- Despite presenting the correct repeat pattern, 45% used inappropriate motif for the said event.

Question 4

“Using diamond repeat pattern, make a design for a fabric to be worn on the day Africa remembers her fallen heroes/heroines.”

Colours; **Not more than three.**
Size; 25cm by 15cm

This question was attempted by 30% of the candidates. About 60% performed poorly.

STRENGTHS

- Over 90% used space correctly.
- Correct use of colour was evident in 65% of the works.

WEAKNESSES

- Only 1% did diamond repeat pattern, the rest don't seem to know diamond repeat.
- Over 90% did not use the correct motif.

SECTION C: PICTURE MAKING

Question 5

“Make an imaginative painting composition on any of the following themes.

Freedom.:

Medium; **Collage.**
Size; 40cm by 30cm.

This question was not popular. Less than 1% attempted it and no candidate performed up to average.

STRENGTHS

- Nothing to show for

WEAKNESSES

- No candidate did painting.
- No candidate presented work on the topic.

Question 6

Adversity.”

Medium: **Mixed media**
Size 40 cm by 30 cm

SECTION B

(a) The questions set for 3B and 3C are all standard with simple language used in the instructions. However, the nature of the questions in section C, picture making, should be revisited. Only 1% of the candidates attempted the two questions with less than 0.5% actually presenting quality works

(b) The questions are within the syllabus, but better options could be used in some instances like the question number 6 in 3B: “The Maiden”

(C) The questions are all within the level of the candidates

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
VISUAL ART 3C

1. GENERAL COMMENTS ON THE PAPER

Paper 3C which is three-dimensional comprises of four questions and candidates are required to answer one. The paper 3C is a task to be undertaken by candidates and performed within six months of the examination year and submitted to the examining body.

This year's questions for both 3B and 3C are both standard and within the level of the candidates. No ambiguity on the question and the instructions are clear and easy to understand just as in the previous years. The overall performance for Creative Design this year is slightly better, as there was an improvement especially in the 3C which is three-dimensional. However, paper 3B continues to record low candidature as most candidates prefer 3C. The general performance for 3B which is on graphics is poor. Only 10% recorded quality works which is far above average whilst 60% performed poorly. In paper 3C, the question on calabash carving was well answered by 80% of the candidates with 5% presenting low quality works.

2. CANDIDATES' STRENGTHS

Very good finishing for the calabash carving.
Carving technique was well demonstrated.
Ceramics were well designed.

3. CANDIDATES' WEAKNESSES

Poor or inappropriate material used for the question on product design.
Ceramics and sculpture work also showed poor finishing where about 5% of the work were painted rather than fired as required by the questions

4. SUGGESTED REMEDIES

Schools should be advised on packaging their works for transmission to council. Many ceramic and sculpture pieces were completely damaged
Candidates should be made to write their identification numbers correctly and in full rather than their classes. This was evident in many works and examiners found it very difficult to distinguish the owners

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

CERAMICS

Question 1

Design and produce a flower vase to be used in a reception room. Decorate the vase with African traditional motifs. The finished ware should be fired.

Height: 30 cm

This question was attempted by about 40% of the total candidates. As already mentioned, 90% of the works had evidence of professionalism which means they could not be candidates' effort.

SECTION B **SCULPTURE**

Question 2

Designed and produce a relief sculpture of a traditional wrestling competition. The finished ware should be fired.

Size: **50 cm by 30 cm**

About 20% of the total candidates attempted this question.

SECTION C: **PRODUCT DESIGN/MODELLING**

Question 3

Design and produce a model of a new can drink by FAXJUICE.

Height: **15 cm**

Diameter: **6 cm**

Medium: **different grades of paper boards.**

This question was not popular. Less than 5% of the candidates attempted this question and about 10% or less scored above average.

