THE WEST AFRICAN EXAMINATIONS COUNCIL
BANJUL, THE GAMBIA

THE WEST AFRICAN SENIOR SCHOOL CERTIFICATE EXAMINATION (WASSCE)

FOR SCHOOL CANDIDATES,2018

CHIEF EXAMINERS' REPORTS

THE GAMBIA

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1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers was appropriate and within the scope of the candidates.

2. CANDIDATES'PERFORMANCE

Candidates' performance was reported on as follows in the different subject groups:

(1) LANGUAGES

While the Chief Examiner for French indicated that this year's performance was slightly better than that of the previous year, that of the Literature-in-English 2 stated that about 30% showed limited understanding of the texts and the questions posed. However the Chief Examiners for Literature –in – English 3, Arabic and English Languge were silent on the issue.

(2) GENERAL SUBJECTS

The Chief Examiners for Geography 2 and 3 reported that the performance of the candidates was below average. The Chief Examiner for Christian Religions Studies reported that the performance of the candidates was average. The Chief Examiners for Islamic Studies, Government and History reported a slight improvement in the performance of the candidates compared to the previous years. The Chief Examiner for Economics reported that the overall performance of the candidates was poor.

(3) MATHEMATICS SUBJECTS

Both Chief Examiners of Mathematics and Further Mathematics express concern on the poor performance by the candidates which is still below average though it was a little better than in the previous years.

(4) SCIENCES

Candidates generally performed poorly in the Science Subjects. Chief Examiners reported that the performance of candidates was poor in Biology, General Science and Physical Education. Although candidates general performance was also unsatisfactory in Chemistry and Agricultural Science, there was some improvement in the practical components of these subject. In a similar vein, the performance of candidates was impressive in Physics and Health science as compared to the previous years.

(5) COMMERCIAL SUBJECTS

The Chief Examiners for Business Management and Principles of Cost Accounting indicated that the performance of candidates this year was better than last year's. However, the chief Examiners for Commerce and Financial Accounting reported a drop in candidates' performance compared to the previous years.

(6) HOME SCIENCES

The Chief Examiners' reports indicate that Candidates' performance was unsatisfactory in Clothing and Textiles 2 and Clothing and Textiles 3 as 80% of the candidates failed to score an average mark. Candidates were however able to complete the required tasks in Home Management 3 and Foods and Nutrition 3 respectively. It was also reported that the candidates' performance in Foods and Nutrition 2 was satisfactory.

(7) TECHNICAL SUBJECTS

The Chief Examiners for Applied Electricity 3, Auto Mechanics 3, Technical Drawing 3, Woodwork 3, Metalwork 2 & 3 and Visual Art 3 C reported that the performance of the candidates was generally good. The Chief Examiners for Technical Drawing 2 and Visual art 3 A reported that the performance of the candidates declined when compared to previous year, 2018. However, the Chief Examiners for Applied Electricity 2, Auto Mechanics 2, Woodwork 2 Visual Art 3 B and Visual Art 2 reported that the overall performance of the candidates was generally low.

3. CANDIDATES' STRENGTHS

(1) LANGUAGES

The Chief Examiners reported the following strengths:

- 98% of the candidates understood the rubrics and questions (French)
- Candidates did better in the letter writing and essay sections (English & French)
- 25% of the candidates showed understanding of texts (Literature –in-English 2)

(2) GENERAL SUBJECTS

The following strengths were reported:

- The Chief Examiner for Geography 3 reported that many candidates satisfied the rubrics of the examination by answering the required number of questions. He also highlighted that some of the candidates scored high marks in question 2, 5 and 8 where they portrayed an excellent knowledge and understanding of the topics.
- The Chief Examiner for Geography 2 reported that candidates performed well in question 1 (b,c) question 2(c) question 3(b), question 4(a,b) and question 5(b).

- The Chief Examiner for History reported that the general performance of the candidates had improved considerably. The Chief Examiner for Government reported that nearly 90% of the candidates observed the rubrics of the examination by not answering questions specifically reserved for candidates in Nigeria, sierra Leone and Ghana.

- The Chief Examiner for Islamic Studies highlighted that, candidates performed well in the area of fight (Islamic Durist prudence) and history where they scored high marks.
- For the Christian Religious Studies the Chief Examiner reported that, the strength of the candidates could be noticed in the Old Testament section. The Chief Examiner for Economics reported no strengths.

(3) MATHEMATICS SUBJECTS

The Chief Examiners for Mathematics reported candidates' strengths as follows:
- Ability to use vein diagrams to form equation.
- Ability to substitude in a given expression.
- Ability to work out quadratic, graphs and functions, inverse functions and.

(4) THE SCIENCES

Candidates showed improvement in the following areas:
- Attempting questions involving graphs.
- Candidates improved in Physics question of General Science.
- Candidates performed impressively in using formulae to solve Mathematical problems. However, calculations in Chemistry practical remains a problem.
- Most candidates attempted the required number of questions.
- Candidates recall definitions of terminologies.

(5) COMMERCIAL SUBJECTS

According to the Chief Examiners of the Commercial Subjects, candidates demonstrated the following strengths:

- Ability to present their work with clarity and orderliness.
- Good interpretation of questions.
- Ability to recall definitions of basic commercial terms.

(6) HOME SCIENCES

Candidates were able to attempt the required number of questions in Home Management 2, Foods and Nutrition 2 and Clothing and Textiles 2. Most candidates were also able to complete the tasks in the practical examinations and some made impressive displays of their completed work in the manner they served their meals in Foods & Nutrition 3.

(7) TECHNICAL SUBJECTS

The following strengths were identified by the Chief Examiners:

- The presentation of their facts were sequential according to the question.
- Some candidates were able to produced good work and they have obeyed instructions.
- Some candidates were able to make very good drawings.
- The use of correct scale and the required dimensions.
- The features needed in the free hand sketches were well presented for each drawing given.
- Skills in providing good quality of lines and skills in the use of instruments.
- Their ability in selecting the correct tools and equipment for the job in hand.

4. CANDIDATES' WEAKNESSES

(1) LANGUAGES

The Chief Examiners highlighted the following weaknesses:

- Candidates committed serious spelling and structural errors (English & French)
- The number of weak candidates is increasing at an alarming rate (Literature-in-English)
- Candidates re-adapted material and copied questions as answers (Literature-in-English)
- A majority of candidates did not understand the questions set (Arabic)
- 30% of the candidates showed limited or no understanding of texts or questions (Literature-in-English)

(2) GENERAL SUBJECTS

The following weaknesses were highlighted:

- All the Chief Examiners reported that the general standard of English continues to be poor. A number of candidates were handicapped by a poor understanding of English both in their interpretations of the questions and in their responses.
- Wrong spellings and inadequate preparations for the examination was also noticed by the Chief Examiners.
- Examination rubrics were still being violated by some candidates in terms of answering more or less than the required number of questions, failure to start a new question on a new page and not properly numbering their answers.
- Candidates inability to draw simple and accurate diagrams.
- Candidates inability to fully amplify their points continue to be a major problem. This led to candidates scoring less than 50% of the possible marks for certain questions.

(3) MATHEMATICS SUBJECTS

Candidates' weaknesses as reported by the Chief Examiners of the Mathematics subjects, were as follows:

- Misinterpretation of questions.
- Inability to translate word problems to numerical expressions.
- Inability to solve trigonometric equations and poor knowledge of circular geometry.
- Inability to cover the syllabuses.

(4) SCIENCES SUBJECTS

- Inability to interpret questions.
- Common spelling errors of Scientific terminologies
- In ability to express themselves in simple English
- In ability coverage of the syllabus
- Writing balanced Chemical equations
- Poor diagrams

(5) COMMERCIAL SUBJECTS

Candidates' weaknesses were reported as follows:

- Inadequate expression of ideas.
- Absolute disregard of instructions.
- Misinterpretation of questions.
- Most of the candidates were not well prepared for the examination.
- Inadequate coverage of the syllabi.

(6) HOME SCIENCES

Some candidates showed a lack of manipulative skills in the practical examinations. Wrong utensils and equipment were used during the exam in carrying out certain tasks and this made them to lose some marks. Multitasking was also a big challenge for most of them. Most times candidates tended to misinterpret the questions. In Home Management 2 candidates could not understand most of the questions. Many candidates spent too much time copying the questions on their answer books.

(7) TECHNICAL SUBJECTS

Besides, the above strengths, some of the weaknesses were also identified by the Chief Examiners, as follow;

- Spellings of technical terms.
- Lack of knowledge of the subject matter.
- Poor numbering of questions.

- Poor drawing ability and composition
- Some candidates found it difficult to make proper sketches and labelling of diagrams was a problem.
- Inability to provide the proper safety gears for the production needed in the workshop.

5. SUGGESTED REMEDIES

(1) LANGUAGES

The Chief Examiners, proposed the following suggestions in a bid to remedy the situation:

- Candidates should adequately prepare for the examination before registering.
- Candidates should read, understand and interpret questions before answering them.
- Candidates need to improve on their spelling, grammar and vocabulary.
- Candidates should study texts instead of just reading them.
- Schools should only employ qualified subject specialists to teach.

(2) GENERAL SUBJECTS

The Chief Examiners made the following suggestions.

- Periodic training and evaluation of teachers
- Regular inspection of teaching in schools
- Workshops be regularly organised for teachers especially on the mode of answering questions.
- Provision of suitable and adequate learning materials for teachers and students. Furthermore, a review of certain test books supplied to candidates which are out of date in terms of content or have questionable explanation to the subject matter.
- Candidates should avoid providing unnecessary introduction or excessive details to a question as marks are not mostly awarded for such details.

(3) MATHEMATICS SUBJECTS

The following suggestions were given by the Chief Examiners as ways to improve on candidates' performance:

- Candidates and teachers should endeavour to cover the syllabus.
- Candidates should be adequately prepared for the examination.
- Students should be encouraged to read and understand examination's instructions before answering questions.
- Candidates should study mathematical concepts very well and retain them.
- Candidates should familiar themselves with the use of mathematical instruments (Graph, calculators, compass, etc.).

(4) THE SCIENCES

- Teachers should endeavour to cover the syllabus.
- Teachers should teach the students how to draw fully labelled diagrams.
- Spelling tests should be included in the school assessment exams to improve students spelling competence.
- Students should revise past question papers while preparing for the examination.
- Candidates must have obtained good grades in Mathematics and Science in GABECE before offering pure Science at Senior School.
- Students should be encouraged to visit relevant websites to update themselves with recent discoveries in Science.

(5) COMMERCIAL SUBJECTS

The Chief Examiners of the Commercial Subjects recommended the following to improve performance:

- Candidates should endeavour to cover all areas of the syllabi before the examination.
- Adequate reading materials should be made available to candidates.
- Candidates should be guided on the requirements of words like state, suggest, list, define and explain.
- Candidates should be encouraged to read and understand instructions before answering questions.

(6) HOME SCIENCES

To improve on the performance of candidates, the chief Examiners of the Home Sciences made the following suggestions:

- Candidates should have access to the chief examiners' reports.
- Qualified Teachers should be appointed to teach the subject.
- Candidates should seek proper tutoring and ensure that they get regular practical lessons.
- The entire syllabus should be properly covered in revision.
- Candidates should be taught to understand the questions before attempting them.
- School Administrators should ensure that Home Science Labs are well equipped and Candidates should be introduced to a lot of practical work to enhance their understanding of the proper use of utensils and equipment, and making right measurements when preparing food and/or sewing.
- Candidates must get and read the prescribed textbooks.
- Candidates should be exposed to topics on recipe and recipe development.
- Schools should organize open days so that students are motivated.

(7) TECHNICAL SUBJECTS

The Chief Examiners proposed the following suggestions:

- Principals of schools are required to provide adequate tools and materials during practical lessons so that students would be able to familiarize themselves with the tools to avoid such difficulties during exams.
- Practical assessment should always be conducted with the proper safety gears and enough practical machines should be provided for candidates during the assessment period.
- Teachers should also try to cover a wide range of topics in the syllabus.
- The use of correct dimensions must be emphasized.
- More practice is required on mechanical and building tools, and candidates must demonstrate the awareness of resemblance and proportionality in their free hand sketching.

LANGUAGE SECTION

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS

LANGUAGES SECTION

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers was appropriate and within the scope of the candidates.

2. CANDIDATES' PERFORMANCE

While the Chief Examiner for French indicated that this year's performance was slightly better than that of the previous year, that of the Literature-in-English 2 stated that about 30% showed limited understanding of the texts and the questions posed. However the Chief Examiners for Literature –in – English 3, Arabic and English Languge were silent on the issue.

3. CANDIDATES STRENGTHS

The Chief Examiners reported the following strengths:

- 98% of the candidates understood the rubrics and questions (French)
- Candidates did better in the letter writing and essay sections (English & French)
- 25% of the candidates showed understanding of texts (Literature –in-English 2)

The Chief Examiner for Arabic stated that there was no strength worthy of mention.

4. CANDIDATES' WEAKNESSES

The Chief Examiners highlighted the following weaknesses:

- Candidates committed serious spelling and structural errors (English & French)
- The number of weak candidates is increasing at an alarming rate (Literature-in-English)
- Candidates re-adapted material and copied questions as answers (Literature-in-English)
- A majority of candidates did not understand the questions set (Arabic)
- 30% of the candidates showed limited or no understanding of texts or questions (Literature-in-English)

5. SUGGESTED REMEDIES

The Chief Examiners, proposed the following suggestions in a bid to remedy the situation:

- Candidates should adequately prepare for the examination before registering.
- Candidates should read, understand and interpret questions before answering them.
- Candidates need to improve on their spelling, grammar and vocabulary.
- Candidates should study texts instead of just reading them.
- Schools should only employ qualified subject specialists to teach.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS REPORT
ARABIC 2

1. GENERAL COMMENT

Questions on essay were generally above the expected ability of candidates. Prose and poem questions were not easy at all. Total numbers of students were initially 10 candidates but this number was reduced to 8 candidates due to many reasons: Suitable text books, Arabic language magazines, and newspapers in Arabic are nonexistence in public and school libraries.

2. CANDIDATES' STRENGTHS

There was no strength worthy of mentioning, some candidates copied question directly in Arabic without explanation.

3. CANDIDATES' WEAKNESSES

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

4. SUGGESTED REMEDIES

Students should be encouraged to enrich their vocabularies through reading of limited Arabic poems, newspapers, and listing to weekly Arabic news on Gambia Radio and Television Services. Students should also form clubs for Arabic language where they train themselves to speak Aarabic and only Arabic Language in schools as well as in their gatherings.

5. COMMENTS ON INDIVIDUAL QUESTIONS

Question one part one: This question was popular.

1. MEANING OF THE QUESTION WAS: LOVE FOR PARENTS.
EXPECTED ANSWERS

- Introduction
- The meaning of love for parents
- Description of love for parents and its benefits
- Danger of disregards to parents
- Quotation from Qur'an and Sunnah
- Good conclusion

2. OBESITY
EXPECTED ANSWERS

- Introduction
- Eating lots of food and drinks
- Eating food properly and slowly contributes to good digestion
- Supporting quotation from the Holy Qur'an and Sunnah

3. **SAD STORY I HAVE COME ACROSS**
EXPECTED ANSWERS
- Introduction
- Narration of any sad story you come across
- Lesson learntto from the story
- Good conclusion

4. **WRITE A SECRET LETTER TO A PARENT INFORMING HIM ABOUT BAD COMPANION OF YOUR BROTHER IN THE SCHOOL**
EXPECTED ANSWER

- Introduction (my dear parent and greetings)
- Date
- Reasons for writing this letter
- Good conclusion (greetings to members of the family)

PART TWO LITERATURE

1. **EXPLAIN THE FOLLOWING POEMS**
EXPECTED ANSWERS

- Introduction
- The poet advised his children the need for unity on the eve of his demise
- A person who break relations with his family and relatives will never enjoy a happy life
- Family get together is strength
- An enemy cannot penetrate united family but can simply attack individuals and disintegrate them easily
- There is no happiness to a person who breaks relation with family members

2. **STUDENTS WERE ASKED TO MENTION THE NAME OF THE POET AND EXPLAIN HIS POEM**
EXPECTED ANSWERS

- Zuhair B. Abie Salma described Haram B. Sanan and Harith B. Awf and their families as high profile and beautiful looking families
- The poet explained that these two families treated their guest with honour and they also gave charity to poor people
- The poet explained the beauty of companion of this family would always witness educational gathering where the illiterate and stupid become educated

3. **EXPLAIN THE FOLLOWING SERMON**
EXPECTED ANSWERS

- This is a religious sermon by Alhajaj
- Alhajaj was a strict ruler in word and action
- He was an Imam of a Mosque in Iraq
- In his sermon he rebuked Iraqis for been useless people
- Good conclusion

4. **WRITE IN BRIEF THE LIFE HISTORY OF HAFEZ IBRAHIM AND SUPPORT YOUR ANSWER WITH SOME OF HIS POEMS**
   EXPECTED ANSWERS
   - The poet Muhammad Hafez Ibrahim father was an Egyptian and his mother Turkish
   - His father was an engineer
   - His date of birth is unknown
   - His father passed away when he was at the age of four
   - His father did not live any wealth for his education
   - He left for Egypt with his mother and they were looked after by his uncle there he started schooling

5. **ANSWER THE FOLLOWING POEMS BRIEFLY**
   EXPECTED ANSWER
   - The poet Abdullah B. Foday said we live with non-Muslims in peaceful co-existence
   - The poet explained they live with non-Muslims side by side and they remained firm to their religion of Prophet Muhammad (SAW)

LITERATURE-IN-ARABIC
PART 2

1. **STANDARD OF PAPER**

This year's paper was reasonably fair in almost every way. It followed the pattern and thus compares favourably with those of previous years. The questions were equally and adequately weighted in depth and scope and thus fitted squarelywithin the contents of the texts and the syllabus. In this way, they fall suitably within the expected standards of senior school certificate Literature-In- English. The paper is thus properly and adequately worded for the average candidate who studied for the examination.

2. **CANDIDATES' PERFORMANCE**

From the general performance, the candidates can be classified under three groups- good, middle and weak.

The good candidates (about 25%) showed clear understanding of the texts, reasonable understanding of questions and, at least, average control of the language and provided reasonably lengthed and organized material in both answers. These candidates scored credit or better grades for the whole paper.

The middle candidates (about 45%) showed some understanding of the texts and questions. However, they manifested misrepresentation of texts or shoed too much narration in at least one of the answers. A good number of these candidates were marred by the non-African prose in which they provided rather weak answers. These candidates scored varying degrees of "pass" grades for the entire paper.

The weak candidates (about 30%) showed very limited or no understanding of either the text or the question (or both) in their answers. Also, their answers were brief (10 lines or less), sketchy and irrelevant narrations. Over half of these scored zero in, at least, one of their answers. These candidates scored "fail" grades for the whole paper.

While performance at the top and middle levels were somehow compared with those of last year, the weak candidates have increased alarmingly and this is the main cause for concern over candidate general performance, this year.

3. CANDIDATES' STRENGTHS

About 25% of the candidates exhibited clear understanding of the texts and provided reasonably lengthen and organized material in their answers.

4. CANDIDATE' WEAKNESSES

- One main weakness emerges from this analysis- many of these candidates lack adequate knowledge of the text and understanding of the questions especially the non-Africa texts.
- About 30% showed very limited or no understanding of either the texts or the questions (or both) in their answers.
- Sketchy and irrelevant narrations.
- Over half of the 30% of the candidates scored zero in at least one of the answers.
- The number of weak candidates has increased alarmingly and it's a cause for concern.

5. SUGGESTED REMEDIES

- Candidates should be encouraged to read and understand the texts before sitting to the examination and the questions before attempting them.
- This will drastically reduce failure by providing adequate, accurate and relevantly lengthy answers which will earn them, at least, a pass.
- Candidates should not just register for literature in English to fulfill subject combination requirement.
- Only qualified subject matter specialists should be allowed to teach the subject.

6. QUESTION BY QUESTION PERFORMANCE

Question 1

Explain Kabria's presence in the hairdressing salon at Agbogbloshie.

This question was less popular than the alternative (attempted by about 40% of the candidates). Here, the good students pointed out her significance of this visit in contrast to her usual shopping at the market. They also explained her experiences in the salon and the market area, and investigative results of her visit. These candidates (about 35%) adequately developed their points according to the questions requirements. The "average" candidates (45%) provided varying but less developed and far shorter answers, marred by narrations. The 'weak' candidates (20%) presented brief and inaccurate narrations of one or none of the relevant points.

Question 2

Comment on the significance of Sodom and Gomorrah in the novel.

This question was more popular (about 60%) and better answered. The good candidates (about 45%) provided convincing answers which depicted the appearance, life-style, criminal activities which mainly exploited children, especially girls and the law's blind eye to the evils. The 'average' candidates (about 35%) a varying but less degrees and lengths presented some of the relevant points and details. The 'weak' candidates (about 20%) presented brief, sketchy narrations of one or none of the relevant points. It must be noted that for almost all the candidates, this was their better (if not only) answer. On the whole; the question was well answered.

Question 3

"No woman's life is ever complete without a man". How is this applicable to Yaremi in the novel?

This was a rather popular question attempted by over 60% of the candidates involved. However, it was less fairly answered. Most of the students (about 60%) misinterpreted the main points of the question-the need for a husband as applicable to Yaremi. They resorted to narrations of Yaremi's lifestyle from an unconvincingly narrow-minded and one sided approach which they failed to accurately or adequately explain.

Their answers contained too much inaccurate and inadequate narration of what they knew or remembered about the story.

With 20% good candidates, 35% average candidates and over 40% weak candidates, this question, though popular, was not well answered.

Question 4

Examine the author's narrative technique in the novel.

This was among the least popular (about 30%). It was also among the worst answered with over 50% weak candidates. It is clear that at least half of these candidates don't know or understand the meaning of 'narrative styles.'As such, at least half of them merely related what they knew or remembered of the story. Only about 15% of them provided answers which discussed the aspects required by the question-narrative perspective, flashback, figure of speech, oral, local and traditional flavor etc. These aspects were presented in varying degrees of number, accuracy, adequacy and lengths. Thus, although most of these candidates showed, at least, some knowledge of the test, their understanding of the question was far too limited. It is among the worst answered questions.

Question 5

Discuss the role of the black clergy in the novel.

The question, though only less popular (about 40%) was among the worst answered. Over 70% of these candidates misrepresented the word 'clergy' as either 'elegy' or 'tragedy' which they used to give varying degrees of black suffering in the novel without any mention of the religion or Reverend Hammond's visits and activities with the incarcerated Bigger Thomas and its interpretation and impact.

It was clearly evident that over 50% of these candidates have abysmal or no knowledge of either text or the question. With the good and middle candidates being only 25-30% and the rest weak candidates, this question stands out as the worst, though not the least answered.

5

Question 6

What have you learned about black life from the conversation between Bigger and Gus at the entrance to the pool room?

A popular question attempted by 50% of the candidates. Generally, it was well answered –over 40% good candidates and about 30% average candidates. However, over 30% of these candidates made very little or no mention/ reference of the conversation itself but made narrations of black sufferings in the society. Although some of these narrations contained limited relevant details, they marred the candidates' chances of scoring pass grades or better in the question. Since the good and average candidates provided answers with accurate and adequate material on both the conversation and its links with black life, the question passes off as well answered.

Question 7

Comment on the significance of Conrad's death in the novel.

Question 8

Examine the relationship between Manfred and Hippolita.

These were attempted by 02-03% of the candidates and almost none of them showed any knowledge/ understanding of either text or the question or both. In fact, the bulk of these candidates merely copied out the questions or wrote 3-5 lines of nothing.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS REPORT
ENGLISH LANGUAGE 2

1. SCOPE OF PAPER

This paper was within the scope of the candidates. Questions were well set within the confines of the syllabus. None of the questions had any blemish.

2. CANDIDATES' STRENGTHS

The candidates performed better in the continuous writing section of the paper. There was marked improvement in the letter and essays written by the candidates what previous candidates had written. All questions this time round were attempted and a lot of the candidates wrote full length essays.

3. CANDIDATES' WEAKNESSES

Candidates demonstrated their inability to understand the passages set for the Comprehension and Summary tests. Questions 6 and 7 are deemed simple, yet candidates provided poor answers to the questions asked.
Candidates sentence structures were so poor, at times, that it was difficult to understand what they intended to put across.
It is disappointing that candidates are still making mistakes which the Chief Examiner had highlighted in previous reports. There were mistakes like the following:

- Whent for went
- So for sure
- Here for hear
- No for know
- Were for where
- Distop for disturb
- As for has
- Fair for fare

The suspicion is that candidates do not make any effort to do away with their mistakes. Candidates should do all they can to unlearn what they have learnt wrongly.