SECTION D: **CRAFTS**

Question 4

Using floral motifs, produce a decorative carved calabash

Colours: **Not more than three**

Size: **Not more than 35 cm in diameter**

This was the most popular question which was attempted by about 55% of the candidates. The performance for this question was good because about 90% performed average and above.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
APPLIED ELECTRICITY 2

This report was prepared following the WASSCE on applied electricity in May-June 2023. The report is divided into three sections.

Section A contains general comments on such items as the standard of the paper, candidate performance, weaknesses, and strength.

Section B contains detailed comments on each question responded including strength, weaknesses of candidates. The concluding part of this report

Section C gives recommendation for grading of (WASSCE) and textbooks to further the delivery of the subject.

1. GENERAL COMMENTS ON THE PAPER

These questions were drawn from six sections from the WASSCE syllabus namely.

- Direct current circuit theory.
- Alternating current circuit theory.
- Electrical machines.
- Measuring instrument
- Electrical installation
- Electrical installation
- Electrical transmission and distribution

2. CANDIDATES' STRENGTHS

Candidates understood and strongly did well in question 2 and 6.

3. CANDIDATES' WEAKNESSES

Based on percentage responses to individual questions, about 100% of candidates responded poorly on these five questions (1, 3, 4, 5, &7) attempted. The weakness of candidates was in their responses indicating that these questions were not properly treated during lesson period or the teachers are not competent in areas, because the topics were not properly dealt with.

4. SUGGESTED REMEDIES

To further the teaching of Applied Electricity as an applied science, proper teaching aids must be provided in all cause and these include textbooks, practical training materials. In this regard the following textbooks are recommended. In addition, this year's results, was one of the most unsatisfactory results comparing to pass years.

I therefore, encourage the principals to be monitoring all staff dealing with these technical subjects, to redouble their efforts, maintains the standard as they are related, and continue training good, creative and productive young men and women for the development of this nation. I also urge the principals to make sure that these practical equipment and materials should be in place so that students would be familiar with them to perform their exams.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

In this section, each question is dealt with in detail. Table B shows the percentage responses of candidates to questions attempted.

Questions Number	Topic	Responded %	Did not respond %
1	Definition of a conductor, properties of a conductor and power and energy cost of operation of 20 kobo in (kwh)	99	1
2	Single phase a.c supplied series circuit calculate the value of (inductive reactance of the circuit, impedance of the circuit, current in circuit, P.d across the inductor and P.d across the resistor.	80	20
3	Part of an alternator, 4-pole three phase inductor motor, 415v.50Hz three supply. And motor speed when the slip is 6%.	30	70
4	a. How can a range of a voltmeter be extended, advantages of a moving coil instrument, b. given a moving coil instrument with: value of series resistor required for the instrument to have a range of 0-200v. and the circuit diagram of the arrangement.	84	16
5	How can earth leakage can occur in an insulation, how discrimination is achieved in an installation	25	75
6	Symbol use to represent the following electrical devices (transformer, socket outlet, lamps and fused)	93	7
7	Definition of substation, function of component of distribution network (lighting arrestors, insulator, service main, and conductor)	68	32

Analysis of table B with regards to the percentage of marks scored indicates the following:

Question 1

- (a) (i) Define conductor.
(ii) State **three** properties of a conductor.
- (b) An electric pressing iron takes 5 A when operated on a 220 V supply. Calculate the cost of operating the pressing iron for 12 hours at 20 kobo per kilowatt-hour (kWh).

One hundred and thirty-seven (137) candidates represent 6% of the total responded strongly and score the pass mark. 16% responded strongly and got the average mark, one hundred and even (107) candidates representing 78% responded poorly. Fifteen (15) candidates score zero and one (1) candidates did not respond.

Question 2

A single phase a.c. supply at 220 V, 50 Hz is applied to a series circuit consisting of 0.02 H inductor and 15 Ω resistor. Calculate the:

- (a) inductive reactance of the circuit;
(b) impedance of the circuit;

- (c) *current in the circuit;*
- (d) *potential difference across the inductor;*
- (e) *potential difference across the resistor.*

One hundred and eighteen (118) candidates responded on this question. Forty-nine (49) candidates represent 42% responded strongly and got the pass mark. Thirty-four (34) which is equal to 28% score below the pass mark, and Twelve (12) candidates which is 10% did not responded at all.

Question 3

- (a) *List **three** parts of an alternator.*
- (b) *A 4-pole, three-phase inductor motor is connected to a 415 V, 50 Hz three-phase supply. Calculate the:*
 - (i) *percentage slip when the motor is running at 1450 rev/min.*
 - (ii) *motor speed when the slip is 6%.*

This question twenty-eight (28) responded on this question, twenty-eight (28) candidates responded poorly and score below the pass mark.

Question 4

- (a) *State:*
 - (i) *how the range of voltmeter can be extended.*
 - (ii) ***two** advantages of moving-coil instrument.*
- (b) *A moving-coil instrument having a coil of resistance 100 Ω requires a current of 1 mA to give a full scale deflection.*
 - (i) *Calculate the value of the series resistor required for the instrument to have a range of 0 – 200 V.*
 - (ii) *Draw the circuit diagram of the arrangement.*

Eight four (84) candidates representing 60% of the total responded on this question, one (1) candidate responded strongly and score the pass mark. Twenty-nine (29) candidates which is 35% responded and score below the pass mark, and fifty-one (51) candidates representing 61% score zero.

Question 5

- (a) *Explain how earth leakage can occur in an installation.*
- (b) *With the aid of a diagram, explain how discrimination is achieved in an installation.*

Twenty-five (25) candidates responded on this question, eleven (11) candidates which is 44% responded poorly and score below the average pass marks. Ten (10) candidates which is 40 % did not responded at all.

Question 6

- (a) *Draw the symbols used to represent the following electrical devices:*
 - (i) *Transformer;*
 - (ii) *Socket outlet;*
 - (iii) *lamp;*
 - (iv) *fuse.*
- (b) *State **three** tests carried out on a new electrical installation.*
- (c) *List **three** types of electrical wiring system.*

One hundred and thirty-one (131) candidates representing 94% of the total responded on this question. Thirty-one (31) candidates representing 24% responded strongly and score the pass mark. Fifty-eight (58) candidates which is 44 % out the total scored below the pass mark, fourteen (14) candidates which is 11% score zero mark.

Question 7

- (a) *Define a distribution substation.*
- (b) *State the function of the following components of a distribution network:*
 - (i) *Lightening arrestor:*
 - (ii) *Insulators:*
 - (iii) *Service mains:*
 - (iv) *Conductors:*

One hundred and seven (107) candidates represent 77% of the total responded on this question, three (3) candidates representing 3% responded strongly and score the pass mark. Eighty-eight (88) candidates which is 82% responded poorly and five candidates did not respond at all.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
APPLIED ELECTRICITY 3 (PRACTICAL)

This report has been prepared following the practical examination on Applied Electricity held in May 2023. The report is divided into three sections. Section A, B and C.

SECTION A: General Comments deals with standard of the papers, candidate performance, weaknesses and strength.

SECTION B: Detailed comments on the practical questions set, strength and weaknesses and.

SECTION C: Shows recommendation for grading of WASSCE.

1. GENERAL COMMENTS ON THE PAPER

The applied electricity paper 3, was a well –structure practical test that provides good chance for candidate to proof their ability in demonstrating practical skills.

2. CANDIDATES' STRENGTHS

Their ability in selecting the correct procedure for the job in hand.

Based on percentage responded to individual questions about one hundred and thirty-six (136) candidates representing 100% of candidates responded to all questions. However, all of them responded to all questions. 99% of the candidates were able to perform the task, this indicated that this topic was well cover during practical classed in the workshop.

3. CANDIDATES' WEAKNESSES

In ability to provides the proper procedure for the job in hand.