4. SUGGESTED REMEDIES

- Candidates should be adequately prepared for this paper.
- Candidates themselves should realise that questions should be interpreted well and meticulously answered.
- Candidates should not think that they can earn marks by mindlessly lifting portions of the passages.

5. ANALYSIS OF INDIVIDUAL QUESTIONS

Question 1

*Your are dissatisfied with some practices in your school. Write a letter to your friend in another school discussing **at least three** of these practices and the improvement you desire.*

The candidate is required to write a letter to his/her friend in another school discussing some practices in his/her school that he/she is dissatisfied with and state the improvement he/she desires.
This was the most popular question. It was attempted by seventy precent of the candidates. Ten percent of them did not write the required number of words, that is, 450words. There were others who wrote more than 450 words.
Fifty percent of the candidates could not write the formal features of the letter properly especially the close. Some candidates wrote long awkward addresses and at the close "Yours faithfully", signed the letter and wrote their full names after their signatures.
Seventy percent of the candidates could not correctly interprete the question and therefore could not mention the practices rather they gave the lack of facilities in their schools as practices.They mentioned things like" improper toilets","ill-equipped laboratories", and so on.

Question 2

*Write an article suitable for publication n a national newspaper on the high cost of living, suggesting **at least three** ways in which the government of your country can tackle the problem.*

The candidate is required to write an article suitable for publication in a national newspaper on the high cost of living and suggest ways in which the government can tackle the problem.
This question was one of the least popular ones. Only five percent of the candidates attempted it.Fifty percent of the candidates demonstrated that they did not know anything about the high cost of living. This question was not adequately answered.

Question 3

Write a letter to the Chairman of the Environmental Protection Agency on the effects of illegal felling of trees and suggest ways to remedy the situation.

The candidate is required to write a letter to the Chairman of the Environmental Protection Agency on the effects of the illegal felling of trees and suggest ways to remedy the situation. Ten percent of the candidates attempted this question. Sixty percent of them who attempted this question performed very well. Both parts of the question were adequately handled. However, the formal features were not handled adequately. The content of this article were also satisfactory. Most of the candidates understood the question and used appropriate language registers to put their points across.

Question 4

You are the main speaker in a debate on the topic: Children of literate parents perform better in school than those of illiterate parents. Write your argument for or against the motion.

The candidate is required to write his/her argument for or against the topic: *Children of literate parents perform better in school than those of illiterate parents.* Twelve percent of the candidates attempted this question. Seventy percent out of the twelve percent who attempted it did well. However, a few of the candidates could not handle the vocatives adequately.

Question 5

Write a story to illustrate the saying: A bird in hand is worth two in the bush.

The candidate is required to write a story to illustrate the saying: *A bird in hand is worth two in the bush.* This was the third most popular question. Five percent of the candidates attempted it. Seventy percent of that number was able to write stories that illustrate the saying: *A bird in hand is worth two in the bush.* There were some who adapted stories they had read. Unfortunately, their adapted stories were of low quality. Perhaps if story telling is done well in the lower and basic schools, it will help candidates to write good stories in grade twelve.

Question 6

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

The crowd was massive. Men, women, boys and girls from every nook and cranny of the village had gathered under the big iroko tree. Also in the crowd was an American couple, tourists, who were enjoying their holiday. At the centre of the large circle of people was the magician who had the reputation of performing unbelievable feats. Everybody was impressed with the feats which went along with the hilarious drumming.

Then came the next item. The magician's three aideseach took out a local gun while the magician danced even wilder. The gun-totting aides took up position in three different corners. The drumming became more frenzied and the magician performed more acrobatics. The people were not to wonder for log what the guns had to do with the whole show. One after the other, the aides aimed at the magician while he steadied himself to receive the shots. Each gun boomed with a loud report, and the magician jumped up in celebration of this swurvival. The three shots seemingly got to him but he simply laughed to scorn the shooters.

The American tourist was more than mystified. He could not explain it. How could a man receive bullet shots in his chest and still remain unscathed? In disbelief, he shouted, " This is amazing, can't be explained. But wait a minute, I'll join the show myself." There and then, he went to his car, took out his rifle, and returned to the crowd. "I m gonna get this guy!" he proclaimed.

He look aim. The magician saw him out of the corner o his eye. He surveyed the scenario and decided that he was not prepared for this. Quickly, he showed a clean pair of heels. Tearing through the crowd, he ran for dear life. Some thought this was

still part of the show, but when the man would not return, it was clear that he had bidden the audience a <u>hasty</u> farewell.

What the American and most others did not realise all the time was that the local guns had no bullets whatsoever, only the gunpowder.
From the candidates' performance in this question, it was clear that most of them did not understand the passage set for this test.

(a) What suggests that the show was free?

6(a) Only 30 percent of the candidates got it right. Ten percent of them mindlessly lifted portions of the passage that did not adequately answer the question.

(b) What evidence is there that the performance was not a one-man show?

6(b) Ninety percent of the candidates mindlessly lifted portions of the passage. The rest got the answer right.

(c) Why was the magician confident to receive the shots from his aides?

6(c) Ninety percent of the candidates could not answer the question. The answer they gave was: "The local guns had no bullets only gun powder".

(d) What did the American tourist set out to prove?

6(d) Fifty percent of the candidates got this answer right.The rest engaged in mindless lifting and gave the answer as: "The American went to his car and brought his rifle".

(e) What might have happened if the American had completed his contemplated action?

6(e) This question was answered satisfactorily by ninety percent of the candidates.

(f) ....he showed a clean pair of heels. What does this expression mean?

6(f) Ninety percent of the candidates got this answer right. However; the meaning of the expression was not answered satisfactorily.

(g) ....which went along with the hilarious drumming.

(i) What is the grammatical name given to this expression as it is used in the passage?
(ii) What is its function?

6(g) Seventy percent of the candidates were able to give the correct name of the expression and its grammatical function. A few unfortunate ones saw the expression as an adjectival phrase but were able to state the grammatical function of the expression.

(h) For each of the following words, find another ward or phrase which mean the same and which can replace it as it is used in the passage:

- feats;
- aides;
- steadied;
- mystified;
- unscathed;
- hasty.

6(h) Candidates showed that they have a poor command of the meanings of words. Sixty percent of them scored zero for this question.Candidates are advised to read widely in order to know words and their meanings.

Question 7

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

Drug abuse is a menace in many countries. The continued abuse of drugs usually leads to addiction. This problem is more common among youths. The drugs that can be abused very from prescribed medication to more controlled substances. Alcohol, cigarette and controlled substances such as cocaine, heroin, methamphetamine and so on are addictive drugs that are often used by many young people. They can be smoked, swallowed, inhaled or injected into the bloodstream.

There are numerous adverse medical and psychological consequences associated with drug addiction. Individuals have been known to suffer irreversible damage from the abuse of drugs. It can affect the central nervous system as well as cause memory loss, brain damage and depression.

Drug addicts may display psychotic behaviours, mood swings and may be predisposed to irascible decision making. They are also likely to suffer general health problems related to the lungs, heart and kidneys. In fact, the adverse behavioural and physical effects of drug addiction on the individual are enormous.

Apart from the problems for the individual, the families of drug addicts are not spared. Since addicts are usually incapable of functioning as 'normal' members of the society, they abuse their families. They are prone to abusing their spouses and children. There have been reports of children harming their parents because the latter did not give them money to buy drugs. Drug addicts may eventually require expensive treatment and rehabilitation. These have huge cost implications that put a lot of pressure on the family budget. In addition, their families face stigmatization in their communities.

The society at large also suffers. Drug addicts are more likely to be involved in criminal activities than people who are not. Many of the beinous crimes reported have been attributed to drug addiction. The abuse of alcohol is one of the reasons for the increasing number of road accidents.

An increase in crime rate forces the government to commit huge resources to fighting crime, resources that could have been used to provide more social amenities. Moreover, most criminal gangs are formed and thrive on money from drugs. Although

the addicts have made the drug trade seemingly attractive and profitable, no one should promote it.

Regardless of the apparently insurmountable of the problems associated with drug addiction, some measures could be taken to curb this meanace. People need to be more educated on the effects of addiction on themselves and their families. Children must be taught in schools and at home the need to stay away from drugs.

The law-enforcement agencies should also be better empowered and resourced to apprehend dealers in order to curtail the availability of drugs in circulation. Another step is to ensure that drug addicts receive early treatment. Such treatment should be based on the specific drug the individual is addicted to. While it may appear impossible to eliminate the problems of addiction, relentless efforts in taking the steps above will help to weaken the grip of drug abuse on our society.

(a) In three sentences, one for each, state three categories of people that are affected by drug addiction and what they suffer.

7(a) Ninety-five percent of the candidates performed badly in this question. They copied whole portions of the passage which they gave as summary. Some identified the categories but could not phrase their answers correctly.

(b) In three sentences, one for each, identify three ways to combat drug addiction in the society.

7(b) The candidates performed satisfactorily in this question. Some of them only scored half of the marks allocated to this question because they wrote phrases as their answers.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS REPORT
FRENCH 2

1. GENERAL COMMENTS

This report is based on Section A of French 2 & 1 (SC304), which required the candidates to write one essay (from questions 1-3) and one letter (from questions 4-6). A total number of 800 candidates sat this paper, representing a significant rise of 81 candidates compared with to year's 719 candidates. Approximately 98% of the candidates wrote one composition and one letter while about 2% answered just one question.

The overall performance of the candidates leaves the impression that a lot of teachers of French are strictly using the WAEC examinations syllabus as a teaching syllabus. And during the conduct of the French Orals, a good number of the candidates confessed to not having done French in the Upper Basic and were only asked to do it in the Senior School so that they could have the required number of subjects for admission. It was observed that unlike last year, traditional private schools (particularly in the Kanifing Municipality) produced outstanding results in this paper this year. This makes it tempting to posit that there is evidence of success in the teaching and learning of French in the said category of private schools.
It was observed that the overall performance of the candidates in this paper was slightly better than that of last year's: more than 40% of the candidates scored above 20 out of 40 marks and approximately with 10% of the 40% scoring above 30 marks.

2. CANDIDATES' STRENGTHS

- About 98% of the candidates understood the instructions as well as the questions and answered them appropriately.
- Candidates did better in letter writing than in the essay.

3. CANDIDATES' WEAKNESSES

- All the candidates committed serious spelling and structural errors, in addition to their weak vocabulary.
- Whole sets of candidates from certain schools wrote ready-made pieces which they could have prepared with their teacher(s).
- The just-mentioned category of candidates, who resorted to memorizing and reproducing ready-made material, ended up writing out-of-topic.
- Candidates, especially those from challenged schools, readapted material from the paper in order to have something to write. Challenged schools in this context are schools that are either poorly staffed or admit mainly students with poor Grade 9 results, or both cases.
- Weak grammatical background.
- Weak and inappropriate use of vocabulary.
- About 2% of the candidates did not understand the questions and resorted to plain re-adaptation of the texts in the question booklet.
- About 2% of the candidates did not obey the instructions.

It was observed that the mistakes/errors committed were almost the same as those committed by previous candidates. The table below captures, albeit non-exhaustively, a catalogue of the errors/mistakes detected in the scripts of the candidates and the proposed corrections against each error/mistake:

Error	**Proposed Correction**
… mon mère	… ma mère
… mon études	… mes études
… mon proffesseur	… mon professeur
... je me grand plaisir	... cela me fait un grand plaisir
… ma cheree soeur, je trein contante	… ma chère sœur, je suis très contente
… ma adorable sœur	… mon adorable soeur
… je suis contant/je suis contan	…je suis content(e)
… j'ai très content	… je suis très content(e)
… j'absence a l'école	… je m'absente à l'école
… laécole	… l'école
… a la university	à l'université
… mon l'argent est fini	… mon argent est fini
… le l'argent	… l'argent
… si vous voulez Je peux travailler à ta boutique	Si vous voulez je peux travailler dans votre boutique
… n'ont pas d'interest	… n'ont pas d'intérêt
… que Dieux aider vous	Que Dieux vous aide
… je prie à le bon dieu	… je prie au bon Dieu
… ils ne sont pas comprendre que	… ils ne comprennent pas que
… la langue français	… la langue française
… beaucoup des	Beaucoup de
… assez de l'argent	… assez d'argent
… je suis actuellement content	… je suis vraiment content
… sac jour	chaque jour
…chaque un	…chacun
… si tu aide moi	… si tu m'aides
… tu le monde la ba est bien	… tout le monde là-bas va bien
… il encourage moi	… il m'encourage
… tout le monde porte bien	… tout le monde se porte bien
Abientot	A bientôt
… je vais écrit	je vais écrire
Je veux écrire à toi cet lettre	Je veux t'écrire cette lettre
Je demande pour que tu aide moi	… je voudrais que tu m'aides
J'aime tu demander aide moi	Je veux te demander une aide
je très heureux a écrivez le lettre	Je suis très heureux (euse) content(e) de t'écrire cette lettre
je me fait plasir	cela me fait plaisir
je t'embrage/ambrase	je t'embrasse
…il est à longtemps	... il y a longtemps
…la laboratoire	... le laboratoire
…il y a à pos-près	... il y a à peu près
… il ya	… il y a
… je pourquoi	… c'est pourquoi
…perse qui, pasque, passki, paskay, parsa que,	… parce que

pasique, par-sa-ka, etc.	
… jespere	… j'espère
… comment va tu?	Comment vas-tu?
... comment sa va?	Comment ça va?
… toujour	toujours
… depi	… depuis
… il aussi donne moi	... il m'a donné aussi
… je vais très longtemps je ne pas parle avec toi	… ça fait très longtemps que je n'ai pas parlé avec toi
… jisca	… jusqu'à
J'ai allé	Je suis allé(e)
Je suis ecrire cette lettre	J'écris cette lettre
… la lycée	… le lycée
… la entrance	… l'entrée
… les parents de les élèves	… les parents des élèves
… dans le interieur du nouveau batiment	… à l'intérieur du nouveau bâtiment
… mon père ne pas travailler	… mon père ne travaille pas

4. SUGGESTED REMEDIES

In view of the foregoing, it is believed that regular sessions of in-service training for teachers of French on the current methods of teaching French as a Foreign Language (FLE) will help hone the competence of teachers. In addition to this, it is recommended that only students who pass French in the GABECE should be allowed to do it in the Senior Secondary School.

The following suggestions shall help future candidates minimize making mistakes in basic French if taken seriously:

- Teachers should update themselves on the new methods of teaching French as a foreign language (The Ministry of Basic Education should organize teacher training workshops).
- Candidates should be made to do more practice in grammar.
- Candidates should be drilled systematically in both written and oral productions using on current issues.
- Candidates should cultivate the practice of reading French magazines and listening and watching French radio and television stations.
- Candidates should access French past papers for better guidance and preparation.
- Above all, since French has been made compulsory in certain schools, it is advisable for those schools to improve the teacher-pupil ratio for better results. In addition to proper staffing, it is important that in-service training workshops on the teaching of French as a foreign language be organized for untrained teachers. The University of The Gambia can be contacted for help.
- The books listed below could be of immense help to candidates; it is hoped that these books (the list is far from being exhaustive) can help build the capacity of the candidates:

- Bérard Evelyne, Yves Canier, Christian Lavenne Gilles Breton and Christian Tagliante, *Studio 60 1&2*, *Studio 100*, Paris, Edition Didier, 2002.
- Bérard Evelyne, Yves Canier and Christian Lavenne, *Tempo 1&2*, Paris, Edition Didier, 1996.

- Bhely-Quenom O and SAM Pratt, *New Practical French 4&5,* London, Longman, 1975.
- Brachet ML and J de Grandsaigne: *France Afrique 4,* London, Macmillan Publishers, 1988.

- Chapman RHB, *A French Vocabulary for West Africa,*Cambridge, Cambrige University Press, 1964.
- Penfornis, Jean-Luc, *Vocabulaire progressive du français des affaires,* Paris, CLE International, 2010.

5. COMMENTS ON INDIVIDUAL QUESTIONS

Question 1:

Racontez une histoire sur le titre : « La récompense de l'honnêteté ».

137 candidates attempted this question and about 20% of this number answered the question appropriately both in terms of content and form.

Question 2:

Le gouvernement vient de faire construire un nouveau bâtiment dans votre école. Décrivez ce bâtiment.

385 candidates attempted this question and about 45% of them answered it satisfactorily both in terms to content and form.

Question 3:

Ces jours-ci, beaucoup d'élèves échouent aux examens de français. Faites une rédaction sur les causes de cet échec.

243 candidates attempted this question and about 60% of them answered it satisfactorily both in terms to content and form.

Section B (Letter Writing)

Question 4:

Ecrivez une lettre à votre oncle pour lui demander une aide financière pour vos études.

456 candidates attempted this question. Approximately 55% of this number answered this question satisfactorily both in content and style. The remaining 45% either reproduced out-of-context classroom materials or readapted materials from the question booklet.

Question 5:

Votre professeur de français est grièvement malade. Ecrivez-lui.

177 candidates attempted this question. Approximately 65% this question satisfactorily both in content and style.

Question 6:

Ecrivez une lettre de félicitation à votre sœur qui vient de trouver un emploi. Dites-lui aussi ce que vous attendez d'elle.

85 candidates attempted this question and nearly 56% of them did well both in terms of content and style; and about 44% reproduced readymade letters that are completely at variance with the question.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS REPORT
LITERATURE-IN-ENGLISH 2

1. STANDARD OF PAPER

This year's paper was reasonably fair in almost every way. It followed the pattern and thus compares favourably with those of previous years. The questions were equally and adequately weighted in depth and scope and thus fitted squarelywithin the contents of the texts and the syllabus. In this way, they fall suitably within the expected standards of senior school certificate Literature-In-English. The paper is thus properly and adequately worded for the average candidate who studied for the examination.

2. CANDIDATES' PERFORMANCE

From the general performance, the candidates can be classified under three groups- good, middle and weak.

The good candidates (about 25%) showed clear understanding of the texts, reasonable understanding of questions and, at least, average control of the language and provided reasonably lengthed and organized material in both answers. These candidates scored credit or better grades for the whole paper.

The middle candidates (about 45%) showed some understanding of the texts and questions. However, they manifested misrepresentation of texts or shoed too much narration in at least one of the answers. A good number of these candidates were marred by the non-African prose in which they provided rather weak answers. These candidates scored varying degrees of "pass" grades for the entire paper.

The weak candidates (about 30%) showed very limited or no understanding of either the text or the question (or both) in their answers. Also, their answers were brief (10 lines or less), sketchy and irrelevant narrations. Over half of these scored zero in, at least, one of their answers. These candidates scored "fail" grades for the whole paper.

While performance at the top and middle levels were somehow compared with those of last year, the weak candidates have increased alarmingly and this is the main cause for concern over candidate general performance, this year.

3. CANDIDATES' STRENGTHS

About 25% of the candidates exhibited clear understanding of the texts and provided reasonably lengthen and organized material in their answers.

4. CANDIDATE' WEAKNESSES

- One main weakness emerges from this analysis- many of these candidates lack adequate knowledge of the text and understanding of the questions especially the non-Africa texts.
- About 30% showed very limited or no understanding of either the texts or the questions (or both) in their answers.
- Sketchy and irrelevant narrations.
- Over half of the 30% of the candidates scored zero in at least one of the answers.
- The number of weak candidates has increased alarmingly and it's a cause for concern.

5. SUGGESTED REMEDIES

- Candidates should be encouraged to read and understand the texts before sitting to the examination and the questions before attempting them.
- This will drastically reduce failure by providing adequate, accurate and relevantly lengthy answers which will earn them, at least, a pass.
- Candidates should not just register for literature in English to fulfill subject combination requirement.
- Only qualified subject matter specialists should be allowed to teach the subject.

6. QUESTION BY QUESTION PERFORMANCE

Question 1

Explain Kabria's presence in the hairdressing salon at Agbogbloshie.

This question was less popular than the alternative (attempted by about 40% of the candidates). Here, the good students pointed out her significance of this visit in contrast to her usual shopping at the market. They also explained her experiences in the salon and the market area, and investigative results of her visit. These candidates (about 35%) adequately developed their points according to the questions requirements. The "average" candidates (45%) provided varying but less developed and far shorter answers, marred by narrations. The 'weak' candidates (20%) presented brief and inaccurate narrations of one or none of the relevant points.

Question 2

Comment on the significance of Sodom and Gomorrah in the novel.

This question was more popular (about 60%) and better answered. The good candidates (about 45%) provided convincing answers which depicted the appearance, life-style, criminal activities which mainly exploited children, especially girls and the law's blind eye to the evils. The 'average' candidates (about 35%) a varying but less degrees and lengths presented some of the relevant points and details. The 'weak' candidates (about 20%) presented brief, sketchy narrations of one or none of the relevant points. It must be noted that for almost all the candidates, this was their better (if not only) answer. On the whole; the question was well answered.

Question 3

"No woman's life is ever complete without a man". How is this applicable to Yaremi in the novel?

This was a rather popular question attempted by over 60% of the candidates involved. However, it was less fairly answered. Most of the students (about 60%) misinterpreted the main points of the question-the need for a husband as applicable to Yaremi. They resorted to narrations of Yaremi's lifestyle from an unconvincingly narrow-minded and one sided approach which they failed to accurately or adequately explain. Their answers contained too much inaccurate and inadequate narration of what they knew or remembered about the story.

With 20% good candidates, 35% average candidates and over 40% weak candidates, this question, though popular, was not well answered.

Question 4

Examine the author's narrative technique in the novel.

This was among the least popular (about 30%). It was also among the worst answered with over 50% weak candidates. It is clear that at least half of these candidates don't know or understand the meaning of 'narrative styles.'As such, at least half of them merely related what they knew or remembered of the story. Only about 15% of them provided answers which discussed the aspects required by the question-narrative perspective, flashback, figure of speech, oral, local and traditional flavor etc. These aspects were presented in varying degrees of number, accuracy, adequacy and lengths. Thus, although most of these candidates showed, at least, some knowledge of the test, their understanding of the question was far too limited. It is among the worst answered questions.

Question 5

Discuss the role of the black clergy in the novel.

The question, though only less popular (about 40%) was among the worst answered. Over 70% of these candidates misrepresented the word 'clergy' as either 'elegy' or 'tragedy' which they used to give varying degrees of black suffering in the novel without any mention of the religion or Reverend Hammond's visits and activities with the incarcerated Bigger Thomas and its interpretation and impact. It was clearly evident that over 50% of these candidates have abysmal or no knowledge of either text or the question. With the good and middle candidates being only 25-30% and the rest weak candidates, this question stands out as the worst, though not the least answered.

Question 6

What have you learned about black life from the conversation between Bigger and Gus at the entrance to the pool room?

A popular question attempted by 50% of the candidates. Generally, it was well answered –over 40% good candidates and about 30% average candidates. However, over 30% of these candidates made very little or no mention/ reference of the conversation itself but made narrations of black sufferings in the society. Although some of these narrations contained limited relevant details, they marred the candidates' chances of scoring pass grades or better in the question. Since the good and average candidates provided answers with accurate and adequate material on both the conversation and its links with black life, the question passes off as well answered.

Question 7

Comment on the significance of Conrad's death in the novel.

Question 8

Examine the relationship between Manfred and Hippolita.

These ere attempted by 02-03% of the candidates and almost none of them showed any knowledge/ understanding of either text or the question or both. In fact, the bulk of these candidates merely copied out the questions or wrote 3-5 lines of nothing.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS REPORT
LITERATURE - IN - ENGLISH 3

1. GENERAL COMMENTS

The following general comments were noted:
The questions set, as usual, reflected WAEC's commitment to quality education as they were standard questions.
Most questions were about characterization, plot development and themes and were therefore within the Knowledge and scope of those candidates who had endeavored to study the plays and poems.
For African Drama, most schools opted for **Harvest of Corruption** whilst very few schools studied T**he Blood of a Stranger.**
For Non-AfricanDrama, most schools studied**SheStoops to Conquer** whilst very few schools studied**A Raisin in the Sun.**
In the area of African Poetry,most candidates attempted the question on ***Piano and Drums*** and fewer candidates attempted the question on ***Ambush***

For Non-African Poetry, most candidates attempted the question on **"The School Boy**"and fewer candidates attempted the question on **"Crossing the Bar".**

2. CANDIDATES' STRENGTHS:

There was evidence to indicate that most of the candidates, if not all of them, had at least read, if not studied the poems and plays. Because of this, they were able to write something in relation to the questions posed.

3. CANDIDATES' WEAKNESSES

The above notwithstanding, most of the candidates were not able to identify relevant evidence from the texts and use them aptly in answering the questions. There were also the perennial problems associated with grammar and expressions, such as spelling, tense, agreement, punctuation, and paragraphing.

4. SUGGESTED REMEDIES

In the light of the above observations, the following recommendations are made herein.