Based on the percentage responded all questions. Three (3) candidates representing 3% responded fairly and achieved below the pass marks

4. SUGGESTED REMEMDIES

To further the teaching of electrical practical, it is very important to have adequate equipment, tools, and use appropriate instruments during the practical exercise, good electrical installation books and finally a good and experience teacher. I therefore, encourage the principals and all staff dealing with these practical subjects, to redouble their efforts, maintain the standard as they are related to system design, and to continue training good creative and productive young men and women for the development of this nation. I also urge the head of these institutions to provide adequate tools, equipment and materials during the practical class so that student will be familiar with them to avoid such difficulties during exams.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

In this section, each question is dealt with in detailed.

Table B shows the percentage responses of candidates to questions attempted.

Quantity	Topic	Responded %	Do not responded %
1	Characteristics of series a.c circuit: read and record in table 1 the reading of voltmeter V_1 (V) V_2 (V) and ammeter A(mA), and plot a graph of V_s (V) and A(mA)	100%	0%
2	Characteristics of parallel a.c circuit: read and record in table 2 the reading on the voltmeter V and ammeter A_1 and A_2 , and plot a graph of V_s (V) and A_t (mA)	100%	0%

Analyses of table B with regards to the percentage of marks scored indicate the following.

Question 1

AIM: To investigate the characteristics of a series a.c. circuit.

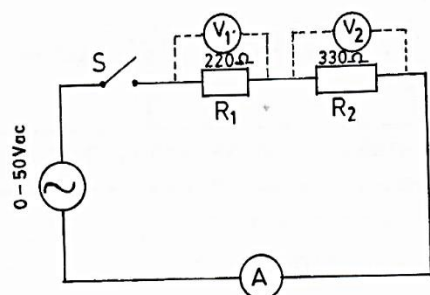


Figure 1

- Connect the circuit as shown in **Figure 1**.
- Ask the supervisor to check the circuit connection.
- You are provided with **Table 1**.

Table 1

V_s (V)	V_1 (V)	V_2 (V)	A (mA)
0			
5			
10			
15			
20			
25			
30			

- Set the variac (V_s) to zero volt.
- Close the switch S.
- Read and record in Table 1 the reading on the voltmeters V_1 , V_2 and ammeter A.
- Open the switch S, adjust the variac (V_s) to 5V.
- Close the switch and repeat step (f).
- Repeat steps (g) and (h) for other values of V_s in **Table 1**.
- Open the switch S.
- Plot the graph of V_s (V) on the vertical axis and A (mA) on the horizontal axis.
- Determine the slope of the graph.

- (m) What does the slope of the graph represent?
 (n) Compare the slope of the graph with $R_1 + R_2$.

One hundred and thirty-six (136) candidates representing 100% responded. One hundred and thirty-three (133) candidates, representing 98% responded strongly and achieved the pass marks. Three (3) candidates representing 2% responded poorly and achieved below the pass marks.

Question 2

AIM: To investigate the characteristics of a parallel a.c. circuit.

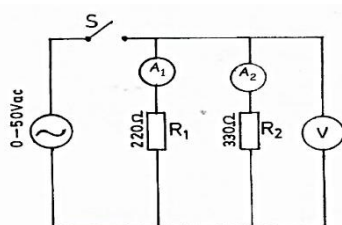


Figure 2

- (a) Connect the circuit as shown in Figure 2.
 (b) Ask the supervisor to check the circuit connection.
 (c) You are provided with Table 2.

V_2 (V)	$A_T = A_1 + A_2$	A_1 (mA)	A_2 (mA)	V (V)
0				
5				
10				
15				
20				
25				
30				

- (d) Set the variac (V_s) to zero volt.
 (e) Close **switch S**.
 (f) Read and record in Table 2, the reading on the voltmeter V and ammeters A_1 and A_2 .
 (g) Open switch S and adjust the variac to 5 V.
 (h) Close switch S and repeat step (f).
 (i) Repeat steps (g) and (h) for other values of V_s as listed in **Table 2**.
 (j) Open switch S .
 (k) Complete **Table 2**.
 (l) Plot the graph of V_s (V) on the vertical axis and A_T (mA) on the horizontal axis.
 (m) Determine the slope of the graph.
 (n) What does the slope of the graph represent?
 (o) Compare the slope of the graph with $R_1 + R_2$.