- Candidates should be encouraged not just to read the texts and poems but really study them.
- Candidates should make every effort to improve on their knowledge of literary terms, especially those associated with drama and poetry.
- Candidates should endeavour to improve on their competence in the use of English as this would enable them score better grades.
- Books selected by Council should be easily available and commentaries, however good they may appear to the candidates, should not be seen as substitutes for the texts and poems themselves.
- Council should give due consideration to finding another venue for the coordination exercises as Gambia Senior Secondary School is no longer ideal for the purpose.

Question 1

How does the love for wealth and power influence the actions of the characters in the play?

This was a simple and straightforward question which was attempted by about 40% of the candidates. Some of them were able to answer the question quite well, but the vast majority failed to show how Malibu, the king's adviser, and Soko, the village shrine priest, were influenced by the love of wealth and power. As a result of this, they did not score good grades.

Question 2

Assess Santigi's reign as king of Mango land.

This question was attempted by 60% of the candidates who did not perform well because they did not focus attention on the central role of custom, the king's ambivalent attitude to it, and the intrigues of Malibu, Soko and Whitehead in corrupting the king. As a result of this, most were unable to score decent grades.

Question 3

Comment on the proceedings at the Wasa High Court of Justice.

This question was less popular as it was tackled by only about 30% of the candidates, who did not score good grades. The reason for this was that they only focused on the sentences handed down on the accused and not other requirements of the question such as the role played by Ogeyi and the evidence presented by the lawyers and witnesses in court.

Question 4

Consider Aloho as a foil to Ogeyi.

This was a very attractive question as it was tackled by about 70% of the candidates, who, unfortunately, did not score good grades as it was obvious that they did not understand the meaning of the literary term "foil". As a result of this, they wrote copious narratives on the e relationship between the two characters.

Question 5

What is the significance of Karl Lindner's visit to the Youngers?

This was not an attractive question to the candidates as it was attempted by only about 20% of them who could not properly identify Karl Lindner let alone the significance of his visit. As a result of this, they scored very poor grades.

Question 6

Trace the transformation of Walter into his manhood in the play.

This was a more attractive question as it was answered by about 80% of the candidates who did so fairly well. They correctly identified the character of Walter but could only write a narrative account of his role in the play. So they scored at best only pass grades.

Question 7

Examine the importance of the jewels in the play.

This question was fairly popular as it was attempted by about 40% of the candidates, who wrote very boring accounts about the jewels. Apart from stating that the jewels belong to Constance, they could not actually highlight the importance of the said jewels and so they did not score good grades.

Question 8

Assess the role of Tony Lumpkin in the play.

This was also a very popular question as it was attempted by about 60% of the candidates, whose answers were quite encouraging. Most of them correctly identified the character of Tony Lumpkin and Ruth in detail about the various tricks he plays in the text. As a result of this, they scored good grades.

Question 9

Examine the use of contrast in Okara's Piano and Drums.

This question was quite popular as it was attempted by about 60% of the candidates who, unfortunately, did not score good grades. This was because apart from stating that the piano represents Western culture, and the drums represent African culture, they failed to elaborate on other aspects of contrast in the poem.

Question 10

Comment on the mood of the poet in "Ambush".

This question was not as popular as question 9 and was also not well answered. The reason for this was that the candidates did not actually highlight the poet's mood of despair emanating from the negative images used to portray the society.

Question 11

How does the poet present death as a voyage in "Crossing the Bar".

This was a fairly popular question, as it was attempted by about 45% of the candidates, who wrote fairly good essays with relevant quotations from the poem, and so scored good grades. Others, however only reproduced the entire poem, which they had memorized and so scored little or no marks at all.

Question 12

Examine Blake's use of diction in "The School Boy".

This poem was equally popular as it was attempted by 55% of the candidates who did not do very well. The reason for this was that they did not understand the meaning of the literary term 'diction' and so settled for lengthy paraphrases of the entire poem.

GENERAL SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
GENERAL SUBJECTS

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers compared favourably to those of the previous years. The questions were within the scope of the syllabuses and the reach of the candidates.

2. CANDIDATES' PERFORMANCE

The Chief Examiners for Geography 2 and 3 reported that the performance of the candidates was below average. The Chief Examiner for Christian Religions Studies reported that the performance of the candidates was average. The Chief Examiners for Islamic Studies, Government and History reported a slight improvement in the performance of the candidates compared to the previous years. The Chief Examiner for Economics reported that the overall performance of the candidates was poor.

3. CANDIDATES' STRENGTHS

The following strengths were reported:

- The Chief Examiner for Geography 3 reported that many candidates satisfied the rubrics of the examination by answering the required number of questions. He also highlighted that some of the candidates scored high marks in question 2, 5 and 8 where they portrayed an excellent knowledge and understanding of the topics.
- The Chief Examiner for Geography 2 reported that candidates performed well in question 1 (b,c) question 2(c) question 3(b), question 4(a,b) and question 5(b).
- The Chief Examiner for History reported that the general performance of the candidates had improved considerably. The Chief Examiner for Government reported that nearly 90% of the candidates observed the rubrics of the examination by not answering questions specifically reserved for candidates in Nigeria, sierra Leone and Ghana.
- The Chief Examiner for Islamic Studies highlighted that, candidates performed well in the area of fight (Islamic Durist prudence) and history where they scored high marks.
- For the Christian Religious Studies the Chief Examiner reported that, the strength of the candidates could be noticed in the Old Testament section. The Chief Examiner for Economics reported no strengths.

4. CANDIDATES' WEAKNESSES

The following weaknesses were highlighted:

- All the Chief Examiners reported that the general standard of English continues to be poor. A number of candidates were handicapped by a poor understanding of English both in their interpretations of the questions and in their responses.
- Wrong spellings and inadequate preparations for the examination was also noticed by the Chief Examiners.

- Examination rubrics were still being violated by some candidates in terms of answering more or less than the required number of questions, failure to start a new question on a new page and not properly numbering their answers.

- Candidates inability to draw simple and accurate diagrams.
- Candidates inability to fully amplify their points continue to be a major problem. This led to candidates scoring less than 50% of the possible marks for certain questions.

5. SUGGESTED REMEDIES

The Chief Examiners made the following suggestions.

- Periodic training and evaluation of teachers
- Regular inspection of teaching in schools
- Workshops be regularly organised for teachers especially on the mode of answering questions.
- Provision of suitable and adequate learning materials for teachers and students. Furthermore, a review of certain test books supplied to candidates which are out of date interms of content or have questionable explanation to the subject matter.
- Candidates should avoid providing unnecessary introduction or excessive details to a question as marks are not mostly awarded for such details.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
ECONOMICS 2

1. GENERAL COMMENTS

The questions were generally within the scope of the syllabus and the level it was meant to test. However, the overall performance was poor. 70 percent of the candidates scored very low marks in most of their answers which suggested a lack of preparation. Also, there were discouraging signs in that many of the candidates were using list-like responses and using bullet points as their methods of answering questions.

2. CANDIDATES WEAKNESS

Candidates misunderstood toothe questions because of problems of the English language. Related to this same problem was the candidates inability to clearly explain economic concepts as demanded by the questions.

There was no evidence of poor preparation by 60 percent of the candidates. These candidates showed studying or doing any personal work to develop their knowledge in the subject.

Examination rubrics were still being contravened by 20 percent of the candidates in the following ways;

- answering more than the maximum 4 questions required which watered down the content of their answers because of time constraints
- failure to start a new question on a new page
- not properly numbering their answers.

3. SUGGESTED REMEDIES

- More work should be done in improving English language in schools so that candidates could better understand questions and be able to express themselves clearly.
- Review of certain text books supplied to candidates which are out of date in terms of content or have questionable explanation to the subject matter.
- Recruiting qualified teachers and motivating them to teach.
- Adequate preparation on the part of candidates by learning the subject, and properly understanding it.
- More past question exercises on data response should be practiced in school.
- Where possible, candidates should avoid listing or excessive use of bullet points since this prevents a full explanation or discussion of salient points. Very short comments mean that the development of the explanation or discussion is missing, which may significantly reduce the marks.

- Reference to local examples to illustrate answers is welcomed as it shows a candidate's ability to apply economic concepts to their local environment.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

The table below shows the composition of exports and imports of a hypothetical country .

Use the information in the table to answer the questions that follow:

Exports	Amount $	Imports	Amount $
Crude oil	120,000,000	Rice and flour	140,000,000
Groundnuts	40,000,000	Petroleum product	80,000,000
Tourism	45,000,000	Vehicles and accessories	50,000,000
Shipping & Insurance	60,000,000	Banking services	60,000,000
Bauxite	80,000,000	Freight and insurance	40,000,000

(a) Calculate the value of visible exports.
(b) Calculate the balance of trade for the country.

(c) List the items of invisible exports and imports
(d) Calculate the current account balance of the country.
*(e) Is the country developed or developing? Give **one** reason for your answer.*

40 percent of the candidates attempted this question.Many of them lacked the knowledge of calculating the basic concepts in international trade,thereby scoring low marks.

Question 2

The cost and output schedule of a firm is shown in the table below.

Output (kg)	0	15	35	60	85
Variable cost ($)	0	30	55	75	90
Total cost ($)	15	45	70	90	105
Total revenue ($)	0	30	70	120	170

*(a) Using the data in the table, **at each** level of output, calculate the firm's:*
- *(i) marginal revenue;*
- *(ii) marginal cost.*

(b) At what output level did the firm:
- *(i) break even;*
- *(ii) make the highest profit;*
- *(iii) attain equilibrium?*

(c) identify the market structure in which the firm operates.

50 percent of the candidates attempted this question and out of this number, 20 percent of them scored excellent marks.
The problem of most candidates was the use of the formula Tn – Tn-1 and not $\Delta T \div \Delta Qty$ to calculate marginal values. Candidates should be taught the different situations under which the different methods are used.

Question 3

(a) Define optimum population
(b) *In what **three** ways can rapid population growth slow down the rate of economic development?*
(c) Describe any three measures that can be adopted to control rapid population growth.

Over 85 percent of the candidates answered the question. The definition of optimum population was a problem for many candidates. Defining optimum population as "Population equals Resources" is wrong and mentioning "Abortion" which is illegal, as a measure of population control is not acceptable.
Many candidates mentioned points in parts 'b' and 'c' without explaining them.

Question 4

(a) What are state-owned enterprises
*(b) State any **three** reasons for the establishment of state-owned enterprises.*
*(c) Highlight any **four** problems associated with state-owned enterprises.*

65 percent of the candidates answered the question and majority of them scored the pass mark. Definition of state owned enterprises was not a problem. However, most candidates were not able to explain the reasons for establishing state enterprises and the problems facing state enterprises.

Question 5

(a) Differentiate between unemployment and underemployment.
*(b) With **one** example **each** explain the following:*
- *(i) seasonal unemployment;*
- *(ii) structural unemployment;*
- *(iii) frictional unemployment;*
- *(iv) cyclical unemployment.*

The difference between unemployment and under employment was a problem to the candidates. The 'b' part of the question was fairly explained, but the explanation of frictional, cyclical and structural unemployment was a challenge to the candidates.

Question 6

(a) What is commodity money?
(b) Identify any three problems associated with trade by barter.
(c) Explain any three ways by which the advent of money has solved the problems of the barter system.

This question was answered by 75 percent of the candidates. The main problem was the definition of Commodity Money as the definition of money was used to define the concept. The ways by which money solved the problem of barter was not brought out by many candidates in part 'c' of the question.

Question 7

(a) What is a demand schedule?
(b) State the law of demand.
(c) Using appropriate examples, explain the following types of demand:

(i) competitive demand;
(ii) derived demand;
(iii) joint demand;
(iv) composite demand.

Most candidates explained the demand schedule clearly. Candidates mostly scored one mark on the law of demand because 'other things being equal' was omitted in their answers.
On the types of demand, many candidates explained and gave good supporting examples for competitive and joint demand. Composite and derived demand was poorly answered with irrelevant examples.

Question 8

(a) What is a tax?
(b) Describe the following rates of taxation:

(i) progressive tax;
(ii) proportional tax;
(iii) regressive tax.

(c) Explain the following principles of a good tax system;

(i) equity;
(ii) convenience;
(iii) economy.

This was a question answered by many candidates. It was poorly answered as most candidates' knowledge on taxation as a topic was scanty. Candidates did not understand that progressive, proportional and regressive taxes should be defined using terms like tax rate, percentage, proportion and not amount.
The part 'c' question on qualities or principles of a good tax system was also poorly answered by the candidates.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
GEOGRAPHY 2

1. GENERAL COMMENTS

The overall performance of Candidates was not satisfactory. Most candidates performed below average.

However, few candidates about 20% were able to score very good marks. In general, the paper was of the required standard. It covered about 95% of the syllabus. The standard of the questions was quite within the reach of the candidates.

The language and the rubrics were very clear. Simple and clear English words like describe, characteristics, advantages, disadvantages, benefits, outline, identify e.t.c were used. It will be very interesting to note that less than 30% of the candidates scored above 50% of the total 80 marks allocated to this paper

2. CANDIDATES' STRENGHTS

- About 30% of the candidates did well in their attempts to answer some of the questions.
- For example in Question 1(b,c), Question 2(c) , Question 3(b), Question 4(a,b) and Question 5(b).

2. About 45% of the candidates understood and followed the instruction.

3. CANDIDATES' WEAKNESSES

- Violation of instructions.
- Misunderstanding of questions
- Poor preparations.
- Mere listing of questions that required detailed explanation.
- Answering less than the required number of questions i.e answering 2 or 3 questions instead of the total of 4 questions
- Answering all the 4 questions from only 2 sections instead of the three sections
- The perennial problem of drawing maps and locating and naming the features required by the question i.e. for questions 5, 6, 7, and 8.
- The use of lack of by candidates instead of inadequate or insufficient
- The use of income for governments instead of the revenue

Answer at least one question from this section

Question 1

*(a) Highlight **three** characteristics of manufacturing industries in Tropical Africa.*

*(b) State **three** ways by which manufacturing industries contribute to the economic development of Tropical Africa.*

*(c) Outline **four** problems facing industrial development in Tropical Africa.*

This was a popular question and about 85% of the candidates attempted it.
About 40% of the candidates that attempted this question scored no or less marks in part (a) to the question.
This is because they completely misunderstood the question. They instead write answers relating to factors
Influencing the location of industries, types of industries, or importance of industries.

Parts (b) and (c) to the question were well or correctly answered by most of the candidates and they
therefore scored good marks. This is normal because these were normal economic activity questions.

Question 2

*(a) Outline **four** ways in which urban settlements differ from one another.*

*(b) Outline **three** factors that have contributed to the high population density in Japan.*

*(c) State **three** problems resulting from the high population density in Japan.*

Like question I, this was also a popular question and about 75% of the candidates attempted it
About 65% of the candidates misunderstood part (a) of this question and they scored no marks at all. They wrote answers on the difference between urban and rural settlements. Some of them wrote more on the functions of settlements. They wrote answers like commercial functions, administrative functions, social functions etc.

Part (b) to the question was fairly well answered by about 50% of the candidates that attempted this question. However, a sizable number of them wrote answers like early marriage, polygamous marriages, teenage pregnancy etc and they scored no marks.

Part (c) to the question, was better answered by majority of the candidates and they scored good marks. This is part of the trend of questions that any average candidate can answer correctly. However, some candidates merely listed their points such as high crime rate, traffic congestion, social vices, unemployment, underemployment etc.. thus scored less marks.

Question 3

*(a) Identify **four** ocean routes in the world.*

*(b) In what **four** ways has water transportation, contributed to economic development.*

*(c) Outline **four** ways of improving transportation, on inland water ways.*

This was not a popular question and about 45% of the candidates attempted it. Part (a) to this question was poorly answered by about 70% of the Candidates who attempted this question and they scored no marks at all. Most of them mentioned the types of oceans in the world. Some wrote things like Savanna trade route, current to ocean trade route, Tropical ocean trade route etc…

Part (b) to the question was correctly answered by about 75% of the candidates that attempted this question. And they scored good marks. This again is one of the economic activity related question that average candidates can perform better.

Part (c) to the question, was very poorly answered by almost all the candidates that chose this question. Most of them scored very low marks and even no marks at all. I want to believe that they did not understand this part of the question.

SECTION B

FOR CANDIDATES IN THE GAMBIA

Answer at least one question from this section

Question 4

*(a) Describe **three** characteristics of subsistence agriculture in Senegambia.*

*(b) Outline **four** advantages of subsistence agriculture.*

*(c) Highlight **three** disadvantages of subsistence agriculture.*

This was a popular question and about 85% of the candidates attempted it and scored average marks. Most of them scored more than 50% of the total 20marks allocated to this question.

Part (a) and (b) to the question were better answered by majority of the candidates that attempted this question. Most of them scored more than half of the marks allocated to these parts of the question.

Part (c) to the question was poorly answered by majority of the candidates that attempted it. They therefore scored very low marks or no marks at all. Most of them wrote about the problem, facing substance farmers, instead of the disadvantages of subsistence agriculture. It should also be noted that some candidates confused parts (a) and (b) and gave similar or the same answers. For example, for both of them they wrote it provides food, for the farmer and his family.

Question 5

(a) Draw a sketch map of Senegambia.
On the map, locate and name **one** area, important for the manufacturing of:
(i) Salt;
(ii) Sugar;
(iii) Textile;

(b) Highlight **three** benefits of large-scale manufacturing industries in Senegambia.
(c) Outline **three**advantages of which large scale manufacturing industries have over small-scale manufacturing industries.

This was not a popular question and about 35% of the candidates attempted and they scored average or less marks.

Part (a)to the question was poorly attempted by about 70% of the candidates that attempted this question. They failed to draw the map of the Senegambia accurately, let alone to locate and name the required features. Most of them scored very low marks or no marks at all

Part (b)to this question was well answered by about 90% of the candidates.

Part (c) to the question was poorly answered by vast majority of the candidates. They didn't understand the question. Most of them gave the same answer for the benefits and disadvantages of large-scale manufacturing industries. Also, some candidates drew tables to differentiate between small-scale and large-scale industries instead of the advantages that that large-scale manufacturing industries have over small – scale manufacturing industries.

Question 6

(a) Draw a sketch map of Senegambia.

On the map, show and name one area each where the following minerals are mined:-
(i) Phosphate:
(ii) Limestone;
(iii) Salt.

(b) Describe the process of mining phosphate in Senegambia.
(c) Identify **four** problems affecting the mining industry in Senegambia.

This was not a popular question. About 30% of the candidates attempted and scored very low marks.

Part (a) to the question was poorly answered and about 70% of the candidates that attempted it scored very low marks. The map outline was a big challenge for many candidates. Much more locating and naming where these minerals are mined.

Part (b) to this question was equally poorly answered by about 85% of the candidates. Many of them wrote the underground method of mining phosphate contrary to the open cast method that is commonly used.

Part (c) to this question was fairly well answered by about 50% of the candidates and they scored average marks. Many of the candidates wrote that mining is dangerous without mentioning the specific dangers. They failed to point out or mention problems like shortage and high cost of spare ports, inadequate skilled labour, poor transportation, fall in demand for minerals etc.

SECTION C

AFRICA

FOR CANDIDATES IN GHANA, LIBERIA, SIERRA LEONE AND THE GAMBIA

Answer at least one question from this section

Question 7

(a) Draw a sketch map of West Africa.
On the map, locate and name:
(i) **One** mountainous area with **low** density of human population;
(ii) **One** coastal area with **high** density of human population;
(iii) **One** town in 7(a) (i);
(iv) Cape Verde Island.

(b) Give **five**reasons for the **low**density of human population in the middle belt of West Africa
(10 Marks)

This question was very unpopular and only about 35% of the candidates attempted it and got zero marks.

Part (a) to the question was poorly answered by almost all the candidates that attempted it. Almost all of them drew the map of Africa instead of West Africa.

Part (b) to this question was equally very poorly answered by about 90% of the candidates that
attempted this question. This part of the question was largely misunderstood by the candidates.

Question 8

(a) Draw a sketch map of West Africa.
On the map, locate and name :
(i) Latitudes 37^0 N and 35^0 S;
(ii) Longitudes 17^0 W and 51^{0E} ;
(iii) Mountain Kilimanjara ;
(iv) Lake Victoria.

(b) Outline **five** benefits of highlands in Africa

This was a popular question, about 75% of the candidates attempted it. Most of the candidates scored
more than 50% of the total 80 marks allocated to this question.

For part (a), there is marked improvement in the way candidates drew the map of Africa. Most of
them drew it accurately, and got the 2 Marks allocated for the outline of the map. The major problem was with the insertion of the features required by part (a) of the question. Majority of them scored low marks

Part (b) to the question, was far better answered than part (a) Majority of the candidates scored more
than half of the 10 marks allocated to this question. However, it was confusing to some of the candidates, who highlighted the importance of rivers instead of benefits of highlands in Africa,

Question 9

(a) Describe **two** methods of irrigation Agriculture in the Niger Valley

(b) Give **two** reasons for the practice of irrigation agriculture in the Niger Valley

(c). Outline **four** problems associated with irrigation agriculture in the Niger Valley

About 65% of the candidates attempted this question. Most of the candidates that attempted this question scored about 50% of the 8 marks allocated to the part (a) of the question. However, some of them scored low marks because they merely maintained the names of the methods such as pumping method, perennial method, basin method etc. Some candidates scored no marks at all because they wrote things like surface irrigation, underground irrigation, overhead method etc.

Part (b)was far better answered than part (a). About 50% of the candidates that attempted this question did fairly well and scored the total 4 marks allocated.

Part (c) to this question was grossly misunderstood by majority of the candidates that attempted this question. They mentioned the problems that irrigation agriculture can cause or the difficulty in practicing irrigation agriculture, instead of the problems associated with irrigation agriculture in the Niger Valley. They therefore scored no marks at all.

RECOMMENDATIONS

1. Teachers should endeavour to cover at least 90% of the syllabus before the exams.
2. Students should be encouraged to read extensively.
3. Students should be exposed to the WAEC syllabus and past WAEC examination papers
4. Students should be encouraged to present their points as clearly as possible during internal school exams.
5. Student/candidates and teachers should be encouraged to read the Chief Examiners report and focus on the comments on the strengths and weakness of candidates with a view to improving on them.
6. Heads of institutions doing the WASSCE should be encouraged to obtained copies of the Chief Examiner's Report for their institutions.
7. Students should be encouraged to draw maps and should practice how to insert features on maps.
8. Geography teachers should tell their students that words such as mention, outline, describe, state, highlight etc. mean detailed explanation.
9. Geography teachers should be able to know the rubrics of the geography syllabus.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
GEOGRAPHY 3

1. GENERAL COMMENTS

This paper was set in the same way as previous papers. It is not markedly different from those papers. The questions set for this paper were within the reach of the candidates. The questions were simple and lacked ambiguity. No question was drawn outside of the syllabus and they covered almost 90% of the syllabus. The general performance of candidates was below average.

2. CANDIDATES' STRENGTHS

The general level of performance in few centers was high. Candidates in these centers appeared to have prepared well for the exam. Many candidates satisfied the rubrics of the examination by answering the required number of questions. There were few cases of misunderstanding questions. Some of the candidates who scored high marks, had a clear knowledge and understanding of the topics examined. For instance in:

i. question 2 they were able to accurately calculate the dot values and showed all workings. They were equally able to plot the dots on the map provided.
ii. question 5, candidates drew convincing diagrams of the lunar eclipse.
iii. question 4, the candidates were able to name all the features the question required them to name. Their diagrams showing the underground features of a limestone region were relatively good. Candidates were also able to clearly explain "the importance of limestone to man".
iv. question 8 was where they portrayed an excellent recall knowledge of flooding with regards to *causes,* effects and preventive measures.

3. CANDIDATES' WEAKNESSES

I. The general standard of English continues to be poor. A number of candidates were handicapped by a poor understanding of English both in their interpretation of the questions and in their responses.

II. Poor spellings especially on key terms is still a major concern.

III. Some candidates crammed two or three questions on one page and often making the work illegible in the process as well as making it difficult for examiners to write the total scores.

IV. Candidates found it difficult to draw simple and accurate diagrams of physical features such as *gorges and sief dunes* in question 3 and *waterfall* and *river capture* in question 7.

V. Candidates inability to fully amplify their points continues to be a major concern. This led to candidates scoring less than 50% of the possible scores for certain questions.

VI. Candidates did not understand key instructions (command words) such as '*calculate*', '*describe*', '*explain*', etc.

4. SUGGESTED REMEDIES

1. The low standard of English must be improved upon in order for candidates to produce standard work. Centers must emphasize the importance of English in written examinations. Most often, poor performance in certain questions is due to candidates' poor expressions and poor understanding of English in their interpretation of the questions.
2. Candidates should be encouraged to present clearly annotated diagrams, graphs, charts. These cartographic "features" should be of average size that can be seen clearly.
3. Centres presenting candidates for this examination should instruct them that if a question asks for a description or explanation, a simple list of points is not sufficient. Their responses must be presented in the form of sentences, with at least a brief comment on each point.
4. Candidates must be advised on how to select questions. Poor choice of questions is usually the main cause of poor scores. The procedure below, though has been suggested in the past, can help candidates to overcome such difficulties:

I. Read the rubric (instruction) at the top of the paper.

II. Read all the questions on the question paper carefully.

III. Tick all the questions you think you will be able to answer.

IV. Reduce the number of questions you have ticked to the number required by the rubric.

V. Underline the key words and phrases to ensure that you actually do understand what the question is demanding.

VI. Select an order in which you will answer the questions, leaving the weakest until last.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Study the map extract provided on a scale of 1:50,000 and use it to answer the questions that follow.

*(a) On the attached topographical map extract, **mark** and **name** the following features using the letter in the brackets:*

*(i) ridge (**RG**);*

*(ii) col (**CL**);*

*(iii) confluence (**CF**);*

*(iv) spur (**SP**);*

*(v) isolated hill (**IH**).*

*(b) Shade an area **above** 950 ft in the north western part of the map.*

(c) *In your answer booklet, calculate the gradient along the line between points **A** and **B** on the map.*

(d) *Describe **two** drainage characteristics of River **Tain**.*

This is the compulsory question based on a map extract of a region in West Africa. This question is often meant to test the candidates' abilities to read and interpret basic information provided by contour lines and dot symbols.

Understanding the questions

1(a) this question required the candidates to *show* and *name* certain physical features. Showing here means identifying the feature by drawing a line of identification across the feature and naming implies writing the name of the feature on the identification line that had been drawn. This question did not asked candidates to draw the features in their answer booklets but to identify them on the topographic sheet provided. In essence, the topographic sheet must be submitted together with the answer booklet.

1(b) this question only required candidates to shade areas *between 950ft and 1000 in thenorthwestern part* of the map only. Shading an area above 950 must not be interpreted as going beyond the next contour interval value.

1(c) This involves a simple mathematical calculation of the slope of Line AB. Candidates are thus required to use the formula:

$$\text{Gradient} = \frac{\text{Vertical Interval (VI) in feet or metres}}{\text{Horizontal Equivalent (HE) in feet or metres}}$$

The answer must be presented as 1/x or 1 in x.
Candidates must note that the contours are in feet and not in metres. Candidates must use the imperial system. If they want to use the metric system then they should convert the contour values to metres
1ft = 0.3048 metres, thus 100ft =30.48m. see expected answers for further explanation

1(d) this question was asking for a simple description of the drainage characteristics of River Tain. This means all description must only relate to the River Tain. The characteristics asked for only involve the stream lay out and not any other physical features that may be found on the map. See expected answers.

Comments on individual sub-questions

1(a) and **(b)** Candidates found it difficult to identify physical features on a topographic sheet. Candidates in most centres did not return the topographic sheets for marking, an indication that they did not know what they were required to do on the map. This question opened the floodgate for guessing. Almost 80% of the candidates fell within this category. Of the remaining percentage, a staggering 10% drew diagrams of the features concern in their answer booklets, while a further 5% ended up reducing the map. The rest (5%) wrote the names against the features but did not draw the identification lines, thus, they ended up scoring 50% of the possible marks where the naming was correct.

Candidates should note that identification of features involves:

i. drawing a line of identification;

ii. writing the name of the feature on top of the identification line.

For part (b) of the question candidates (45%) shadings were outside of the required limits rendering them inaccurate which attracted no scores.

1(c) The performance in this sub question was nothing but poor.Candidates showed no knowledge of how to calculate gradient. There was no indication that they even know the formula for calculating gradient. Thus, they were presenting formulae such as:

- ‘Vertical height’
Horizontal height

- Distance
Height

- Height of AB
Road distance

Not surprisingly, the calculations were lop-sides and therefore they arrived at “answers” that were not close to the expected answers.

Expected answers:

Calculation of gradient:

Gradient = Vertical Interval (VI)
Horizontal Equivalent
VI = (1100 – 850) ft

1 inch = 2.54 cm or approximately 2.5 cm

250 ft x 12 x 2.54 cm

HE = 12.5 cm $\pm$ 0.1

Scale of map = 2 cm is to 1 km **OR** 1:50,000

Therefore 12.5/2 = 6.25 km0, **OR** 12.5 x 50,000 = 625,000

Gradient = $\frac{250 \times 12\ 2{,}54\ cm}{6.25 \times 100{,}000}$ **OR** $\frac{250 \times 12 \times 2.54}{12.5 \times 50{,}000} = \frac{7.620}{625{,}000}$

= 1/82 **OR** 1 in 82

1**(d)** this sub question was averagely answered. About 55% of the candidates scored 50% of the possible scores as they were only able to mention the drainage pattern but failed to describe it as seen on the map. Of the remaining 45%, 15% got the maximum possible scores, while the remaining 30% scored no marks because of irrelevant responses.

Expected answers

Description of the drainage characteristics of River Tain:
- The major or largest river in the mapped area.
- Has many tributaries.
- Drainage pattern is dendritic.
- It flows from northwest to the center and then eastwards.
- It is in the middle course.

- It flows through U-shaped valley.
- The width of the river is between 10 – 100ft.
- Meanders are found in the northwest of the map.
- The northern boundary is Tain Forest Reserve.
- The slope of the riverbed is gentle.

Question 2

*The population distribution in the regions of country **M***in the year 2011 is represented in the table below. Use the data to answer the questions that follow:

REGION	POPULATION
A	100,000
B	380,000
C	160,000
D	220,000

(a) *Using the map on page 3 and a scale of one dot to represent 20,000 persons, produce a dot map for country **M**.*

*(Detach the dot map of country **M** on page three and attach it to answer booklet).*

(b) *On the dot map produced in **2(a)**, suggest a suitable title.*

(c) *State **two** advantages of dot maps.*

This was a popular question attracting more than 90% of the candidates and the general performance generally was good, especially on question 2(a) where most candidates scored more than the average score.

Understanding the question

2 (a) This question required the candidates to divide the population of each region by 20,000 in order to know the number of dots to be inserted in each region on the map provided. Candidates were not required to reproduce the outline map in their answer booklet. The finished map must be detached and submitted together with the answer booklet.

2(b) The title of all statistical maps must be the title of the given statistical table.

2(c) candidates were required to provide **two** advantages which dot maps have over cartographic methods.

Comments on individual sub-questions

2a) Performance in this sub-question was very good. Almost 80% of those who attempted it scored the maximum possible marks. A further 15% did not show working but they were able to plot the correct number of dots region. Of the remaining 5%, 3% got the calculations right but used different symbols rather than dots in plotting. The remaining 2% had no idea of what was required of them.

Expected answers:
Calculation and plotting of dots on map:

Calculation of dots

Region A: 100,000/20,000 = 5 dots

Region B: 380,000/20,000 = 19 dots

Region C: 160,000/20,000 = 8 dots

Region D: 220,000/20,000 = 11 dots

Plotting dots

Region A = 5 dots

Region B = 19 dots

Region C = 8 dots

Region D = 11 dots

2(b) This was poorly attempted. All forms of titles with no bearing to the data were supplied. 80% of the candidates wrote down the wrong title. Of the remaining 20%, 15% did not write any title. The remaining 5% got the title right.

Expected answer:

Suitable title: Dot map showing distribution of population of the regions of country M in the year 2011.

2 (c) The performance in this question was average. 70% of the candidates supplied unrelated answers. Of the remaining 30%, 25% were able only able to supply one correct advantage and therefore scored only 50% 0f the maximum possible mark. The rest were able to provide two correct advantages.

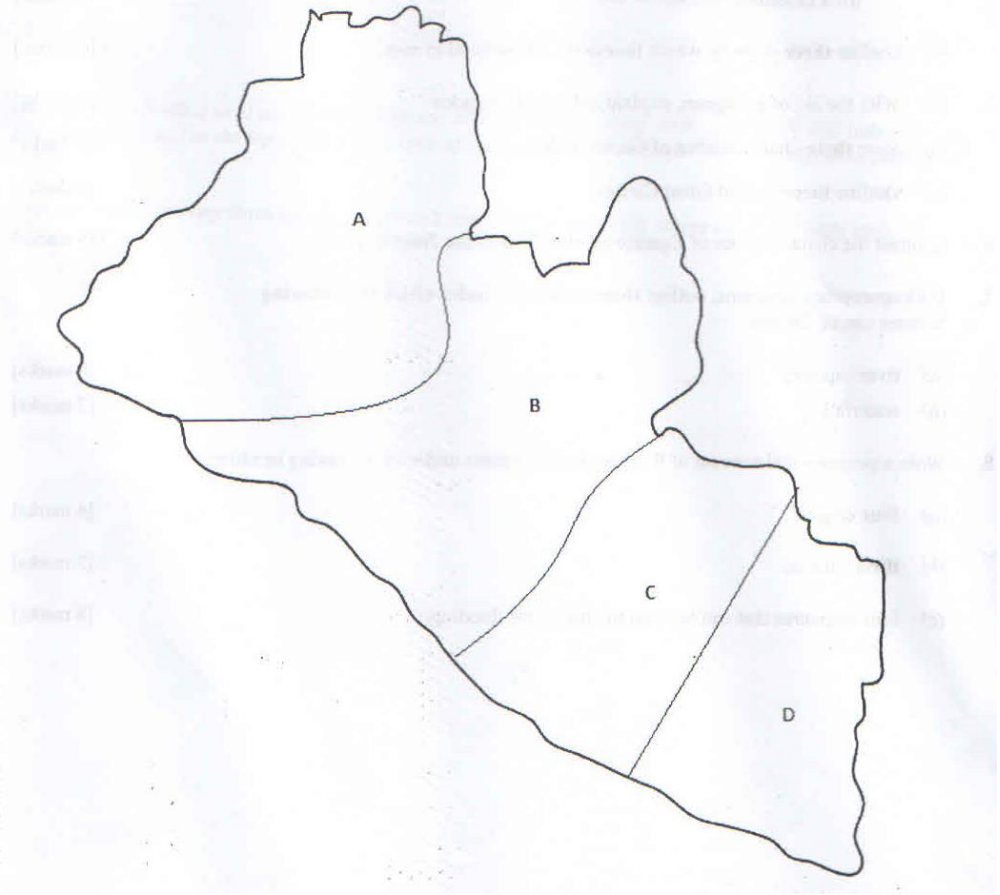
Expected answers:

Advantages of dot maps:
- Give good visual impression
- Easy to interpret by counting the dots
- Easy to compare the distribution of items using concentration of dots
- Clearly presents the density of distribution across land areas
- Easy to construct
- Can be used to represent a wide range of items
- It is easier to show variation in distribution of wide variety of items if different colours are employed
- Original figures can be worked out using a scale
- Best method to show absolute figures
- Can be used with other methods, e.g. chloropleths

NAME: ..... INDEX NUMBER: .....

2. *(b)* TITLE: _____

_____



Question 3

With the aid of annotated diagrams, explain the characteristics and mode of formation of thefollowing features;

(a) gorges;

(b) seif dunes.

This was the most unpopular question and was attempted by only 10%. They selected this question for want of a fourth question to satisfy the rubrics but not because they knew the answers.

Understanding the questions

These questions were asking for a description of what makes each of these features distinct from other geographical features. The second part of the question required an explanation of how the features may have been formed. The information should involve the role of certain agents of denudation. Additionally well labelled and explanatory diagrams are required.

Comments on individual sub-questions

3(a) This was not a popular question and attracted low scores. The responses presented had no bearing to gorges. Some of the candidates were describing features such as river capture. Their answers attracted no marks. In general 98% of those who attempted this question scored no marks. The remaining 2% was made up of those who got few marks for the diagram.

Expected answers:
Characteristics of gorges:

- also called ravines/canyons
- elongated
- steep-sided
- can be dry
- favours the construction of dams
- could be associated with faults
- deep narrow river valley
- can be found in limestone regions
- can be found in dissected plateau
- found along rejuvenated rivers
- very common in the upper course of rivers
- usually v-shaped
- examples include the Rhine in Germany, Shororo gorge on River Kaduna, Bumbuna gorge in Sierra Leone, Bui gorge on River Volta in Ghana, along River Indus in India, Ajena gorge in River Volta in Ghana, etc.

Mode of formation:

- formed mostly in the upper course of a river
- formed where waterfall retreat upstream
- formed along fault lines
- presence of alternate bands of hard and soft rocks
- formed where rivers cut deeply along the lines of weakness vertically
- further vertical erosion deepens the valley
- this creates an elongated depression
- the depression has steep sides due to minimal lateral erosion
- the valley is called a gorge
- could be formed where a river crosses a lime stone region
- also where a river incises itself into the land surface due to fall in sea level

3(b) This was equally not well answered. Candidates showed no knowledge of the basic characteristics of seif dunes. It is therefore not surprising that they were unable to correctly explain how these features may have been formed. No candidate scored credible mark 3 in this sub question. The few marks they got were from their unfinished diagrams. In summary the candidates were ill-prepared for this type of question.

Expected answers:
Characteristics of Seif dunes
- found in arid region
- they are sand deposits
- they are long and narrow ridges
- lie parallel to the direction of prevailing winds
- they lie parallel to each other
- could attain 60 meters in height
- could be over 100km in length
- crests are characterized by peaks and saddles
- they migrate and are therefore not stationary
- they are separated from each other by a corridor
- also known as longitudinal dunes
- have steep sides
- crest line is serrated

Mode of formation:
- formed in desert areas
- formed due to wing deposition
- sand dunes are deposited parallel to the prevailing wind
- winds blow to clear the corridors between dunes of sand
- eddies blow towards the sides of the corridors
- this results in long parallel mounds of sand called Seif dunes
- may also be formed when winds breaks through barchans
- the winds forming the barchans may change their direction
- this results in removal of sand from the middle of the barchans
- the removed sands are deposited at the horns to build up dunes
- the crest of the sand dunes moves forward as more sand is accumulated by wind action
- sand is blown up the wind ward side
- this action leads to dune advancement/migration

Question 4

*(a) (i) List **three** landforms found in limestone regions.*
*(ii) Draw a well labelled diagram to show the **underground** features of a limestone region.*

*(b) Outline t**hree** ways by which limestone is beneficial to man.*

This was a popular question and total scores were good for both parts of the question. It was attempted by 90% of the candidates. The only problem with their responses was that their diagrams were shabbily drawn. On the (b) part, candidates were able to provide responses that were correct though not captured in the marking scheme.

However, there was a down turn in their performance and this was caused by poor spelling of technical terms, e.g.:
- "stalagtite" for stalactite
- "Stalacmite" for stalagmite, etc.

Understanding the question

4(a) (i) This question was asking the candidates to simply write down the names of any **three** features that one can see in a limestone area. Descriptions explanations were not required.

4(a) (ii) This was a straight forward case of drawing a simple diagram showing the features found below the surface of a limestone area. The features must be correctly labelled and the names correctly named.
4(b) This sub-question was asking the candidates to explain what man stands to benefit from limestone. The responses to this question required basic examples (i.e. example of each benefit mentioned) in order to score the maximum possible mark.

Comments on individual sub-questions

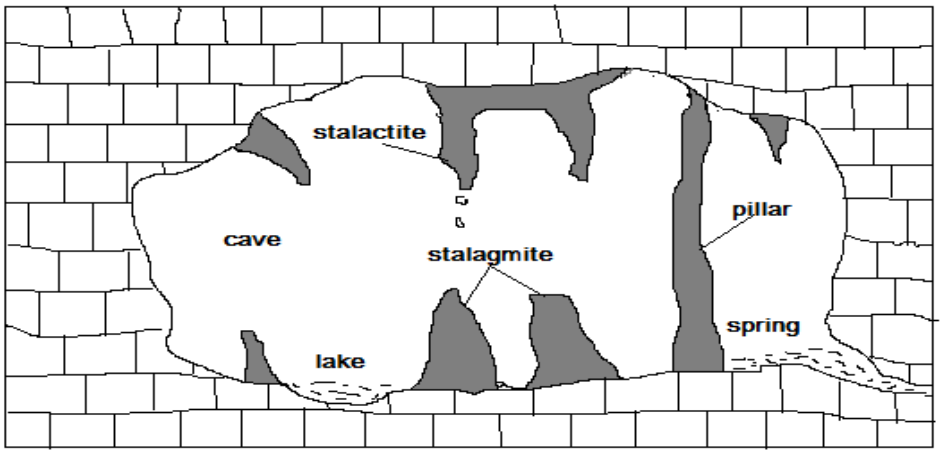
4(a) (i) This sub-question was well answered by those who attempted it. Almost 90% of the respondents scored all the possible marks. Out of the remaining 10%, 8% scored average marks because poor spelling of technical words, while the remaining 2% mentioned features that could not be found in a limestone area. In summary, the performance was exceptionally good.

Expected answers:
Landforms found in limestone regions:

- stalactite
- stalagmite
- doline
- uvala
- clint
- grike
- cave/carven
- pillar/column
- dry valley
- gorge
- chalk cuesta
- sinkhole/swallow hole
- polje

4(a) (ii) The performance in this sub question was equally good. The statiscal analysis remain the same as that in 4(a) (i).

xpected answer/diagram



4(b) The performance in this sub question was not markedly different from Question 4(a).

Expected answers:

Ways in which limestone is beneficial to man:

- streams could be used for domestic purposes
- springs provide drinking water
- limestone is used as raw material in cement industries
- chalk is obtained from limestone
- source of underground water
- caves could serve as hiding places in times of war
- used in iron and tin smelting
- tourism
- the metal lead is mostly found in limestone regions
- grass for livestock farming
- used as material for construction
- weathered to form soil
- used to neutralize acidity of soils and lakes
- used in manufacture of glass
- farming activities could be carried out in lime stone regions
- reservoir of crude oil

Question 5

(a) With the aid of a diagram, explain eclipse of the moon.
*(b) State **three** characteristics of Great Circles.*

*(c) Outline **three** uses of Great Circles.*

This was a popular question attempted by almost 90% of the candidates. The overall performance was nothing but average.

Understanding the question

5(a) Candidates were required to draw an explanatory diagram to show how a lunar eclipse occurs. It required candidates to draw a diagram portraying the three major bodies (i.e. the sun, the earth and the moon) occurring in a straight line with the earth at the middle. Additionally, the moon should be shaded either partly dark to (show a partial eclipse) or completely dark (to show a total eclipse). The diagram must be fully labelled. Candidates were also require to describe in simple terms how a lunar eclipse is caused.

5(b) This question was asking for factors that make Great Circles different from all other circles. That is, candidates were required to show the distinguishing characteristics of Great circles. The responses must portray their location, relationship and to a certain extend their importance.

5(c) Candidates were required in this sub-question to tell the examiner the usefulness of Great circles; i.e. what are they use for and why.

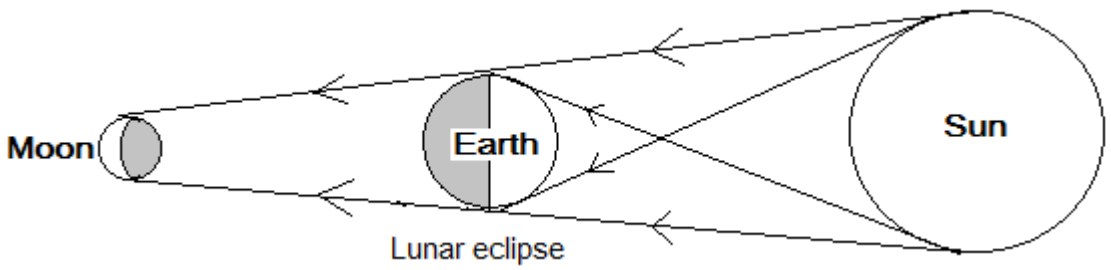
Comments on individual sub-questions

5(a) This sub question was well answered by about 85% of those who attempted it. They were able to produce simple, accurate and well labelled diagrams. Of the remaining 15%, 10% got the positioning of the heavenly bodies wrong, e.g. putting the moon between the earth and the sun. This gave them low scores. The remaining 5% drew diagrams that do not only show the wrong position of the heavenly bodies but also represented them in all manner of sizes. E.g. the moon being larger than the earth and the sun, etc. This resulted to no scores.

Expected answer:

Explanation of explanation of eclipse of the moon:

- also called lunar eclipse
- the earth revolves round the sun
- the moon revolves round the earth
- when the earth comes between the sun and the moon, the earth blocks the rays of the sun from reaching the moon
- the shadow of the earth is cast on the moon
- the shadow creates darkness or umbra on the moon
- this unusual darkness is called eclipse
- partial coverage of the moon leads to partial eclipse



(b) This question was poorly answered by almost all those who attempted it. About 95% of those who attempted it scored low marks. The remaining 5% were able to score just above average marks.

Expected answers

Characteristics of Great Circles:

- imaginary circular lines drawn on maps or globes
- they run in all directions
- they are limitless in number
- any line that divides the earth into two equal parts is a Great circle
- the center of great circles is also the center of the earth
- the Equator is the only latitude that is a Great Circle
- the shortest distance between any two points on the earth's surface lies along the circumference of the Great Circle
- it is capable of dividing the earth into two equal halves
- each half is called hemisphere
- any two opposite longitudes form a Great Circle, e.g. Longitude 90ºE & 90ºW; 180º & 0°
- they are equal in length

(c) The performance in this question was nothing but average. Candidates were simply writing down whatever came to their mind. As usual, there were a handful (5%) who were able to score above average marks as they were able to provide acceptable answers.

Expected answers
Uses of Great Circles:

- for locating places on the earth's surface
- in determining approximate distances between places
- serve as the shortest distance between two points on the earth's surface
- in determining directions
- by commercial aircrafts for long distance journeys
- in saving time in aviation and navigation
- by ships in navigation

Question 6

Contrast the characteristics of Equatorial climate with the Tundra climate.

This was the most unpopular question attempted by only 4%. They selected this question for want of a fourth question to satisfy the rubrics but not because they knew the answers.

Understanding the question

Candidates were required to bring out the differences between the Equatorial climate and the Tundra climate. The emphasis here is on measurable climatic factors and not vegetation or soils. The answers should incorporate differences in:

i. *geographical location;*
ii. *temperature;*
iii. *precipitation;*
iv. *humidity;*
v. *wind patterns*, etc.

Comments on individual sub-questions

This question was poorly answered. Candidates presented responses that were nowhere closer to the answers. A lot of them (about 40%) centered all their answered on precipitation and temperature, ignoring the other salient factors. These sorts of responses do not attract respectable marks. About 45% of the remaining number concentrated on the vegetation and occupation of the people in the regions under discuss. This was not what the question was meant to test. The remaining 15% portrayed no knowledge of what the question required them to do.

Expected answers

Differences between the characteristics of the Equatorial climate and the Tundra climate:

- Equatorial climate is located near the Equator while the Tundra climate is located near the poles
- the Tundra climate is located around latitudes 60º - 90° north and south of the Equator while the Equatorial climate is located around latitude 5º north and south of the Equator.
- The Equatorial climate can be found in the Amazon Basin of South America, Zaire Basin in Central Africa and the coast of West Africa while the Tundra climate can be found in the coastal strip of Greenland, Eurasia and America, northern Canada and Alaska
- Equatorial climate has high temperatures all year round while Tundra has low temperatures all year round.
- Equatorial mean temperature is as high as 27ºC while Tundra temperature is as low as -29ºC.
- Equatorial climate has higher precipitation of 2000mm and above while the Tundra has low precipitation of 250mm and below.
- Rainfall occurs throughout the year in Equatorial climate (no marked dry season) while in Tundra climate rainfall occurs only in summer.
- Equatorial climatic areas are usually hot and wet (moist) while Tundra climatic areas are cold and wet with snow and moist (winter).
- Equatorial climate experience small annual temperature range of about 1º - 3°C while the Tundra has high annual temperature range of 40ºC - 50°
- Equatorial climate experiences very little differences between lengths of day and night while Tundra experiences several weeks of continuous night in winter and several week of continuous day in summer.
- Equatorial climate has high humidity throughout the year while Tundra has low humidity throughout the year.
- rainfall occurs in equatorial climatic areas while snow occurs in the tundra climatic areas.
- there is high incidence of frost in Tundra while there is none in Equatorial areas
- thunderstorms are experienced in the Equatorial climatic areas while blizzards are experienced in Tundra climatic areas.
- Trade winds are found in the Equatorial climatic areas while Polar Easterlies are found in Tundra climatic areas.
- Equatorial climatic areas experience unstable convective clouds while the Tundra climatic areas experience stable stratiform clouds.
- Equatorial climate has double maxima rainfall while the Tundra has single maximum rainfall.
- The rays of the sun are vertical in the Equatorial areas while they are incline Tundra regions.