One hundred and thirty-six (136) candidates representing 100% responded. One hundred and twenty-two (122) candidates which is 90% responded strongly. Fourteen (14) candidates represent 10% responded poorly and achieved below the average marks.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
AUTO MECHANICS 2

1. GENERAL COMMENTS ON THE PAPER

The paper provided opportunity for candidates to proof their ability in the field of motor mechanic and this year's performances was a bit above average. About one hundred candidates attempt the paper and 70% of them got a pass mark, a very few of the candidates performed low.

2. CANDIDATES' STRENGTHS

Their strength was above average to mention.

3. CANDIDATES' WEAKNESSES

Candidates lack little understanding in their work. Lack of enough practice to improve their practical skills and inadequate coverage of the syllabus.

4. SUGGESTED REMEDIES

Schools should endeavor to provide adequate time for the subject to be properly covered. This will allow teachers to have time to cover the syllabus. Some of the questions were not fully covered, a solution to the problem is to create enough time to the candidates. Candidates should make good use of the library, local garage and workshop at the school for more practical exercise in order to improve their practical abilities and theoretical knowledge in the subject.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) Explain the following processes that take place in the four stroke petrol engine:

- (i) induction stroke;
- (ii) compression stroke;
- (iii) power stroke.

(b) List **two** firing orders for a four-cylinder, four-stroke engine

(c) Name **four** parts of a piston.

It was the most popular question 100% attempted by the candidates and about 65% got a pass mark and the remaining 35% failed to. Only few did the sketches but their explain was detail and properly answered.

Question 2

(a) The sketch in **figure 1** shows a unit in the spark ignition engine.

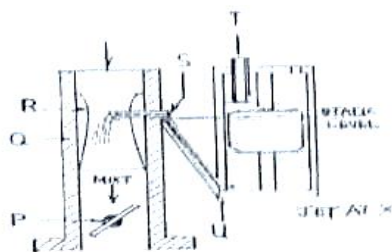


Figure 1

- (i) Name the unit;
- (ii) State the purpose of the unit;
- (iii) Name the parts labelled: P, Q, R, S, T, U.

(b) State **three** areas that require the use of torque wrench in the automobile.

Eighty percent of the candidates attempted this question but only 10% got a pass mark while the remaining 90% failed to answer correctly. Candidates did not fully understand the question and therefore failed to give correct identification of the parts in **figure 1**.

Question 3

- (a) State **two** advantages of front engine, rear wheel drive
- (b) (i) Define the term dwell angle of coil ignition system.
(ii) State the purpose of each of the following ignition components:

- I. condenser;
- II. spark plug;
- III. battery.

(c) List **three** parts of the starter motor.

All the candidates attempted this question and about 30% got a pass mark while the remaining failed to answer it correctly. Most of the candidates did not understand the questions and to list the parts of the starter motor and also have problems in stating the purpose of the listed components of the ignition system.

Question 4

- (a) Sketch the flywheel and label the following parts:
Clutch face, starter ring gear and crankshaft recess.



(b) Explain the function of the flywheel.

(c) State **two** main types of oil filters

It was also a very popular question and 100% attempted, almost all the candidates sketch but some failed to label their sketches correctly. About 50% got a pass mark and the rest failed to answer it correctly.

Question 5

State **three** demerits of an air cooled engine
State **three** defects in friction clutches that causes clutch slip.
List **three** components of the steering systems

Only 5% of the candidates attempted the question and the remaining 95% failed to attempt it. The question was a bit difficult for most of the candidates and due to that few attempted the question.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
AUTO MECHANICS 3 (PRACTICALS)

1. GENERAL COMMENTS ON THE PAPER

The Auto Mechanics paper 3, provided opportunity for candidates to proof their ability in the field of motor mechanic. This year's performance was a bit above average. One hundred and twenty-three (123) candidates attempted the Auto Mechanics 3 and about 95% of the candidates got the pass mark, a very few of the candidates performed low.

2. CANDIDATES' STRENGTHS

Their strength was above average to mention.

3. CANDIDATES' WEAKNESSES

There were little weaknesses which was the lack of ability to select correct tools. Time was not also enough to complete their work.

4. SUGGESTED REMEDIES

To further the teaching of Auto Mechanics as an applied science, proper teaching aids must be provided.

Enough time should be given for practical sessions in order to complete due to the nature of the practical and the number of candidates.

I also urge the principals to make sure that these practical equipment and materials should be in place so that students would be familiar with them to perform their exams.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Removing the circlip from the piston pose a bit of problem for most of the candidates, especially identifying the tool. Effort should be made to improve the practical ability and confident of the candidates.

Question 2

All the candidates attempted these questions but the weight of the cylinder head raised in some concern removing and fixing the cylinder head.

WASSCE FOR SCHOOL CANDIDATES, 203
CHIEF EXAMINER'S REPORT
WOODWORK 2

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper is within the teaching syllabus. The overall performance of the candidates was below average especially in the essay. Structured questions carry 20 possible marks, spaces were provided for drawing and sketches on the answer booklet. Over the years performance in the practical has been better compared to structure questions.

2. CANDIDATES' STRENGTHS

- Spaces were provided on the question paper
- Questions were not over loaded
- Time was adequate for the candidates.

3. CANDIDATES' WEAKNESSES

- Poor sketching skills
- Questions were not fully attempted.

4. SUGGESTED REMEDIES

- Improvement in drawing and sketching
- Tools e.g. Saws and chisel should be sharpen before exams.
- Border line should be ruled before drawing and sketched.
- Unseasoned timber if boxed with time develops mould.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

- (a) *Desirable the rotary method of cutting Veneer*
(b) *Sketch an exploded pictorial view of a combed joint*

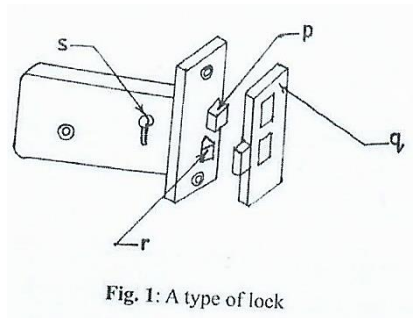


- (c) *List **two** methods of turning a piece of timber on the lathe machine.*

This is a very popular question about 75% of the candidates attempted this Question .it seems as this part of the syllabus has not been treated by some schools Part b space was provided for the sketch but 20% of the candidate's sketch a simple But joint c two method of turning a piece of timber on the lather was ignored.

Question 3

- (a) (i) Define the term conversion.
(ii) List **two** methods of conversion



- (b) (i) Name the type of lock shown in **Fig. 1**.

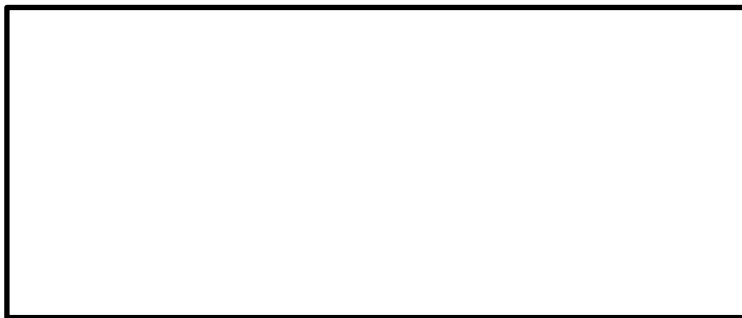
This question was the most unpopular question about 35% of the candidates attempted this question but 15% of the candidates were able to define the term conversion and list down two methods of timber conversion sketches were not necessary on by naming the methods is required.