Question 7

*With appropriate diagrams, outline **three** conditions under which the following features can be formed:*

(a) river capture;

(b) Waterfall.

This was also a popular question attracting about 70% of the candidates. The performance in this question indicated that what actually attracted the candidates to this question was the fact that most candidates were familiar with these landforms. The performance in both (a) and (b) parts of the question was far below average.

Interpreting the question

7(a) and (b) These questions required the respondents to produce well labelled diagrams. It also asked them to write down the conditions that favour the formations of the features under discuss. The Question does not require an explanation of the mode of formation of these features.

Comments on individual sub-questions

7(a) and (b): responses to these questions were at best vague, showing candidates lack of understanding of the topic tested. Not surprisingly, all of their scores were far below average. The diagrams were shabbily drawn and poorly labelled.

Expected answers for 7(a)
Conditions under which river capture can be formed:

- excessive rainfall in favour of powerful rivers
- there must be two parallel consequent rivers
- the consequent rivers must be separated by watershed/divide
- one of the rivers must be more powerful, i.e. have more erosive power than the other
- the valley of the more powerful river must be deeper than the other
- the powerful river should have steeper slope or gradient
- the powerful river must have strong headward erosion
- the rock at the headwaters of the powerful river should be less resistant to erosion
- it must cut back into the headland faster than the other

Expected answers for (b)
Conditions under which waterfall can be formed:

- there must be a resistant rock
- the resistant rock must lie across/discordant to the river valley
- the river must plunge over the resistant rock to form a waterfall
- the river valley must have river flowing in it
- a fault line scarp must cut across the valley
- a river must plunge over an edge of plateau
- high velocity of flow
- presence of a hanging valley
- damming of rivers
- presence of a dyke across the river channel

Question 8

Write a geographical account of flooding in urban areas under the following headings:

a) ***four*** *causes;*

b) ***three*** *effects;*

c) ***four*** *measures that can be used to control the flooding.*

This was one of the most popular questions attracting more than 90% of the candidates. The general performance was reasonably good. Candidates showed a clear understanding of the causes of flooding and the effects of flooding. They were also able to supply good responses on the measures that can be taken to control flooding in urban areas. There were however, few candidates who found it very difficult to identify the **four** causes of flooding while others faced difficulty in providing answers for question 8(c).

Interpreting the question

8 (a) Candidates were asked to explain what makes *urban areas* to be flooded. The question was not asking for what causes flooding in any other area than in urban areas. No reference should be of flooding in rural areas or forested areas.

8(b) This required candidates to write down the consequences of flooding in *urban areas*. The required answers must be the direct consequences of flooding in urban areas.

The (c) part of the question required candidates to state what should be done to control flooding.

Comments on individual sub-questions

8(a) The performance in this question was above average for above 70% of those who attempted it. 20% of the remaining number wrote on the causes of flooding in general which led them to score below average marks. The remaining 10% was made up of those who took *causes* to mean effects for which they scored no marks.

Expected answers

Causes of flooding in urban areas:

- excessive rainfall
- refuse dumping into drains
- poor engineering/construction of drainage system
- settlements along river channels
- volcanic eruption
- tsunamis
- wind storms, e.g. hurricanes, tornadoes, typhoons
- non-enforcement of environmental laws
- strong tidal waves along the coast
- erecting structures along waterways
- bursting of weak dams
- inadequate urban planning
- extensive cementing of compounds in urban areas
- overpopulation and increased solid waste generation

8(b) This sub question was well answered by almost 95% of the candidates. They were able to correctly present more than the required number of points. The remaining 5% supplied irrelevant material and so had poor grades.

Expected answers

Effects of urban flooding:
- loss of lives
- loss of property
- causes soil erosion
- interruption of social and economic activities
- environmental degradation
- creates the need for emergency relief supply
- deposition of silt and garbage
- displacement of people
- increase in government expenditure
- health hazards
- difficulty in movement
- pollution of environment
- washes away railway lines and roads
- easy spread of water borne diseases
- destroys bio-diversity
- contamination of water sources
- it induces landslide, mud flow, rock fall and soil creep
- retards urban development

8(c) This was averagely handled as candidates were presenting answers meant for flooding elsewhere, e.g. afforestation, avoid overgrazing, etc.

Expected answers

Measures that can be used to control flooding:
- enforcement of legislation against indiscriminate waste disposal
- efficient urban planning
- construction of wider culverts and drains
- frequent cleaning of drains
- re-channeling of flood water from city centers
- public enlightenment
- the use of water pumps to suck away flood water
- construction of dams to create reservoirs
- strengthening of old dams
- building/construction of artificial levees or groynes of embankments along river banks
- provision of more refuse bins in urban centres
- organized commercial efforts at cleaning drainage channels
- environmental education in schools
- creation of lanes and lawns in urban centres
- establishment of disaster management agencies.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
GOVERNMENT 2

1. GENERAL COMMENTS ON THE PAPER

The standard of the paper compared favorably with those of previous years but the general performance of candidates was slightly above average.
The questions set gave the candidates ample opportunity to score a pass mark. The rubrics were clear. In addition, questions were drawn from familiar topics like citizenship, public opinion etc
There was abundant evidence from some of the scripts that a good number of the candidates were not properly prepared for the examination.
The poor performance of the candidates could be attributed to either the lack of reading materials and inadequate tuition or a lack of seriousness on the part of the candidates.

2. CANDIDATES' STRENGTHS

Nearly 90% of the candidates observed the rubrics of the examination by not answering questions specifically reserved for candidates in Nigeria, Sierra Leone and Ghana.
About 95% of the candidates followed the instructions on the paper by answering two (2) questions from section A and two (2) from section B.
About 80% of the candidates provided appropriate answers to questions 3, 8, 9 and 10, and very good marks were scored such as 8, 10 and 15.
Nearly 70% of the candidates exhibited a high degree of legibility and clarity of work.

3. CANDIDATES' WEAKNESSES

About 40% of the candidates could not express themselves in simple and concise English Language, making their answers clumsy to read and understand.
Examiners also observed that 5% of the candidates started answering a question, for example on page 3 of the Answer Booklet and referred the Examiner to page 5 for a continuation of the same question.
About 10% of the candidates answered more than one question on a page of the Answer Booklet
The points raised by about 10% of the candidates in answering their questions were mostly mere mentioning of points
Nearly 5% of the candidates provided an unnecessary introduction to questions. Marks are not awarded for such details.

4. SUGGESTED REMEDIES

Candidates should be encouraged by teachers to improve upon their skills in writing.
Candidates must desist from the practice of using two different pages for a question.

Examiners made a lot of mistakes in accurately transferring marks scored for such questions on to the cover of the Answer Booklet
Candidates should be discouraged from answering more than one question on a page of the Answer Booklet. Every question should start on a fresh page.

Candidates should be made to understand that whatever point they raised must be explained.

Candidates should avoid providing unnecessary introduction or excessive details to a question, as marks are not mostly awarded for such details.

5. DETAILED COMMENTS ON EACH QUESTION

Question 1

(a) Define society.
*(b) Identify **four** features of a society*

This question was popular among 75% of the candidates. However, performance was unsatisfactory, about 4 out of 15. The definition was poorly done and features raised did not match with those provided in the marking scheme.

Question 2

(a) What is communalism?
*(b) State **four** differences between feudalism and communalism*

This question was attempted by about 40% of the candidates. The definition was not straight forward and the differences between feudalism and communalism did not come out clearly. The average performance was poor about 3 out of 15.

Question 3

*(a) Highlight **three**methods of acquiring citizenship.*
*(b) Outline **two** conditions an alien **must** satisfy before becoming a citizen of another country.*

A very popular question among 95% of the candidates. The average performance was good, about 10 out of 15. The key words for methods, about 30% of the candidates misspelt them, for example decent for descent etc, but the explanation was good. It was the conditions required for citizenship that posed a challenge to nearly all the candidates.

Question 4

(a) Define opinion poll
*(b) State any **four** factors that make the conduct of opinion poll unreliable in West Africa.*

Quite an unpopular question, only about 20% of the candidates answered it, with very low marks such as 2 out of 15. This is because about 10% of the candidates used the definition of public opinion for opinion poll and the criticisms of public opinion for unreliability of opinion polls.

Question 5

(a) Define a constituency.
*(b) Highlight any **four**merits of the single member constituency.*

This question was equally unpopular as about 15% of the candidates attempted it. The performance was unsatisfactory on the average about 3 out of 15. The definition of

constituency was wrongly done and about 5% of them defined constitution for constituency. They could not provide substantial points to support the merits of single member constituency.

Question 6

*State **five**ways by which the Mansa was prevented from being autocratic in the Madinka pre – colonial administration.*

About 60% of the candidates attempted this question, but the performance was unsatisfactory, about 3 out of 15. Instead of explaining how the Mansa was controlled, about 50% of them rather wrote on the functions performed by the mansa.

Question 7

(a) What is proto nationalism?
*(b) Identify **four** features of proto nationalism*

Another unpopular question among 20% of the candidates, performance was very poor about 2 out of 15. The definition given by most of the candidates for proto nationalism was wrong and instead of the features of proto nationalism they wrote on the demerits of proto nationalism.

Question 8

Outline five political developments in the Gambia from 1965 to 1982.

Nearly 75% of the candidates attempted this question, but the average performance was poor about 2 out of 15. About 50% of them misinterpreted the word development to mean provision of infrastructure and so dwelt on mentioning projects embarked on during the period from 1965 to 1982. For example, they indicated developments in the social and economic spheres such as schools, hospitals, roads, agriculture etc. This eventually led to their poor performance.

Question 9

What mechanisms should be put in place to forestall military intervention in politics?

Another popular question among 90% of the candidates and the performance was satisfactory about 6 out of 15.. About 50% of them came up with very relevant and well explained answers, while others could not provide convincing points to obtain good marks.

Question 10 *State **five** obstacles to the implementation of the Economic Community of West African States (ECOWAS) aims and objectives.*

This question was very popular among 95% of the candidates. However, the average performance was only satisfactory about 6 out 15. Also about 50% of them deviated by not understanding the word “obstacle” but rather went on to write mainly on the aims and objectives of ECOWAS. They could give the outlines but lacked the ability to explain them, resulting in to satisfactory performance

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
HISTORY 2

1. GENERAL COMMENTS

The standard of the paper compared favourably with those of previous years. The problem was that some of the candidates were either not properly taught, not taught at all or did not understand what they were taught. Some technical words like communities, processing, reacted, freed, unwilling, etc. were not understood as could be determined from the way questions were answered. These are related to history and therefore teachers and candidates are expected to know them. It was generally observed that where candidates had questions in a and b or a, b and c they did much better.

There were no incorrect or ambiguous questions nor were there questions outside the requirements of the syllabus.

The questions were suitable for the level being examined. The only problem as already stated was the comprehension and understanding of some technical words. It was also discovered that some very weak candidates attempted questions from Nigeria, and Sierra Leone, although the number was much lower than in previous years.

2. CANDIDATES' STRENGTH

Generally most of the candidates had improved considerably as they read widely as was noticed in all the sections. Also this year less than 1% of the candidates attempted questions outside The Gambia as stated earlier. This also shows a marked improvement as over the years many candidates had been answering questions from Nigeria, Sierra Leone and Ghana. It was also observed that the language of candidates had improved. Candidates are therefore encouraged to read as widely as possible.

3. CANDIDATES WEAKNESS

It was generally observed that candidates still do not know how to spell words – even simple words. Candidates should learn how to spell correctly. Some candidates also did not write legibly and this accounted for some of them losing marks. It was still observed that some candidates did not fully understand the rubrics as they answered from only two sections instead of three. Some candidates also answered from only one section. Although the answers were correct but they could only be scored on two questions. Candidates and teachers should use prescribed or good text books. It was further observed that pamphlets written by their teachers or somebody else, which are scanty of facts, were the books they used and this did not help some of them. Another observation was that some candidates did not understand the meaning of answering at least one question from each section. They answered only three questions fairly well. If they had answered a fourth question they might have performed much better.

4. **SUGGESTED REMEDIES**

- Students and teachers should be encouraged to use the prescribed text books and not depend on pamphlets written by teachers.
- Students and teachers should ensure that they complete the syllabus rather than gambling topics to pass the examination.
- Students should endeavour to read all other books, besides prescribed text books to improve on their understanding and comprehension of the English language.

5. **DETAIL COMMENTS ON EACH QUESTION**

Question 1

*a) List any **three** salt manufacturing communities in pre-colonial Gambia.*
*b) Outline any **two** methods of salt processing in The Gambia.*
*c) State any **two** benefits of salt in pre-colonial Gambia.*

This was a very popular question as about 65% or so of the candidates attempted it. Some of the candidates, who attempted it, say about 60% scored very good marks. Some of them however did not develop their answers on 1b or the methods of salt processing. They gave the correct answers for A as they mentioned, Pakalinding, Si Kunda, Foni, Pirang, etc.

For the (b) part they mentioned trapping sea water into large holes, salt water was boiled until it evaporated. These were correct answers.

For the (c) part they mentioned preservation of food items, means of employment, source of income, medicinal purposes, bride price, etc

Question 2

*(a) Identify any **three** items offered as sacrifice to the gods or ancestors by the traditional priests and priestesses*

*(b) Identify any **four** reasons for the importance of priests and priestesses in the pre-colonial Gambian society.*

This was a popular question which was fairly well answered by most of the candidates who attempted it. Generally, they knew some of the items offered as sacrifice to the gods or ancestors but they lost marks because they just mentioned animals and gave the names of three. They were expected to give one animal for example sheep, or chicken, food stuff like rice and coos, palm wine, soap, water, alcohol, etc. They therefore lost two marks. For the (b) part they did not quite understand the question. However the good ones gave answers such as they served as diviners and healers, as judges and were mediators between the people and the gods or ancestors. They therefore scored very good marks.

Question 3

*(a) List any **three** traditional musical instruments of the Gambia.*
*(b) Name any **three** occasions during which these instruments were used.*
*(c) In what **three** ways were the traditional musical instruments important to the people of the Gambia in the pre-colonial era?*

This was also a very popular question in this section, which was also well answered. The majority of the candidates stated traditional instruments such as kora, tama, ndeer/gorong, sewuruba, riti, bombolo, konting, sabarr, horn, etc. The candidates therefore scored full marks. One or two candidates mentioned guitar and organ. These were definitely not traditional. For the (b) part the majority of the candidates gave three correct answers such as installation of chiefs/kings, marriage ceremony, initiation, naming ceremony, funeral, etc. Surprisingly some candidates wrote marriage ceremony and wedding. They therefore lost one mark. For (c) most of the candidates scored very high marks as they stated some of the following they were used in locating lost people, sending messages of impending danger to society, to summon people to meetings for entertainment during social gatherings, etc.

Question 4

*Outline any **five** different ways the people of The Gambia reacted to the British incursion into their territories.*

This was one of the most unpopular questions not only in this section but the whole paper. Most of the very few candidates who attempted it scored very low or no marks at all. I belief the candidates did not know the word incursion as they were writing on the abolition of the trans-Atlantic Slave trade. They were expected to have stated some of the following – some communities bravely defended themselves against the British, took advantage of their better knowledge of the terrain, used traditional powers refused to sign treaties which they suspected would negatively affect their independence, etc.

Question 5

*(a) Name any **three** towns were freed slaves were resettled in The Gambia*

*(b) Highlight any **four** problems encountered by the freed slaves*

This was a popular question although it was not well understood by some of the candidates. It was attempted by about 50%. Many of the candidates who attempted this question instead of stating the names of three towns stated three countries such as Sierra Leone, Liberia and The Gambia. Some stated the correct towns but lost marks because instead of putting down MacCarthy Island put down only MacCarthy. They should have mentioned as stated earlier MacCarthy Island/George Town, Soldier Town/ Bathurst, Berwick Town/Barra, Bakau and Lamin. Unfortunately those who put down George Town could not spell it correctly. However the majority of the candidates scored very good marks. For (b) the majority of candidates who attempted this question gave the correct answers such as problem of accommodation, food and clothing, unhygienic conditions of the area, hostility of the indigenous people, etc. Some candidates unfortunately wrote about the slaves instead of the freed slaves stating that they were mercilessly beaten, starved and over worked they therefore had no marks.

Question 6

*(a) Identify any **two** reasons for the building of Fort Bullen at Barra Point by the British*

*(b) Highlight and **three** factors that contributed to the increase in British interest in the North Bank of The Gambia.*

This was fairly a popular question. About 40% of the candidates attempted it and about 50% of those who attempted it knew exactly what was being asked. Unfortunately, they only stated that it was built to monitor slave ships that were still carrying slaves after its abolition. For the second reason they mentioned that it was a place where slaves were kept which was not correct. It was built to check the activities of the French by the British, to house the refugees fleeing the wars of Mabah Jahou Ba in Baddibou and its surroundings, etc. For the (b) part most of them mentioned that the British wanted to control the trade along the North Bank and also that the North Bank had close proximity to Bathurst, the base of the British.

Question 7

*Highlight any **five** reasons for the unwillingness of the British to grant Independence to The Gambia before 1965.*

This was not a popular question as about 15% or so of the candidates attempted it. Most of those who attempted it did not do well as they did not know the meaning of unwillingness. Some of them stated the reasons for Britain granting independence. They mentioned that Britain was tired of spending money in the Gambia. The few who understood the question scored good marks as they stated that they wanted the Gambia to be part of Senegal because of its small size and population, they wanted to give up the Gambia in exchange for any French territory, the Gambia was not bless with enough natural resources, religious disturbances in the interior, etc.

Question 8

*Highlight any **five** steps taken by the Jawara administration to improve agriculture in The Gambia.*

This was fairly a popular question, though not well answered. About 15% of candidates attempted it. The majority of the candidates who attempted this question did fairly well as they did not develop some of the points they put down which included the introduction of new cash crops such as cotton and sesame, establishment of the Agricultural Development Bank, expansion of the Gambia Produce Marketing Board, establishment of National Agricultural Research Institute, Training of Extension Workers, etc.

Question 9

*Highlight any **five** roles played by The Gambia in the United Nations Ogranisation (UN/UNO).*

This was the most popular question in this section as about 60% of the candidates attempted it. Generally, the candidates who attempted it understood what was being asked. However a sizable number of the candidates did not understand what was being asked. Some of the candidates stated what the Gambia had benefited from the Organisation. The majority of the candidates as stated earlier understood the question and scored good marks. They mentioned provision of personnel in the secretariat and the UN agencies, such as Dr. Samba, played a significant role in the area of peace keeping, played a significant role in the area of taking care of the refugees, regular payment of her dues, etc. Those who developed those and other correct points scored very high marks.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
ISLAMIC STUDIES 2

1. GENERAL COMMENT

It is my duty to write a comprehensive report on Islamic paper at the end of the marking exercise dealing with the performance of the candidates in the exams and to outline the strengths and weaknesses of the candidates.
This year's paper was within the reach of the candidates apart from Question 6 which is out of the syllabus. The performance of candidates this year is better than the previous years.

2. CANDIDATES' STRENGTHS

Candidates' Strengths could be clearly seen in the area of figh (Islamic Durist prudence) and History where they deed well and eventually scored high marks.

3. CANDIDATES' WEAKNESSES

Their weaknesses could be found in Qur'an and Sumah where majority of the candidates were not able to score high marks.

4. COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

Write SURATUL NASR (Q-110) either in Arabic or transliteration translate into English and comment on it.

This was the compulsory question which all candidates have to attempt. Thirty percent of them mistakenly wrote suratulNasi instead of suratul NASR. They did well in the translation and commentary.

Question 2

Describe the circumstances that made 'uthman b-'Affan earn the tittle Dhu-NURAYN.

This was a question attempted by forty percent of the candidates. The only point they were able to raise was that he married the two daughters of the Prophet (S.A.W). The other points that they were to raise are; His close relationship with the Prophet (S.A.W), The dead of the first wife Ruqayya in marriage, his marriage to the sister Ummukulthum in the third year of Hijral, the Prophet (S.A.W) admiration of him. All these earned him the Tittle DHU-NURAYN.

Question 3

State the conditions that necessitate Ghusl in Islam and describe how it is performed.

This was a popular question which was attempted by sixty percent of the candidates and scored high marks. They were able to point the conditions which are Janabah,Hayda, Nifas, Janazah, Dukhulul-Islam etc. Although they used the English words.
Secondly they were able to show how Ghush is performed t with minor mistakes.

Question 4

a) Define the term Shirk.
b) Explain with three examples each, the two types of Shirk.

This was another popular question which forty-five percent of the candidates attempted it and were abled to define shirk, Explain the two type of shirk but were unable to raise enough examples. The only example they brought were Idol worship and trinity.

Question 5

Discuss the role of the Huffaz in the preservation of The Qur'an.

This was an unpopular question which was attempted by twenty percent of the candidates twenty percent. Almost ninety percent of those who attempt it got it wrong. They failed to discuss some relevant points like the Prophet (S.A.W) was the first Hafiz, He dictated the verses to the sahabas who later memorized them, the verses were written on different objects like backs of trees, stones, bones, etc. The four principal memorizers were; Abdullah b- MAS'-UD, SalimmearkAbiHudhayfah, muadhb.Judalandubayyb.ka'ad. That such memorizers were sent to certain tribes and the leader of the committee for the compilation was zaidb thabit who also was a hafiz.

Question 6

Jnn-Halala bayyinun wa innal-Harama bayyinun, wabaynahuma uniurun mustabihat la ya lamuhunna kathirun mina-Nas. (Hadith 6 of an – Nawawi).

a) Translate the above Hadith into English.
b) Comment on it.

This was another unpopular and confusing question. The question did not state that the entire Hadith should be translated or the portion quoted, only about Ten percent were able to translate a portion of the Hadith but failed to comment on it.
Secondly, this hadith is not part of the syllabus.

SUGGESTED REMINDER

(1) I would like to recommend that both teachers and students must try to inculcate the habit of reading extensively to have mere understanding of the topics covered during their three year course.
(2) Teachers (Oustasses) should also make sure WASSCE prescribed syllabus is fully treated in the class room before the start of the exams.
(3) Suitable learning materials should be made available in the schools.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
CHRISTIAN RELIGIOUS STUDIES

1. GENERAL COMMENTS

The questions were free from any ambiguity. The scope was within the prescribed syllabus and any prepared candidate could answer the questions well.

The general performance of the candidates was average.
A total of 538 candidates the paper and their general performance was almost as of last years. About 367 candidates scored marks ranging from 20 to 48, out of the total score of 60 mark, representing about 68% of candidates. The rest scored below 20 marks.

2. CANDIDATES' STRENGTHS

The strength of most of the candidates could be noticed mainly in the Old Testament section. Their marks were generally good with good expressions.

however, the number of candidates with good command of english was not encouraging.

3. CANDIDATES' WEAKNESSES

Clearly noticeable was the candidates, poor command of English language. This resulted in poor expressions that could not convey their thoughts. Wrong spellings and lack of enough preparation for the examination was also noticeable.

4. SUGGESTED REMEDIES

It is recommended that the following areas be looked at for a possible change in candidates' performance.

i) A periodic training and evaluation of CRS teachers.
ii) Regular inspection of CRS teaching in schools.
iii) Workshops be regularly organised for CRS teachers especially on the mode of answering CRS questions.
iv) Availability of RSV Bibles in all schools for teachers and candidates.
v) Interest be developed in the subject by candidates and teachers.
vi) Frequent use of past papers especially for Grade 12 candidates to familiarize themselves with the mode of questioning.

5. DETAILED COMMENTS

Question 1

(a) Outline in chronological order, the first creation story.
*(b) Give **three** reasons why man is regarded as the crown of creation.*

84.4% of the candidates attempted this question. Their general performance was relatively very good with many candidates scoring between 9 and 15 marks.

However, some of the candidates mixed up the order of events and could not chronologically state which element was created in each day.

Question 2

(a) Give an account of the report brought to Moses by the twelve spies.
(b) What three lessons can political leaders learn from the mission of the spies?

This question was attempted by 18.8% of the candidates. The majority of them had no idea of the topic and lacked the command of the language to express themselves clearly. This resulted to loss of marks.

Candidates were expected to give a report of the spying mission but many described the exodus journey.

Question 3

(a) Recount the story of the death of Saul on Mount Gilboa.
(b) State two effects of disobedience.

13.8% of the candidates attempted this question. Candidates were expected to write on the death of King Saul. However, some candidates confused King Saul both Saul who became Paul.

Their scores were generally low due to the fact that many of them had very little idea of the story.