- (ii) Name each of the following labelled parts of the lock in **Fig. 1**.

Name the lock and the different parts was left out those who attempts this question scores a very low mark.

Question 4

- (a) State **one** reason for wearing goggles while operating a drilling machine.
- (b) Mark a free hand sketch of a claw hammer and label **two** parts.

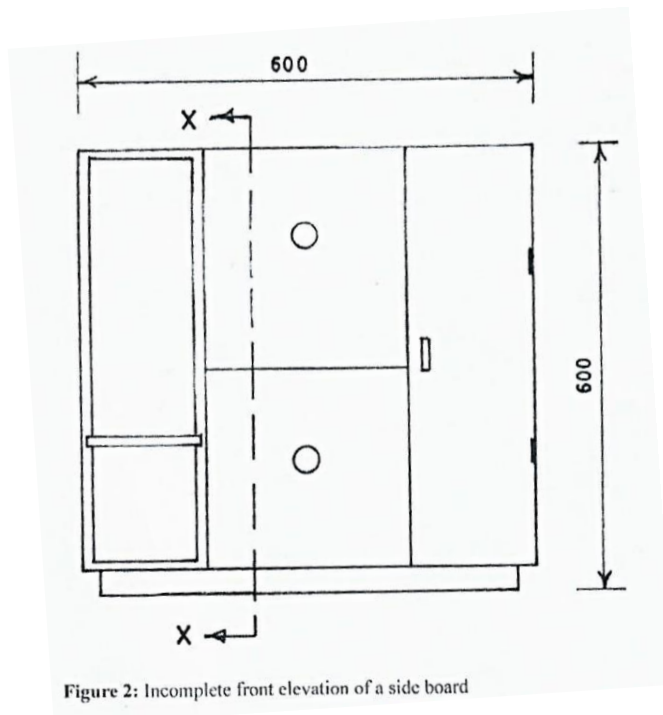


- (c) Name the special purpose tool used for **each** of the following operations
- (i) Leveling the bottom of trenches.
(ii) Planning small through chamfers.

Goggles are mainly to protect the eyes not the hands.
Poor sketched and the claw part was left out.

A very popular question attempted by 70% of the candidates but in complete relevelling the bottom of trenches using normal. About 65% of the marks were obtained.

DESIGN AND DRAWING



About 80% of the candidates were supplied with one drawing paper instead of two. The general performance was below average.

Question. Two preliminary free hands pictorial sketches 80% of the candidates made only one pictorial sketch losing marks as a result

2a front elevation

b. Sections and elevation a and b were poorly drawn and showing poor draughtsmanship in whole process.

WASSCE FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORT
WOODWORK 3 (PRACTICALS)

1. GENERAL COMMENTS ON THE PAPER

The woodwork paper 3, was within the syllabus. The main joint in the practical was a dovetail which is a common joint in the workshop. The performance of the candidates was satisfactory.

About 80% of the candidates were able to assemble the nail box. The performance of the candidates was satisfactory, about 75% of the candidates scored over 70% marks out of 100% possible marks.

SOLUTIONS

- Mild hardwood should be provided
- Saws and chisels sharpened
- Seasoned timber should be use
- Pine and Gamine and suitable

2. CANDIDATES' STRENGTHS

80% of the candidates were able to assemble their work within the time frame.

3. CANDIDATES' WEAKNESSES

Timber provided was difficult to work with. The use of blunt tools was a problem.

4. SUGGESTED REMEMDIES

Students should be given enough practical exercise before the examination. Centres should make sure the basic hand tools are available for students to practice. Soft well-seasoned timber should be provided for examination.

5. DETAILED COMMENTS ON THE QUESTION

About 80% of the candidates were able to assemble the nail box. The performance of candidates was satisfactory, about 75% of the candidates scored over 70% of the marks allocated.

Question 1