Question 4

*(a) Highlight **four** punishments Amos warned Israel about if they failed to repent.*
(b) List three sins Amos condemned which are prevalent in our society today.

18.2% of the candidates attempted this question. Their marks were generally very low. Many candidates had no idea on the punishment Prophet Amos warned would come upon the people if they failed to repent.

The expected punishments included being exiled, defeated in battle, famine in the land and disease plague on the people,
Some candidates used the symbolic names in Hosea as Amos warring to Israel .

Question 5

(a) This is my beloved Son, with whom I am well pleased. Discuss the events which led to the above statement.
(b) What four steps can Christians take to become committed to God?

90.5% of the candidates attempted the question. Their answers were very good but many candidates had difficulty in answering part "**b**", on the steps Christians could take to become committed to God.
Some candidates listed the sacraments like Baptism and Eucharist. The expected answers included being prayerful, daily study of the word of God, being a forgiving person and repenting after sinning.

Question 6

(a) Outline the roles women played in the resurrection stories according to the Synoptic Gospels.
*(b) What **three** roles do women play in the Church today?*

34% of the candidates attempted this question. Most of them could not describe the synoptic account of the role women played in the resurrection stories. Most of them wrote only on Mathew's account and had no idea of Mark and Luke.

Mark and Luke recorded the appearance of one or two angels to the women and spoke to them. They also recorded Jesus appearing to the women and calling Mary.

Question 7

(a) Relate Peter's miraculous escape from prison.
(b) State three factors that motivate people to pray.

27.1% attempted this question. There was a fair understanding of the story of Peter's escape from prison. Quite a number of those who attempted this question had high scores.

Many of the candidates also stated the factors that motivate people to pray like sickness, asking for forgiveness, in times of difficulties and thanksgiving to God.

Question 8

(a) Recount James' argument that faith without works is dead.
(b) Mention three benefits of faith to a Christian.

This question was attempted by 72.9% of the candidates, and was also poorly answered. Many candidates could not St. James' teaching on "Faith without works". Many of them corote recount their individual thoughts.

Question 9

(a) Highlight Peter's reasons for calling on Christians to remain loyal to their masters in all situations.
(b) List three virtues worthy of practice by Christians.

Only 18.2% of the candidates attempted this question. It was poorly answered with very low marks. Most of the candidates could not state the virtues of a good Christian as required by the "**b**" component of the question.

Part (b) of the question had demanded for points like patience, obedience, endurance, kindness and forgiveness, which many of them failed to state.

MATHEMATICS SECTION

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
MATHEMATICS

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers was appropriate, within the scope of the syllabus and compared favourably to those of the previous years. The Chief Examiner for Further Mathematics even stated that the paper was easier than those of the previous years.

2. CANDIDATES' PERFORMANCE

Both Chief Examiners of Mathematics and Further Mathematics express concern on the poor performance by the candidates which is still below average though it was a little better than in the previous years.

3. CANDIDATES' STRENGTHS

The Chief Examiners for Mathematics reported candidates' strengths as follows:

- Ability to use vein diagrams to form equation.
- Ability to substitude in a given expression.
- Ability to work out quadratic, graphs and functions, inverse functions and.

4. CANDIDATES' WEAKNESSES

Candidates' weaknesses as reported by the Chief Examiners of the Mathematics subjects, were as follows:

- Misinterpretation of questions.
- Inability to translate word problems to numerical expressions.
- Inability to solve trigonometric equations and poor knowledge of circular geometry.
- Inability to cover the syllabuses.

5. SUGGESTED REMEDIES

The following suggestions were given by the Chief Examiners as ways to improve on candidates' performance:

- Candidates and teachers should endeavour to cover the syllabus.
- Candidates should be adequately prepared for the examination.
- Students should be encouraged to read and understand examination's instructions before answering questions.
- Candidates should study mathematical concepts very well and retain them.
- Candidates should familiar themselves with the use of mathematical instruments (Graph, calculators, compass, etc.).

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
GENERAL MATHEMATICS

1. GENERAL COMMENTS

The questions were of the required standard. The stems of the questions were very clear, straightforward with no ambiguity. The questions covered a wide range of the syllabus and compare favourably with those of the previous years. However, the performance of the candidates was below expectations.

2. CANDIDATE'S STRENGTHS

The following strengths have been observed of the candidates:
Ability to substitute in a given expression.
Able to find gradient of a given line.
Determining of trigonometric ratios and could make use of the sin and cosine rule.
Drawing of a vein diagram of three intersecting sets.
Completion of a table of values of a given quadratic equations and drawing of quadratic graphs through given co-ordinates.
Conversion of other bases to and from base ten.
Determining of the upper class boundaries in a histogram.
Determining of the axes and drawing to a given scale in a transformation.

3. CANDIDATE'S WEAKNESSES

The following weaknesses have been observed of candidates:
Little or no concept of depreciation and compound interest.
Inability to find equations of a line passing through given points.
Poor knowledge of circular geometry.
Could not understand commercial questions expressed as $\frac{1}{2}absin\theta$ where θ is the included angle between the given sides $a$and$b$.
Poor concept of bearing of one point from another being greater than 090°.
Unable to solve inequalities.

4. SUGGESTED REMEDIES

The following remedies should be noted for action;
Detailed explanation by teachers when dealing with any mathematical topic with emphasis on salient points.
Candidates to be given sufficient exercises to do and such to be marked or seen by the teacher for correction.
Teachers to concentrate on the teaching syllabus of which WAEC syllabus is a subset.
Candidates need to have a full coverage of the syllabus and be able to work on their own.
Candidates should be in possession of all the mathematical requirements i.e. mathematics textbooks, standard graph exercise books, scientific calculator, geometrical set box, etc.
Candidates should equip themselves with basic mathematical concepts.
Candidates must be reminded that units of measurements mentioned in the questions should be stated in the solutions, and that questions involving money should be expressed in two decimal places.

5. **DETAILED COMMENTS**

Question 1

A used car was purchased at ₦900,000.00. its value depreciated by 30% in the first year. In each subsequent year, the depreciation was 22% of its value at the beginning of that year. If the car was bought on 1st Much, 2011, calculate, correct to the **nearest hundred naira**, the value of the car on 28th February, 2015.

Solution:
Purchase price = ₦ 900,000.00
At end of the first year = $₦900{,}000.00 - \frac{30}{100} \times ₦900{,}000.00 = ₦630{,}000.00$
At the end of the 2nd year = $₦630{,}000.00 - \frac{22}{100} \times ₦630{,}000.00 = ₦491{,}400.00$
End of the 3rd year = $₦\frac{100-22}{100} \times ₦491{,}400.00 = ₦383{,}292.00$
End of the 4th year value = $\frac{100-22}{100} \times ₦383{,}292.00 = \mathbf{₦299{,}000.00}$ (correct to the nearest hundred naira)

Comment

The candidates were required to calculate the value of a car that depreciated by30% initially and then by 22%in subsequent years. Although they had the ability to calculate the percentage of a given quantity, but most did not realise the need to calculate the yearly value of the car as it depreciates. Over 80% of the candidates were unable to get the correct answer.

Questions 2

(a) The graph of $y = 2px^2 - p^2x - 14$ passes through the point (3, 10). Find the values of p.
*(b) Two lines, $3y - 2x = 21$ and $4y + 5x = 5$, intersect at the point **Q**. Find the coordinates of **Q**.*

Solution: $y = 2px^2 - p^2x - 14 \Leftrightarrow 10 = 2p(3)^2 - p^2(3) - 14 \Leftrightarrow p = \mathbf{40r^2}$.

Comments

More than 50% of the candidates who attempted this question were able to substitute in *x* and *y* of the equation correctly. They had problem in the evaluation.

The candidates were expected to find the co-ordinates of the point Q where the two given lines intersect. Few of the candidates were able to obtain the values for *x* and y but could not express these in coordinate form. Less than 15% of those who attempted could express in co-ordinate form.

Question 3

*(a) The diagonals of a rhombus are 10.2 cm and 9.3 cm long. Calculate, correct to **one decimal** place, the perimeter of the rhombus.*
(b) Given that $\sin x = \frac{3}{5}$, $0^o < x < 90^o$, find the value of $5 \cos x - 4 \tan x$.

Solution perimeter$= 4 \times \sqrt{\left(\frac{10.2}{2}\right)^2 + \left(\frac{9.3}{2}\right)^2} = 6.9016 \times 4 =$
$27.6\ (correcttoonedecimalplace)$.

Comments

The candidates did not know that the diagonals of a rhombus bisect at right angle, where the hypotenuse sides of the triangles formed are the sides of the rhombus and are equal. One known hypotenuse side could have been multiple by 4 to give the perimeter of the rhombus. Less than 10% of those that attempted had it right.

Solution:

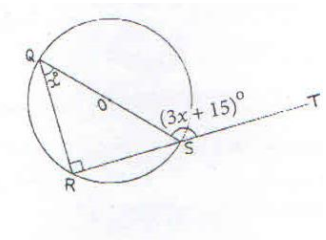
$$\cos x = \frac{4}{5} and \tan x = \frac{3}{4}, \Leftrightarrow 5\cos x - 4\tan x = 4 - 3 = \mathbf{1}$$

Comment

The candidates made use of the Pythagoras theorem to obtain the 3rd side and hence able to find the cosine and tangent value of x. they were able to evaluate the expression $5\cos x - 4\tan x$. It was well answered by over 50% of those candidates who attempted it.

Question 4

(a)



In the diagram, QOS is a diameter, <RQS = x° and <QST = (3x + 15)°. Find:

(i) the value of x;
(ii) <RSQ.

(b) If 2N4 $2N4_{seven}$ = $15N_{nine}$, find the value of N.

Solution

$$(3x + 15)^\circ = 90^\circ + x, x = 37.5^\circ$$
$$\angle RSQ = 180^\circ - (3 \times 37.5 + 15) = 52.5^\circ$$

Comments

The candidates showed good strength in writing the equation $(90 + x) = (3x + 15)$. They were able to recall that the sum of the angles of a triangle is 180°. It was well answered by over 55% of those who attempted.

Solution

$2N4_{seven}=15N_{nine}$

$$(2 \times 7^2) + (N \times 7^1) + (4 \times 7^0) = (1 \times 9^2) + (5 \times 9^1) + (N \times 9^0), \therefore N = 4$$

Comments

Mostof the candidates were able to convert both sides of the equation to base ten, and consequently obtained the required result. Over 60% of those who attempted this question had it right.

Question 5

(a) If the mean of m, n, s, p and q is 12, calculate the mean of (m + 4), (n-3), (s + 6), (p – 2) and (q + 8).

(b) In a community of 500 people, the 75th percentile age is 65 years while the 25th percentile age is 15 years. How many of the people are between 15 and 65 years?

Solution :

$$\frac{(m+n+s+p+q)}{5} = 12 \; and \; \frac{(m+n+s+p+q+13)}{5} = \frac{(60+13)}{5} = 14.6$$

Comments

The candidates did not realise that the sum of *m, n, s,p and q =5×12=60;* and that this could be used to find the mean asked for. They lack the understanding of the concept of 'mean'. Less than 10% of those that attempted had solved it correctly.

Solution

75th percentile $is \frac{75}{100} \times 500 = 375$

25th percentile $is \frac{25}{100} \times 500 = 125$

Number of people between 15 and 65 years is 375- 125= 250.

Comments

While some candidates lack the concept of percentiles / interquartile ranges, few other were able to find the 75th and 25th percentile to get (375-125)= 250. Less than 15%of the candidates were able to solve.

Question 6

In a road worthiness test on 240 cars, 60% passed. The number that failed had faults in Clutch, Brakes and steering as follows: clutch only - 28; clutch and steering -14; Clutch, steering and Brakes - 8; Clutch and Brakes - 20; Brakes and steering only - 6. The number of cars with faults in steering ***only*** *is* ***twice*** *the number of cars with faults in brakes* ***only****.*

(a) Draw a venn diagram to illustrate this information.
(b) How many cars had:

(i) faulty Brakes?
(ii) ***only one*** *fault?*

n (U) = 24
Let C = Clutch, B = Brakes and S = Steering.
Number of cars that failed the test $= \frac{40}{100} \times 240 = 96$
28+6+6+8+12+2x+x=96;∴ $x = 12$
Number of cars with faulty brakes is x+6+8+12 =38.
Number of cars with only one fault is 28+x+2x ⇔28+12+24=64

Comments

The candidates were able to draw a Venn diagram of three intersecting sets in a universal set. They showed their inability to understand and deal with word problems. Less than 15% of the candidates were able to solve the question.

Question 7

(a) Find the equation of the line passing through the points (2, 5) and (-4, -7).
(b) Three ships P, Q and R are at sea. The bearing of Q from P is 030^o and the bearing of P from R is 300^o. If $|PQ|$= 5 km and $|PR|$= 8 km,

(i) illustrate the information in a diagram.
*(ii) calculate, correct to **three** significant figures, the:*

(I) distance between Q and R;
(II) bearing of R from Q.

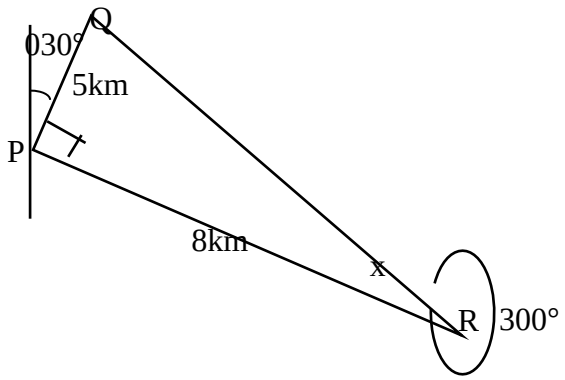
Solution

Gradient is $\frac{-7-5}{-4-2} = 2,\ equationofthelineiny = mx + c \Longrightarrow 2x + (5 - 4) = 2x + 1$

Comment

The candidates were expected to obtain the equation of the line through the points (2, 5) and $(-4, -7)$. While most of them 80% were able to calculate the gradient, others had problem in evaluating the gradient. Instead of dividing the change in 'y' values by the change in 'x' values, they wrongly used the reverse by dividing the change in 'x' values by the change in 'y' values.

Solution



$|QR| = \sqrt{5^2 - 8^2} = 9.43, \quad and tan x = \frac{5}{8}, \therefore x = \tan^{-1}(0.6250) = 32.01°$

Bearing of R from Q= $90° + 30° + 32° = 152°$

Question 8

(a) *Lamin bought a book for ₦300.00 and sold it to Bola at a profit of x%.*

Bola then sold the same book to James at a profit of x%. If James paid $\left(6x + \frac{3}{4}\right)$ *more for the book than what Lamin paid, find the value of x.*

(b) *Find the range of values of x which satisfies the inequality* $3x - 2 < 10 + x < 2 + 5x$.

Solution

Cost of the book to Bola $= ₦(3x + 300)$

Cost of the book to James is $₦\left[\frac{3x^2 + 6000x + 30{,}000}{100}\right]$

The cost of the book to James is

$$(cost of the book to lamin) + \left(6x + \frac{3}{4}\right); \Longrightarrow ₦\left[300 + 6x + \frac{3}{4}\right]$$

$$\frac{3x^2 + 6000x + 30{,}000}{100} = 300 + 6x + \frac{3}{4}, \Longrightarrow x = 5.$$

Comment

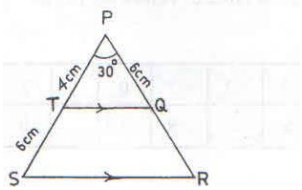
The candidates showed their inability in understanding word problems and expressing it in Algebraic form. Efforts were made in vain to get the value of 'x'. less than 5% of the candidates were able to solve for 'x'.

Solution

$3x - 2 < 10 + x \Longrightarrow x < 6 \; and \; 10 + x < 2 + 5x \Longrightarrow 2 < x \therefore$
$therangeofvaluesofxis \; 2 < x < 6.$

The candidates were unable to solve the inequalities in pairs. i.e. $(3x - 2) < (10 + x)$ and then $(10 - x) < (2 + 5x)$.

Question 9



In the diagram, $|PT|$=4 cm, $|TS|$=6 cm, $|PQ|$=6 cm and <SPR = 30°. Calculate, correct to the ***nearest*** *whole number:*

(a) $|SR|$;

(b) *area of TQRS.*

Solution

Using the cosine rule: $/TQ/^2 = 6^2 + 4^2 - 2 \times 6 \times 4cos30° \Longrightarrow TQ = 3.2299cm$

$$\frac{4}{10} = \frac{3.2299}{SR} \Longrightarrow SR = 8.07475cm, \therefore SR = 8cm(nearestwholenumber)$$

Solution

Area of TQRS = Area of triangle SPR − Area of triangle PTQ

$$= \frac{1}{2} \times 10 \times 15 \sin 30° - \frac{1}{2} \times 4 \times 6 \sin 30°$$

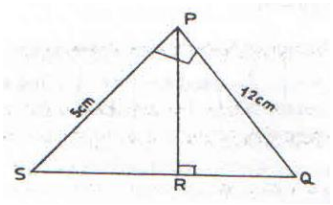
$$\Longrightarrow 37.5 - 6 = 31.5\ cm^2 \cong 32cm^2\ (nearwholenumber)$$

Comment

The candidates demonstrated a good knowledge of the cosine rule in finding |TQ|. They also made use of the concept of similar triangle to find |SR|. However, calculation of the area TQRS posed a major weakness. The candidates could have calculated the difference in area between triangle PSR and triangle PTQ.

Question 10

(a)

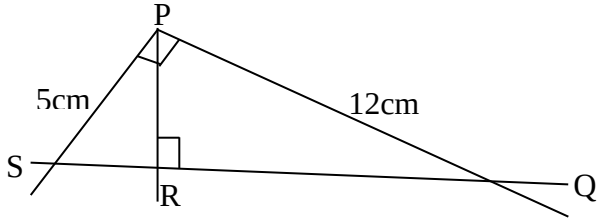


In ΔPQS, |PQ| = 12 cm, |PS|= 5 cm, <SPQ = <PRQ = 90°. Find, correct to ***three*** *significant figures, |PR|.*

(b) The lengths of two ladders, ***L*** *and* ***M*** *are 10 m and 12 m respectively. They are placed against a wall such that each ladder makes the same angle with the horizontal ground. If the foot of* ***L*** *is 8 m from the foot of the wall,*

(i) draw a diagram to illustrate this information;
(ii) calculate the height at which ***M*** *touches the wall.*

(a) Solution ;



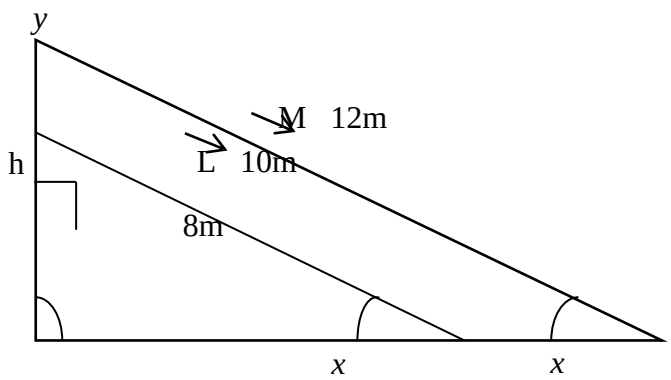
$$|SQ| = \sqrt{5^2 + 12^2} = 13,$$

$$using properties of similar triangles;\ \frac{PR}{5} = \frac{12}{13} \Longrightarrow |PR| = 4.62cm.$$

Comment

The candidates demonstrated good knowledge of Pythagoras theorem to get |SQ|. they made use of the properties of similar triangles to get |PR|.

Solution



$h = \sqrt{10^2 + 8^2} = 6m; and using properties of similar triangle \frac{6}{y} = \frac{10}{12} \therefore y = 7.2m$.

Comment

Most candidates were unable to represent the information in a correct diagram. They failed to realise that when two ladders of different lengths lean against a vertical wall and make the same angle to a common horizontal, then they cannot reach the same height on the wall. Less than 1% of the candidates could solve the question.

Question 11

(a) Copy and complete the table of values for $y = 2x^2 + x – 10$ for $-5 \leq x \leq 4$.

x	-5	-4	-3	-2	-1	0	1	2	3	4
y			5		-9	-10		0		

(b) using scales of 2 cm to 1 unit on the x – axis and 2 cm to 5 units on the y – axis, draw the graph of $y = 2x^2 + x – 10$ for $-5 \leq x \leq 4$.

(c) Use the graph to find the solution of:

(i) $2x^2 + x = 10$;
(ii) $2x^2 + x – 10 = 2x$

Solution

x	-5	-4	-3	-2	-1	0	1	2	3	4
y	35	18	5	-4	-9	-10	-7	0	11	26

From the graph;
The solution of $2x^2 + x = 10$ *is* $\Longrightarrow x = -2.5 \pm 0.1$ *or* 2 ± 0.1

If we draw the graph of
$y = 2x; then the solution of 2x^2 + x - 10 = 2x is x = -2 \pm 0.1$ *or* 2.5 ± 0.1

Comment

The candidates (more than 70%) were able to copy and complete the table of values for $y = 2x^2 + x - 10 \ for - 5 \leq x \leq 4$. they were able to use correct scale of 2cm to 1unit on the x-axis, but found it difficult to use 2cm to 5units on the y-axis. Some of them had encountered reading their graph to find the solution to$2x^2 + x = 10 \ and 2x^2 + x - 10 = 2x$. the graph of $y = 2x$which was expected to be the easier to draw, was not drawn by majority.

Question 12

(a) *If x =* $\binom{2}{3}$*, y =* $\binom{5}{-2}$ *and z =*$\binom{-4}{13}$ *, find scalars p and q such that px + qy = z.*

(b) *(i)* *Using a scale of 2 cm to 2 units on both axes, draw on a graph paper two perpendicular axes 0x and 0y for -5 ≤ x ≤ 5, -5 ≤ y ≤ 5 respectively.*

(ii) *Draw, on the graph paper, indicating clearly the vertices and their coordinates,*

(I) *the quadrilateral WXYZ with W(2, 3), X(4, -1), Y(-3, -4) and Z(-3, 2);*

(II) *the image $W_1 X_1 Y_1 Z_1$ of the quadrilateral WXYZ under an anticlockwise rotation of 90° about the origin where $W \rightarrow W_1$, $X \rightarrow X_1$, $Y \rightarrow Y_1$ and $Z \rightarrow Z_1$.*

Solution

$p\begin{bmatrix}2\\3\end{bmatrix} + q\begin{bmatrix}5\\-2\end{bmatrix} = \begin{bmatrix}-4\\13\end{bmatrix}$This implies: $\begin{matrix}2p + 5q = -4\\3p - 2q = 13\end{matrix} \Longrightarrow p = 3 \ and q = -2.$

Comment

Given that x= $\begin{bmatrix}2\\3\end{bmatrix}$, $y = \begin{bmatrix}5\\-2\end{bmatrix} and z = \begin{bmatrix}-4\\13\end{bmatrix}$, candidates were expected to find scalars *p* and *q* such that $Px + Qy = z$. they were able to derive the required equations $2p + 5q = -4$ and $3p - 2q = 13$ by multiplying the vectors by scalars. Other had problem in solving the simultaneous equations to obtain for *p* and *q*.

Solutions

Quadrilateral WXYZwith $W(2,3),\ X(4,-1), Y(-3,-4),\ Z(-3,2)$; to be shown on graph.
Quadrilateral $W_1X_1Y_1Z_1$ with $W_1(-3,2),\ X_1(1,\ 4), Y_1(4,-3),\ Z_1\ (-2,-3)$; to be shown on graph.

Comment

Most candidates were able to draw the axes, used correct scales on both axes and were able to plot W,X,Y and Z. they however were unable to rotate through 90° anticlockwise to plot W_1, X_1, Y_1 and Z_1.

Question 13

Marks	10	20	30	40	50	60	70	80	90
Frequency	1	1	x	5	y	1	4	3	1

The frequency table shows the marks distribution of a class of 30 students in an examination. The mean mark of the distribution is 52.

(a) Find the values of x and y.
(b) Construct a group frequency distribution table starting with a lower class limit of 1 and a class interval of 10.
(c) Draw a histogram for the distribution.
(d) Use the histogram to estimate the mode.

Solution

Equation 1: $\Longrightarrow 16 + x + y = 30;\ i.e.\ x + y = 14.$

Equation 2: $\Longrightarrow mean = \frac{900+30x+50y}{16+x+y} = 52\ ;i.e.\ 11x + y = 34 \Longrightarrow x = 2, y = 12.$

Class interval	Frequency	Upper class boundary
1-10	1	10.5
11-20	1	20.5
21-30	2	30.5
31-40	5	40.5
41-50	12	50.5
51-60	1	60.5
61-70	4	70.5
71-80	3	80.5
81-90	1	90.5

The estimate of the mode from the histogram is 44±1.

Comment

The candidates (less than 10%) were unable to form the two equations;$x + y = 14\ and\ 11x + y = 34$ by using the sum of the frequencies and the given mean . This led to inaccurate drawing of the required histogram.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
FURTHER MATHEMATICS/MATHEMATICS(ELECTIVE)2

1. GENERAL COMMENTS

The paper is simpler and straight forward than the previous years. The rubrics are very clear. Thus, the general performance of the candidates is above average. About 60% of the candidates scored above 40 and less than 1% scored zero.

2. CANDIDATES STRENGTH

Some of the candidates showed some understanding in determinants of a given matrix, partial fractions, Arithmetic progression, Spearman's rank correlation coefficient, probability and combination, , finding magnitude of a given vector, finding the common velocity for same and opposite direction, exponential indices and indefinite integral, binomial and polynomial, statistics. and vectors.

3. CANDIDATES' WEAKNESSES

Most candidates failed to answer correctly questions on logarithm and very few attempted the question on mechanics which is on circle geometry.

4. SUGGESTED REMEDIES

Teachers must exercise patience in explaining concepts to the candidates.
Candidates must be encouraged to study concepts very well and retain them.
Teachers must ensure that there is sufficient time for revision after covering the syllabus.
Candidates must effectively use their Mathematical instruments, calculators and graph books before examination time.
Teachers must train candidates how to better approach WASSCE questions using past examination questions.
Candidates must learn how to present their solutions properly and to answer the questions correctly to the given degree of accuracy.
Teachers should try to cover as much of the syllabus as possible especially the most important areas.
candidates and teachers should give much attention on application or real life problems.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

If $\begin{vmatrix} x-3 & 4 & 3 \\ 5 & 2 & 2 \\ 2 & -4 & 6-x \end{vmatrix} = -24$, *find the values of x.*

This was a standard question testing on the understanding of candidates on finding determinants of a given matrix. there were about 35% of the candidates scored full mark and only 10% scored zero.

Question 2

Give that $log_3 x - 3log_x 3 + 2 = o$ *find the values of x.*

This was one of the standard and basic question in logarithm. It requires candidates to apply the knowledge of change of base and using correct substitution in logarithm. However, more than 90% of the candidates poorly attempted this question of which, about 60% scored zero. Nevertheless, about 10% of them manage to score full mark.

Question 3

(a) *Using the substitution u = x – 2, write* $\frac{x^3+5}{(x-2)^4}$ *as an expression in terms of u.*

(b) *Using the answer in 3(a), express* $\frac{x^3+5}{(x-2)^4}$ *in partial fractions.*

This was also a standard question requiring candidates to correctly substitute the given partial fraction in terms of u in part (a) of the question. In part (b), candidates are required to substitute for u. However, some candidates failed to do the subtraction instead they went into solving the partial fraction to find the unknowns. Although about 30% of the candidates scored zero, however, about 35% of the candidates scored half or more of the total mark.

Question 4

The sum of the first twelve terms of an Arithmetic Progression (A. P) is 168. If the third term is 7, find the values of the common difference and the first term.

This was one of the most popular question which required candidates to find common difference and the first term. It was satisfactorily attempted by more than 70% of the candidates who scored full mark whereas only 10% scored below the total marks.

Question 5

Two panel of judges, ***X*** *and* ***Y****, rank 8 brands of cooking oil as follows:*

Cooking Oil type	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
X	*8*	*5*	*1*	*7*	*2*	*6*	*3*	*4*
Y	*6*	*3*	*4*	*8*	*5*	*7*	*1*	*2*

Calculate the Spearman's rank correlation coefficient.

This was also a standard question requiring candidates to calculate the Spearman's rank correlation coefficient. About 50% of the candidates scored full mark whereas about 10% scored a zero.

Question 6

(a) *The probability that Kunle solves a particular question is* $\frac{1}{3}$ *while that of Tayo is* $\frac{1}{5}$*. If both of them attempt the question, find the probability that only* ***one*** *of them will solve the question.*

(b) *A committee of 8 is to be chosen from 10 persons. In how many ways can this be done if there is no restriction?*

This was also a standard question which required candidates to find problems on probability and combinations in part (a) and (b) respectively. About 75% of the candidates scored more than half of the total mark and only about 3% scored zero.

Question 7

Given that $\mathbf{m} = 3\mathbf{i} - 2\mathbf{j}$, $\mathbf{n} = 2\mathbf{i} + 3\mathbf{j}$ *and* $\mathbf{p} = -\mathbf{i} + |6\mathbf{j}$, *find* $4\mathbf{m} + |2\mathbf{n} - 3\mathbf{p}$.

This question requires candidates to find the magnitude of a given vectors. About 75% of the candidates scored more than half of the total mark and only about 2% scored zero.

Question 8

A body of mass 20 kg moving with a velocity of 80 ms^{-1} collides with another body of mass 30 kg moving with a velocity of 50 ms^{-1} . if the two bodies moved together in the same direction after collision, find their common velocity if they moved in the:

(a) *same direction before collision;*
(b) *opposite direction before collision.*

This was also another standard question which required candidates to find common velocities of the two bodies moving in the same and opposite directions respectively in part (a) part (b) of the question. About 65% of the candidates scored more than half of the total score and there were very few zero.

Question 9

A circle is drawn through the points (3, 2), (-1, -2)and (5, -4). Find the:
(a) *coordinates of the centre of the circle;*
(b) *radius of the circle;*
(c) *equation of the circle.*

This was a standard question on circle geometry. It required candidates to find coordinates of the center of the circle, radius and equation of the circle in part (a), (b) and (c). respectively. About 75% of the candidates attempted this question, of them, about 45% scored more than half of the total score of the question and there were very few zeros.

Question 10

(a) *Solve* $2^{3y+2} - 7(2^{2y+2}) - 31(2^{y}) - 8 = 0$, *YER.*

(b) *Find* $\int \left(\sqrt{x^2 + 1}\right) x\, dx$.

This was standard and it required candidates to solve exponential indices involving polynomial equations in part (a) and infinite integral by submission in part (b). Hence, less than 50% attempted this question. Of them, more than 50% scored less than half of the total score and there were few zeros (less than 1% of the candidates).

Question 11

(a) (i) Write down the binomial expansion of $(2 - \frac{1}{2}x)^5$ *in ascending powers of x.*

(ii) Using the expansion in 11 (a)(i), find, correct to ***two*** *decimal places, the value of* $(1.99)^5$.

(b) The polynomial $x^3 + qx^2 + rx + 9$*, where q and r are constants, has(x + 1) as a factor and has a remainder – 17 when divided by (x + 2). Find the values of q and r.*

This question involved in writing the binomial expansion of$(2 - \frac{1}{2}x)^5$in ascending powers of x and using the expansion to find the value of $(\mathbf{1.99})^{\mathbf{5}}$ in part (a) (i) and (ii) respectively. In part (b), finding q and r in the polynomial$\boldsymbol{x^3 + qx^2 + rx + 9}$, more than 50% of the candidates attempted this question. About 75% of them scored more than half of the total mark. However, there were few zeros (about less than 1% of the candidates).

Question 12

Ten coins were tossed together a number of times. The distribution of the number of heads obtained is given in the following table.

Number of Hands	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
frequency	*2*	*7*	*23*	*36*	*11*	*61*	*100*	*12*	*8*	*5*	*3*

Calculate, correct to ***three*** *decimal places, the:*

(a) men number of heads.
(b) probability of getting an ***even*** *number of heads.*
(c) probability of getting an ***odd*** *number of heads.*

This question was simple. It is attempted by about 60% of the candidates. Out of these, about 65% scored more than half of the total mark and so there were very few zeros.

Question 13

The probabilities that Ali, Baba and Katty will gain admission to College are $\frac{2}{3}$, $\frac{3}{4}$ *and* $\frac{4}{5}$ *respectively. Find the probability that:*

(a) ***only*** *Ketty and Baba will gain admission.*
(b) ***none*** *of them will gain admission.*
(c) ***at most two*** *of them will gain admission.*

This question requires candidates to find problems involving probabilities as given in part (a), (b) and (c). However, about 85% attempted this question. Out of these, about 60% scored more than half of the total mark. Also, there were less than 1% who scored zero.

Question 14

*The position vectors of points **A,B** and **C** with respect to the origin are (8i – 10j), (2i + 6j) and (-10i + 4j) respectively. If **ABCN** is a parallelogram, find,*

*(a) the position vector of **N**.*
(b) $|\vec{AN}|$ and $|\vec{AB}|$.
*(c) correct to **two** decimal places, the acute angle between $\vec{AN}$ and $\vec{AB}$.*

This was also a standard question attempted by about 60% of the candidates. It required candidates to find the position vector of N, $|\vec{AN}|$ and $|\vec{AB}|$, and the acute angle between $\vec{AN}$ and $\vec{AB}$ in part (a), (b) and (c) respectively.
About 50% of them scored more than half of the total score and about 5% scored zero.

Question 15

A uniform beam, XY, 4 m long and weighing 350 N rests on two pivots P and Q. It is kept in equilibrium by weights of 80 N attached at X and 1000 N attached at a point between P and Q such that it is 0.6 m from Q. If $|\boldsymbol{XP}|$ = 0.8 m and $|\boldsymbol{PQ}|$ =2.2 m:

(a) Calculate the reactions at P and Q.
(b) If the 1000 N weight is replaced with a 1200 N weight, at what point from Q should it be placed in order to maintain the equilibrium.

This questionrequired candidates to calculate the reactions at P and Q on the beam XY and also find the distance from Q to maintain the equilibrium. It is one of the most seldom attempted question by about 30% of the candidates. Of these, about 45% scored more than half of the total mark. However, about less than 1% scored zero.

SECTION B

There were some minor typographical error in some of the questions such as question 12 (c) the correct answer is 0.451 instead of 0.452in three decimal places and question 13 (c) the multiplication (x) sign between second and third terms in brackets is wrong instead it should have been plus (+) sign.

SCIENCE SECTION

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
SCIENCES

1. STANDARD OF THE PAPERS

The science subjects of the WASSCE include General Science, Physics, Chemistry, Biology, Agricultural Science, Health Science and Physical education. The chief Examiners reported that the level of questions set for all these subjects were within the scope of the syllabus. They also reported that the difficulty level of the papers compared favourably with those of the previous years. The marking schemes were detailed and flexible in their interpretation to accommodate various responses from the candidates. Each paper was composed of a blend of recall, comprehension and application type questions. The questions were straightforward and without any ambiguity.

2. CANDIDATES' PERFORMANCE

Candidates generally performed poorly in the Science Subjects. Chief Examiners reported that the performance of candidates was poor in Biology, General Science and Physical Education. Although candidates general performance was also unsatisfactory in Chemistry and Agricultural Science, there was some improvement in the practical components of these subject. In a similar vein, the performance of candidates was impressive in Physics and Health science as compared to the previous years.

3. CANDIDATES' STRENGTHS

Candidates showed improvement in the following areas:

- Attempting questions involving graphs.
- Candidates improved in Physics question of General Science.
- Candidates performed impressively in using formulae to solve Mathematical problems. However, calculations in Chemistry practical remains a problem.
- Most candidates attempted the required number of questions.
- Candidates recall definitions of terminologies.

4. CANDIDATES' WEAKNESSES

- Inability to interpret questions.
- Common spelling errors of Scientific terminologies
- In ability to express themselves in simple English
- In ability coverage of the syllabus
- Writing balanced Chemical equations
- Poor diagrams

5. SUGGESTED REMEDIES

- Teachers should endeavour to cover the syllabus.
- Teachers should teach the students how to draw fully labelled diagrams.
- Spelling tests should be included in the school assessment exams to improve students spelling competence.
- Students should revise past question papers while preparing for the examination.
- Candidates must have obtained good grades in Mathematics and Science in GABECE before offering pure Science at Senior School.
- Students should be encouraged to visit relevant websites to update themselves with recent discoveries in Science.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
AGRICULTURAL SCIENCE 2

1. GENERAL COMMENTS

This year's paper was of exceptional standard. Candidates of exceptional abilities were challenged by the new method of setting. The paper compared to the last two years was of equal standard in examination.
This year, about 52% of the total number of candidates were able to score above 40% of the average pass mark. Question number 3, 4, and 6 were well attempted and the candidates' performance were exceptionally impressive.
No doubt, the paper was one of the most well set examinations when compared to the past years. It cleared out both students and teachers who are indulged in route learning, engaging in any laboratory activities was proven wrong. Agricultural Science is a cross cutting meansteam and applied subject which requires the students/ teachers adopting the philosophy of learning by doing. All sections of the syllabus must be given equal weight when teaching/ learning.

2. CANDIDATES' STRENGTHS

Quite a good number of the candidates scored above 40% of the average pass mark. This year's performance was far better compared to the past two years in terms of candidates' performance. Most of the candidates followed the scientific rules in drawing diagrams, the agronomic practices of cassava cultivation and the economic principle of the law of the diminishing returns.

3. CANDIDATES' WEAKNESSES

Candidates major weaknesses were their

- Inability to either analyses, synthesis a or apply knowledge gained to tackle given analytical questions in agriculturalscience.
- Failure to realize that route learning will not earn them the best grades, rather they should engage in scientific enquiry approach to learning agricultural science.
- It was evident that their agricultural and English language vocabulary was inept. Their ability to read and understand questions with given appropriate response remains to be a serious challenge.
- To sum it all, Candidates and invigilators should be discouraged from spying and comparing answers during examination.

4. SUGGESTED REMEDIES

- Teachers/ students are encouraged to treat all aspects of the syllabus with equal attention.
- Students are encouraged to read widely and independently ass class room sizes are too large for teachers to give the required coaching and attention to all sundry
- Learning is a process of self – activity, therefore candidates should be made to understand that teachers can only facilitate, guide and not spoon feed them.
- School managements should encourage Agriculture/science teachers to be engage practical learning and field visits.

Question 1

(a) *Explain **four** ways in which each of the following factors hinders agricultural development in West Africa:*

(i) *basic amenities;*
(ii) *farm inputs.*

(b) *State **three** uses of each of the following farm machinery:*

(i) *tractor;*
(ii) *bulldozer.*

(c) *State **four** daily maintenance practices carried out on a tractor.*

This Question was not well attempted by the candidates .The factors hindering the development of Agriculture in West Africa was not fairly answered. About 26% of the total number of the candidates who attempted this sub question scored above half of the marks allotted to this question .Most of the candidates gave a single answer like storage processing fertilities ,road network etc.
This Question is expected to be answered thus for the basic amenities:
In adequate storage facilities result in wastage of farm produce
In adequate processing facilities
In adequate provision of portable water for domestic use
Moreover, most of the candidates failed to perform the hindrance of farm inputs in the development of agriculture. The most prominent answers to those candidates who have answered this question were; poor technical know, how, in adequate farm machine, etc
However the uses of farm machinery were also not well attempted. The only popular answer that earns a mark was; a tractor is used to carry farmers. For question 1(c), Candidates gave inappropriate answer like keep it away from children. This point does not attract any mark. The daily maintenance practice carried out on a tractor is:

- Parking it in a shade
- Checking of steering fluid ; this is not captured by the marking scheme

General cleaning of the tractor after use

Question 2

(a) *State **four** functions of soil water to crops.*
(b) *Outline **five** factors that could cause low soil PH.*
(c) *Explain the life cycle of liver fluke.*

This question was one of the worst attempted questions. About 80% of the candidates who have attempted this question failed to comprehend what the question demandedthem to do. For 1 (a) ; candidates gave answers like :

- Water is use for watering crops,it is used for cooking etc. This is not the right based approach to the question .It is expected to be answered: Thus
- It is used for photosynthesis
- It dissolve soil nutrients for plants
- The helps in cooling of plants through transpiration etc
- However, for the factors that causes low soil PH, a few of the candidates gave brilliant answers like:
- The application of excessive fertilizers, soil erosion and leaching of soil nutrients.
- The rest of the points that the candidates gave were inappropriate to be awarded marks

On the other hand, the life cycle of the liver fluke was woefully answered by the candidates. About 75 % of the candidates did not follow the principle of drawing the life cycle of the organism. They were not showing arrows and the stage of the growth of the liver fluke where not in sequential order .Some draw the stages without identifying by naming each of the stages

Question 3

(a) Discuss the cultivation of cassava under the following headings:

(i) soil requirements;
(ii) land preparation;
(iii) propagation;
(iv) spacing;
(v) weed control;
(vi) fertilizer requirement;
(vii) harvesting;
(viii) storage.

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

Disease	*Causal organism*	*Farm animal affected*	*Symptom*	*Control*
Coccidiosis	*(i)*	*(ii)*	*(iii)*	*(iv)*
Rinderpest	*(v)*	*(vi)*	*(vii)*	*(viii)*

This question was one of the most well attempted questions. About 90 % of the candidates who have attempted these questions were able to score more than three time of the total marks allotted to this question. This is greatly manifested in the way they present their facts. The only challenge they faced was on the methods of storing cassava and the causal organisms of coccidiosis and rinderpest.

Question 4

(a) Explain the term land tenure system.
(b) Define the term weed.
(c) Discuss groundnut rosette disease under the following headings:

(i) causal organism;
(ii) mode of transmission;
*(iii) **two** symptoms;*
*(iv) **two** control measures.*

(d) State four characteristics of each of the following factors of production:
(i) land;
(ii) capital.

This question was also among the well attempted questions. Candidates were able to explain the term land tenure system explicitly and state the characteristics of land and labair,

5. This question was not poorly attempted .At least 30% of the total number of the candidates were able to score half of the marks allocated to this question.

5b. Almost 80% who attempted drawing the chicken egg, some were able to clearly label their diagrams.

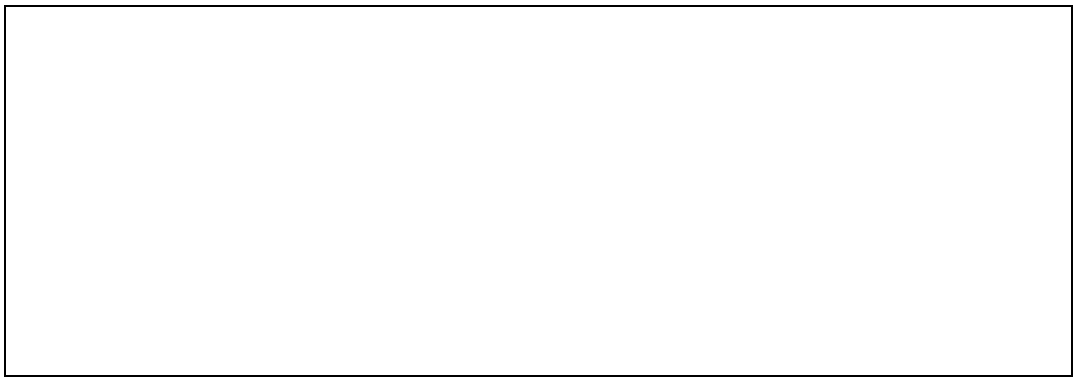
5b. However, some candidates draw very small diagrams .This makes candidates to lose some marks. In addition to this, Agricultural science teachers should advise students not use pen in drawing diagrams because it will not earn them any mark.

5a. For the definition of colostrums, it was not well attempted .Most of the candidates gave scanty answers to the definition of this term .The most outstanding answer that the students were giving was "it is the first milk produced by a cow ".This is just a descriptive definition of colostrums and does not give a clear picture of the components and the function of the colostrums.

5c. The table demanded candidates to complete the law of diminishing returns was not properly answered. Candidates exhibited a great deficiency of the law of diminishing returns. Most of them only copied the table without completing it .The few that tried to attempt it got it woefully wrong .Candidates have to do away with gambling the syllabus and give equal weight to the prescribed syllabus.

Question 5

(a) Explain the term colostrums.
(b) Draw and label the structure of a chicken egg.



(c) Study and complete the table below which illustrates the law of diminishing returns.

Fixed Factors (Land) (ha)	*Variable Factor (Fertilizer) (Bag)*	*Total product (kg)*	*Marginal product (kg)*
2	*1*	*1*	*(i)*
2	*2*	*4*	*(ii)*
2	*3*	*15*	*(iii)*
2	*4*	*(iv)*	*13*
2	*5*	*(v)*	*12*
2	*6*	*48*	*(vi)*
2	*7*	*49*	*(vii)*
2	*8*	*49*	*(viii)*

Question 6

*(a) State **four** management practices carried out in poultry production.*
*(b) Give **four** advantages of dehorning in cattle production.*
*(c) Mention **five** marketing services in agricultural production.*
*(d) Outline **five** problems of agricultural marketing in West Africa.*

This question was well attempted by the candidates generally. About 68% of the total number of the candidates scored at least half of the total marks allotted to this question. Candidates were able to take a holistic approach by analyzing question (6) a) and gave brilliant answers like candling, incubation, hatching etc. The manner in which they presented their answer in this question was what was expected and recommended by the marking scheme.

Moreover, for the advantages of dehorning in cattle production was not poorly attempted. Some of the candidates were able to analyse the question by giving the advantages of dehorning in cattle production. About 47% of the candidates scored at least half of the marks allocated to this sub question. Among the points they were giving includes:

- It prevent injury of the farmer
- The animal is easy to handle

Although some of the candidates were giving weak points like; the, will not be injured, the cattle will fight well etc. Despite such weak answers, many were able to attract marks by attempting this sub question. On the marketing services in Agricultural production, these were most of the candidates under performed. Quite a good number of the candidates were able to meet the required number of points that the question demand them to give. The most outstanding answers they gave includes:

- Storage
- Processing and
- packaging

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
AGRICULTURAL SCIENCE 3

1. GENERAL COMMENTS

The Agricultural Science 3 practical examination paper was a lot simpler than that of last year 2017. The paper was made up of four (4) questions from different areas of Agriculture. The first part of question one consist of simple farm tools (Axe, spade, hand trowel and hand fork) and candidates were asked to state three uses of each tool. The second part of question 1 requested them to state three (3) ways of maintaining specimen A(axe).

All the Examiners considered this paper to be of average standard. It is straight forward and simple compared to that of last year 2017. The questions were very clear and considered to be at the level of the candidates. The Examiners were expecting that about 80% of the candidates would have scored very high marks. Unfortunately candidates performed poorly in questions 2 and 3, while questions 1 and 4 were a success for most of them.

2. CANDIDATES' STRENGTHS

The candidates did well in question 1 and question 4 which dealt with simple farm tools and farm animals. Most of the students were comfortable with these questions and were able to completely answer them correctly. Their answers were considered satisfactory by Examiners.

3. CANDIDATES' WEAKNESSES

The candidates' exhibited their weaknesses in questions 2 and 3 which dealt with soil science, pests and diseases of crops. The weaknesses of candidates were varied. For some, they failed to understand the question, for others, they could not spell correctly. For example, some spelt cow as caw, horse as house, neutral as natural. Some could not even follow the steps in classifying neutral, acidic and alkaline soils in order and some were not familiar with virus and fungus.

4. SUGGESTED REMEDIES

- We are suggesting that the Language Department should step up the teaching of English Language to help students to write good English.

- Agricultural Science teachers should come together for a development Workshop to enhance the teaching and learning of Agriculture.

- Schools need to emphasize the teaching of good hand writing because Examiners found it difficult to understand student's handwriting.

- Teachers need to explain how to space questions in examinations to their candidates.

- Teachers should use the required text book(s).

- Teachers need to teach practicals during class sessions and not a week before the exams.
- Live materials should be provided during class sessions for students to identify. Diagrams alone is not enough.
- This report (Chief Examiner's Report) should be made available to the Agricultural Science teachers for free in all the schools.

5. DETAIL COMMENT IN INDIVIDUAL QUESTIONS

Question 1

(a) *State three uses of each of specimens **A, B, D** and **F**.*
Almost 90% of the students had question 1A correct.

(b) *State **three** ways of maintaining specimen **A**.*
About 75% had their answers correct.

Question 2

(a) *With the aid of the litmus paper and water provided, classify specimens **G, H** and **I** according to their **pH**.*

About 65% of the candidates had 2a right.

(b) *Outline the steps taken in classifying specimens **G, H** and **I**.*

The candidates did not seem to understand the question and about 90% did not do well.

(c) (i) *If the **pH** value of one of the soil samples provided is **4.5**, what condition does this **pH** value indicate in the soil sample?*
About 80% of the students did well.

(ii) *State **three** effects of the condition indicated in 2(c)(i) on crop production.*
Students did not understand the question and as a result about 60% did not do well.

(iii) *List **three** factors that could cause the condition indicated in **2**(c)(i).*
50% of the candidates did not do well because they did not understand the question too well.

Question 2 dealt with soil Science and candidates were asked to classify soils according to their pH, and to outline the steps in classifying neutral, acidic and alkaline soils in this order. They were also asked to identify the condition indicated by pH value 4.5 in the soil samples and its effects on crop production as well as three (3) factors that could cause soil acidity.

Question 3

(a) *Name the organism which causes the damages observed on each of specimens **J, K, L** and **M**.*
25% did well and the rest did badly.

(b) *State three ways in which the organism which caused the damage on specimen J is of economic importance.*
About 60% of the candidates did well.

(c) *State two ways of controlling **each** of the organisms which caused damage to specimen **J, K, L** and **M**.*

Generally poor performance because about 75% did not answer the question.
Question 3 covered pests and diseases of crops. Candidates were asked to name the organism which cause damage on maize, yam, cassava and tomato and to state three (3) economic importance of maize weevil. They were also asked to state two (2) ways of controlling each of the organisms which caused damage to maize, yam, cassava and tomato.

Question 4

(a) *Name **three** farm animal hosts of specimen **O**.*
Excellent performance because about 98% of the students answered question 4a correctly.

(b) *State **four** damages done by **each** of specimens **N** and **O** on their farm animal hosts.*
Almost 85% of the candidates did well.

(c) *Enumerate four ways of controlling specimen **O.***
The question was well answered, only about 20% were unable to answer.

Question 4 was an animal science question. Candidates were asked to name three (3) farm animal hosts of life fluke and tick. They were also to state four (4) damages done by each of life fluke and tick on their farm animal host and outline any four (4) ways of controlling specimen O (tick).

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
BIOLOGY 2

1. GENERAL COMMENTS

The standard of questions for Biology paper 2 were the same as those of the previous years. The questions were within the scope of the biology syllabus, designed for the West African Senior Secondary Certificate Examination (WASSCE). The overall performance of the candidates was below average. Few candidates performed excellently; showing that they had prepared very well and probably covered at least 95% of the topics in the syllabus. Majority of the candidates however performed poorly; indicating that they do not have the right attitude towards the subject or were not really well prepared for the examination.

Majority 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 and had to write 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 had nothing to do with the questions asked; thereby wasting precious time and gaining no marks.

A good number of them are 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.

Some of the candidates found it difficult to express their ideas 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. Most of the candidates failedto score good marks because they lack the ability to spell scientific/biological terminologies correctly. Most of them also lack the ability to draw biological diagrams correctly; taking into consideration quality, details and correct labels.

Majorityof the candidates lackthe ability to present their ideas in simple English and this is a key obstacle to most candidates scoring good marks. As a result of 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. Some even attempted questions from section B which gained them no marks at all.

2. CANDIDATES` STRENGTHS

- Ability of a good number of them to interpret questions
- Ability to reproduce definitions
- Ability to answer direct questions such as "name", "state" etc
- Legible presentation of work by majority of them

3. CANDIDATES` WEAKNESSES

- Poor level of preparation and lack of basic knowledge
- Habit of just copying the exams questions on the answer booklet
- Wrong usage of scientific/biological terminologies
- Failure to attempt the required number of questions from section A
- Wrong spellings of biological/scientific terms
- Lack of logical presentation of ideas
- Lack of the ability to correctly draw and label biological diagrams
- Inability to express ideas/knowledge in simple English

4. SUGGESTED REMEDIES/RECOMMENDATIONS

- Teachers must endeavour to thoroughly cover the topics in the Biology Syllabus with their students and embark onrevision.
- Candidates should work hard to lift up their interest, self motivation, dedication and enthusiasm towards Biology.
- Teachersmust encourage their students to learn appropriate biological/scientificterminologies by giving them spelling tests on such terms; especially the parts of organs and systems.
- Teachers and students alike must ensure that effective teaching and learning is achieved to improve and enhance academic excellence.
- Teachers must develop in their students the skills in drawing biological diagrams by having regular practical lessons with them.
- For effective and thorough main coordination, at least one chief examiner for biology should be present at the international preliminary coordination meetings to enable them contribute to the finalization of the marking scheme.

5. DETAILED COMMENT ON INDIVIDUAL QUESTIONS

Question 1

*(a) Explain **briefly** how the structure of **each** of the following cells relate to their functions:*

(i) sperm cell;
(ii) palisade cell.

(b) Make a drawing, 8 cm long of the front view of the female reproductive system in humans and label fully.

*(c) State **two** differences between reproduction in mammals and in amphibians.*

*(d) State **two** methods of birth control in humans.*

About 80% of the total number of candidates attempted this question but only about 60% of them got the right answers. This question seems to be simple but it took most of the candidates by surprise; especially 1 (a), which asked candidates to explain briefly how the structure of the sperm cell and palisade cells are related to their functions. 1 (b), deals with drawing the front view of the female reproductive system in humans and label fully.

This also was not well done by most of the candidates who attempted this question because they failed to follow the basic rules of drawing biological diagrams. They failed to correctly spell the names of the parts. Some of the candidates had no idea about what the structure of the female reproductive system looks like and therefore had to draw diagrams that do not look like such a structure; thus scoring zero. 1 (c) and (d) were correctly answered by most of the candidates; stating the differences between reproduction in mammals and in amphibians, and stating the methods of birth control. However some candidates failed to score good marks to 1 (d) because they cannot correctly spell the methods of birth control. The performance of candidates in the whole of question 1 was below average.

Question 2

(a) Name the gases involved in the photosynthesis of a plant.

*(b) State **one** role **each** of the gases named in **2**(a).*

(c) (i) What is a variegated leaf?
(ii) Which part of the variegated leaf would test positive when treated with iodine solution?
*(iii) State **two** reasons for the answer in **2**(c)(ii).*
*(iv) Name **one** mineral element required by plants for the formation of the part that would test positive in **2**(c)(ii)*

(d) The table below indicates different methods by which organisms obtain food. Place the following organisms under the headings in the table below;
Human, Mushroom, Venus flytrap, Water leaf plant, Tapeworm, Elephant grass, Housefly, Lichen, Spirogyra, Rhizopus.

Mode of Nutrition				
Holozoic	*Parasitic*	*Symbiotic*	*Saprophytic*	*Autotrophic*

About 50% of the candidates attempted this question and almost 30% of them performed poorly; scoring between 0 and 5 marks. The term variegated leaf was actually difficult to be understood by most of the candidates and by extension proved difficult to correctly answer subsequent questions. Question 2 (d) was like a give-away question; where candidates were expected to score good marks but again, because of lack of understanding of the instruction given in the question, some ended up scoring between 0 and 3 marks. However, quite a good number of them scored between 5 and 9 from the 10 marks allocated to this question. The overall performance of candidates in question 1 was slightly above average, with few candidates scoring between 10 and 17 marks out of 20.

Question 3

*(a) Explain **briefly** the following terms:*

(i) renewable natural resources;
(ii) non-renewable natural resources.

*(b) Give **two** examples **each** of:*

(i) renewable natural resources;
(ii) non-renewable natural resources

*(c) State **five** ways of conserving forests.*

*(d) State **four** effects of adding animal manure to garden soil.*

(e) Give the possible genotypes in humans.

This question was not attempted by a large number of the candidates and the few who tried to attempt it performed poorly. It seems some of them had little idea of renewable and non-renewable natural resources. The word that confused some of them most is "natural resources". They took natural resources to be God's making; thus giving answers such as "Renewable natural resources are those things made by God and non-renewable natural resources are those things not made by God". None of the candidates correctly answered question 3 (e) as they could not give the possible genotype in humans. The general performance of candidates who attempted this question was very poor as none of them could get up to above 12 marks out of 20. The scores ranged from 0 to 10, with 0 to 5 being the majority.

Question 4

*(a) Explain **briefly** the following terms:*

(i) gene;
(ii) hybrid;
(iii) trait.

(b) Two heterozygous yellow flowers are crossed. Using a genetic diagram, state the phenotypic and genotypic ratios of the first filial generation.

*(c) State **four** transmittable characters in plants.*

This question seems to be the simplest of all the questions in section A of this year's Biology paper 2. About 50% of the candidates attempted it and about 40% scored marks ranging from 10 to 17 out of 20. However, there were some candidates who performed poorly as they do not understand the genetics topic in the syllabus; let alone talk about drawing correct genetic crosses, thus scoring between 0 and 5 marks. The overall performance in question was above average.

Question 5

(a) *(i)* *Explain **briefly** chemosynthesis as a mode of nutrition.*
(ii) *Give **two** examples of organisms that carry out chemosynthesis.*

(b) *List **three** gases in the atmosphere with their percentage composition.*

(c) *(i)* *State **four** characteristics of a salt marsh habitat.*
(ii) *Explain **briefly** how plants are modified for anchorage in a salt marsh habitat.*

(d) *(i)* *List **four** bacterial diseases associated with poor food hygiene.*
(ii) *State **three** effects of poor food hygiene'*

(e) *A person was involved in a car accident and became unconscious due to excessive blood loss. Explain **briefly** how the blood lost could be restored.*

(f) *State **three** differences between tillage and bush burning as farming practices.*

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About 95% of the candidates attempted this question as it is a compulsory question. This question was actually spread over many topics in the biology syllabus; ultimately testing the deep knowledge and understanding of the candidates in biology. The term "chemosynthesis" and the example of organisms that carry out chemosynthesis was a nightmare for some of the candidates to correctly answer. The gases in the atmosphere and their percentages were correctly listed by majority of the candidates; except for some wrong spellings of the names of the gases by a few of them. Stating the characteristics of a salt marsh habitat was another difficult task for majority of the candidates. Some do not even seem to understand what a salt marsh habitat is; let alone talk about stating its characteristics. Subsequently, they failed to explain briefly how plants are modified for anchorage in a salt marsh habitat, thus most of the candidates scoring zero for the whole of question 6 (c) (i) and (ii). A good number of the candidates were able to correctly list the bacterial diseases associated with poor food hygiene but some could not gain any mark because of wrong spellings of the names of the diseases. About 90% of the candidates who attempted this question could not correctly state the differences between tillage and bush burning as farming practices. The overall performance of the candidates was below average in this question.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
BIOLOGY 3

1. **GENERAL COMMENTS**

Biology 3(Practical) examination was made up of three compulsory questions. These questions were well structured, up to standard and without ambiguity. These three questions were centered on three main topics from the syllabus.

Question 1

*Study specimens **A** and **B** and answer questions **1**(a) to **1**(c).*

*(a) (i) Name the habitat of **each** of specimens **A** and **B**.*
*(ii) Name the adult stage into which **each** of specimens **A** and **B** would develop.*
*(iii) Name the Phylum and Class **common** to the adult stages of specimens **A** and **B**.*

*(b) State **three** observable features of biological significance in:*
*(i) specimen **A**;*
*(ii) specimen **B**.*

*(c) (i) State **four** observable structural differences between specimens **A** and **B**.*

*(ii) State **three** observable similarities between specimens **A** and **B**.*

Examined two specimens that were the larvae stages of two insects. Specimen A was the larva stage of a mosquito and B was the larva stage (or maggot) of a housefly.

Question 2

*Study specimens **C**, **D** and **E** and answer questions **2**(a) to **2**(c).*

*(a) (i) Name the organism from which each of specimens **C**, **D** and **E** are obtained.*
*(ii) State the function common to specimens **C**, **D** and **E**.*
*(iii) State **three** observable features which adapt specimen **C** to its function.*

*(b) (i) State **two** observable structural similarities in specimens **C** and **D**.*
*(ii) State **three** observable structural differences between specimens **C** and **D**.*

*(c) Make a drawing, 6 cm to 8 cm long of specimen **C** and label fully.*

Examined three specimens C (gill of a bony fish), D (lungs of a mammal) and E(leaf of a dicotyledonous plant)

Question 3

*Study specimens **G**, **H** and **J** and answer questions **3**(a) to **3**(f).*

*(a) (i) Name the habitat of **each** of specimens **G**, **H** and **J**.*
*(ii) Classify **each** of specimens **G** and **H** into their Orders.*

*(iii) Give **one** reason **each** for the answers in **3**(a)(ii).*

*(b) (i) State **two** structural differences between the thoracic segments of specimens **G** and **H** in a tabular form.*
*(ii) State two structural similarities between the walking legs of specimens **G** and **H**.*

*(c) What is the relationship between specimens **H** and **J**?*

*(d) (i) What is the symmetry of specimen **H**?*
*(ii) State **three** reasons for the answer in **3**(d)(i).*

(e) State three observable structural:

*(i) differences between specimens **H** and **J** in a tabular form;*
*(ii) similarities between specimens **H** and **J.***

*(f) State **two** observable features **each** which adapt **each** of specimens **G** and **H** to their habitats.*

*Question **4***

*Study specimens **K** and **L** and answer questions **4**(a) to **4**(f).*

*(a) (i) Name the floral parts of specimen **K.***
*(ii) Indicate the number of floral parts in **each** whorl of specimen **K.***

*(b) (i) Name the sex of specimen **K**.*
*(ii) Give **one** reason for the answer in **4**(b)(i).*

*(c) (i) What is the symmetry of specimen **K**?*
*(ii) Give **one** reason for the answer in **4**(c)(i).*

*(d) Name **one** pollinating agent of **each** of specimens **K** and **L**.*

*(e) State **four** observable differences between specimens **K** and **L**.*

*(f) Make a drawing 8 cm-10cm long of the longitudinal section of specimen **K** and label fully.*

Examined two specimens K and L. Specimen K was a flower of a dicotyledonous plant called Pride of Barbados and L was the whole monocotyledonous plant of elephant grass (made up of the root and shoot systems).
A thorough knowledge about these specimens would have earned candidates high marks.

As in previous examinations, questions on these specimens included, observables structures, observable differences between two specimens, habitats and classifications. A quality diagram of one or two specimens, fully labeled with some details is always expected.

The general performance of the candidates as compared to previous years was not satisfactory with the exception of few candidates from some schools. It is rather

disheartening to observe from the marking exercise that the same mistakes that have been made and pointed out in the chief examiner's reports are still reoccurring. Infact, the performance of candidates has dropped so much that about 20 % of them scored zeros (00) this year. On the other hand, few candidates about 10% from some outstanding schools scored higher marks ranging from 50 to 60 out of 80 as compared to last year. Below is a rough estimate of percentages of performance this year:

Range of marks out of 80	**Percentage of candidates**
50 - 64	10
49 - 40	20
39 - 20	30
19 - 10	20
9 - 00	20

CANDIDATES WEAKNESSES

Poor spelling of biological and taxonomical words e.g. Arthropoda and not arthropodaMisunderstanding of questions e.g. biological significance misunderstood for economic importance.
Candidates just copying questions for the whole period for the examination
Poor hand writing, making it difficult for the examiner to read and mark
Poor preparation for the examination which made some student not to attempt question 4.
Poor diagrams, not fully labeled, without quality and details.

CANDIDATES STRENGTHS

Some clearly understood the questions and answered them well
Some answered questions in their correct order
Some had good and fully labeled diagrams with details
Some were able to correctly spell biological terms and taxonomical words

INDIVIDUAL QUESTIONS WITH ANSWERS AND COMMENTS

Question 1

Study specimens A and B and answer questions 1 (a) to 1(c).

*(a) (i) Name the habitat of each of **each** of the specimens A and B*
(ii) Name the adult stage into which each of specimens A and B would develop.
(iii) name the phylum and Class common to the adult stages of specimens A and B.

*(b) State **three** observable features of biological significance in:*
(i) Specimen A;
(ii) specimen B.

*(c) (i) State **four** observable structural differences between specimens A and B*
*(ii) State **three** observable similarities between specimens A and B*

ANSWERS AND COMMENTS

1 (a) (i) Habitats of
Specimen A/ larva of Mosquito:
Stagnant water/swampy areas/pool/pond/edge of stream/or correctly named habitat

Specimen B/maggot
Rotting/rotten/ decaying/decomposing animals/decaying food/human faeces/pit latrine

(ii) Adult stage of
Specimen A/ larva of mosquito: Mosquito/ Anopheles mosquito/Culex/Aedes mosquito
Specimen B/Maggot: Housefly/Musca domestica

(iii) Phylum and class common to specimens A and B
Phylum: Arthropoda Class: Insecta

(b). Observable features of biological significance in:
(i). Specimen A/ larva of Mosquito:
Presence of spiracles; for breathing/gaseous exchange
Presence of siphon/breathing trumpet/breathing tube ;for breathing /gaseous exchange
Presence of antennae; for sensitivity
Horny jaw/mouth; for chewing solid food
Mouth brushes; for sweeping food into the mouth
Presence of bristles ;to remain afloat/buoyancy/protection/defense
Feather-like /feathery hair; for defense
Long cylindrical body; for wriggling movement
Presence of eyes; for sight /vision
(ii). Specimen B/maggot
Hooks at mouth; for movement/tearing of food /feeding
Small spiny pad ;for movement
Small mouth ;for feeding
(Two pairs) of spiracles ;for breathing /gaseous exchange

(c). (i). Differences between specimens A and B

Specimen A/larva of Mosquito	**Specimen B/maggot**
Mouth brushes present	Mouth brushes absent
Bristles present	Bristles absent
Anal gills present	Anal gills absent
Anterior and posterior pointed	Anterior end pointed
Posterior end not blunt/wide	Posterior end blunt
Has antennae	Absence of antennae
Has 3 body divisions (head, thorax and abdomen)	Two body divisions(head and trunk)
Has one spiracle	Has two pairs of spiracles
Hook absent	Hook present
Siphon/breathing trumpet/tube present	Siphon/breathing trumpet/tube absent
Pad absent	Pad present
Eyes present	Eyes absent

(ii). Similarities between Specimens A and B

They both have segmented body
They both possess spiracles
They both have mouth/mouth part
Both have elongated /long body/cylindrical

COMMENTS

(i). 50% of the candidates were able to state the habits of specimens A and B
(ii). 40% of the candidate were not able to identify the adult stages of specimens A and B or got the spelling of Mosquito and housefly wrong. Housefly is one word and not two as most candidates wrote as House fly and Mosquitor instead of mosquito.
(iii). Most candidates could not identify the Phylum and class to which the adults of A and B belong to as Phylum Arthropod and Class Insecta. Taxonomic terms should always start with a capital letter, therefore arthropoda and insect/insect are wrong.
(b). To state three features of biological significance was misunderstood by candidates as economic importance. Features of biological significance also means structures on the specimen and their functions/adaptations
(c). Writing down structural differences between specimens A and b would be better done by tabulating the differences. In this tabulation, the differences should tally to score as clearly stated in the answers above. Only observable differences and similarities can score.

Question 2

Study specimens C, D and E and answer questions 2 (a) t0 2 (c)

(a). (i). Name the organisms from which each of the specimens C, d and E are obtained.
(ii). State the function common to specimens C, D and E
*(iii). State **three** observable features which adapt specimen C to its function*

*(b). (i). State **two** observable structural similarities in specimens C and D*
*(ii). State **three** observable structural differences between specimens C and D*

(c). Make a drawing , 6 cm to 8 cm long of specimen C and label fully.

ANSWERS AND COMMENTS

(i). Name of organism where specimens C, D and E were obtained.
Specimen C(Gill) : Tilapia fish/catfish/any named bony fish
Specimen B(lungs): Goat/sheep/rat/rabbit/any named mammal
Specimen C/leaf: mango plant/cashew plant/orange/any correctly named dicotyledonous plant
Though simple, this part of the question was scored by few candidates because their answers were too general and not specific. Specific names of organisms from which these structures were obtained were needed.

(ii) Function common to specimens A, B and C:

Gaseous exchange/respiration

Instead of writing a common function, candidates wrote different individual functions of Specimens A, B and C. Some candidates mentioned respiration for specimens A and B but mentioned photosynthesis for specimen C and therefore could not score that mark.

(iii) Observable features that adapt specimen C to its function

-It is moist; for diffusion of dissolved gasses /gaseous exchange
-It is thin-walled /thin membrane to make diffusion easy
-it is richly supplied with blood vessels/highly vascularised as diffusion medium for gaseous
exchange.
-has a large surface area to increase the rate of diffusion of gases

Comment: In a question like this, the structure should always go with the function to score.
Some candidates only mentioned the observable feature and never stated the function.
Other candidates mentioned features that were not even observable.

(b) (i). Observable similarities between specimens C and D

-Both have net-work of capillaries/highly vascularized
-Both are pink/red in colour
-Have moist surfaces
-Are thin-walled/thin membrane
-have large surface area

(iii). Observable structural differences between specimens C and D

Specimen C/Gill	**Specimen D/lung**
Gill rakers present	Gill rakers absent
Gill arch present	Gill arch absent
Gill lamella present	Gill lamella absent
Gill filaments present	Gill filaments absent
Pleural membrane absent	Pleural membrane present
Pleural cavity present	Pleural cavity present
Not fluffy	Fluffy/soft

Comment: Differences are always well written by tabulating your work so that the features you are mentioning tally. As in question 1, these differences should be observable on the specimens. Never write abstract differences but features seen on the specimens**.**

(c). Drawing of specimen C/Gill

This is a major problem for most biology students. Biological drawings need to be done according to certain specifications which clearly point out the quality and details of the diagram.
To score for this diagram and other diagrams, the following should be done:
Title of the diagram should be written : Diagram/drawing of specimen C

Quality
Size of the diagram: 6 cm to 8 cm long: Diagram should not be less than 6 cm or more than 8 cm
Clarity of lines: Pencil lines must not be wooly or broken
Neatness of labels: Label lines must be ruled and horizontal together with the labels at their ends
Magnification: This can be written below the diagram as x 0.5 to x 3. Magnification bears no unit as x 0.5 cm or x 3 cm

Details:
-At least three filaments should be shown
-At least three rakers must be shown
-Gill bar /arch must be shown in double lines

Labels:
Gill raker, Gill bar/arch, Gill filament, gill lamella (spellings must be correct to score)

Comments:
Diagrams are not seriously taken by candidates and therefore lose a lot of marks. This diagram alone scores 9 marks and therefore if ignored by students, you lose 9 marks. However any small effort you make to draw, you must score some marks.

Question 4

Study specimens K and L and answer questions 4(a) to 4 (f).

(a) (i). Name the floral parts of specimen K.
(ii). Indicate the number of floral parts in each whorl of specimen K

(b) (i). Name the sex of specimen K
*(ii). Give **one** reason for the answer in 4(b) (i)*

(c) (i). What is the symmetry of specimen K?
*(ii). Give **one** reason for the answer in 4 (c) (i)*
*(d) Name **one** pollinating agent of each of specimens K and L*

ANSWERS AND COMMENTS:
(a).(i). Floral parts of specimen K/ Pride of Barbados
- Sepals/calyx
- Petals/corolla
- Stamen/androecium
- Pistil/Gynoecium/carpel

(ii). Number of floral parts
Sepals- 5/4+1
Petals- 5/4+1
Stamen- 10
Pistil/Gynoecium- 1

(b). (i).Sex of the specimen: Hermaphrodite/ Unisexual
(ii). Reason: Has both male and female organs/androecium and Gynoecium

(c). (i). Symmetry of specimen K: Bilateral symmetry

(ii). Reason for answer in c(i).

It can be cut into two equal halves along only **one** plane.

(d). Name of pollinating agent of specimen K and L

- Specimen K is pollinated by Butterfly/bees and **not** just insects or birds
- Specimen L is pollinated by wind

(e). Observable structural differences between specimens K and L

Specimen K/flower of Pride of barbados	**Specimen L/Elephant grass**
Flowers are conspicuous/large	Flowers are inconspicuous/small
Brighter coloured flowers;yellow/red	Dull coloured flower
Scented flowers	Not scented flowers
Large sticky pollen grains	Small light pollen grains
Sticky stigma	Stigma is not sticky
Has no roots	Has fibrous system
Has special petal	No special petal

The marking scheme did not mention the last two differences I have mentioned in the table above. Infact, they were to give differences between the flower and the whole dicotyledonous plant and not just flower of k and flower of L . This made a lot of brilliant student to lose 4 marks for this part of the question.

(f). Drawing of specimen K/Flower of Pride of Barbados

Title: Drawing/drawing of longitudinal section of specimen K x1

Quality

Size: Diagram should be 8cm to 10 cm long x1
Clarity of lines: x1
Neatness of labels: x1
Magnification: (x0.5 to x 1) x1

Details:

Standard petal shown 1614 x1
At least three filaments shown: x1
Cut surface shown with double lines x1
At least four ovules shown in ovary marginally arranged x1

Labels: Petal,sepal, style, anther, standard petal, receptacle, pedicel/
Flower stalk 6x1/2 **(3 marks)**

COMMENT

This diagram was awarded 12 marks and this is where most students could not score any
marks because they do not want to draw diagrams.
All the rubrics for drawing diagrams should be followed to score marks as indicated
in the marking scheme.
Spellings of one word answers must be correct to score. The spellings of the floral parts, sex
and its symmetry were so bad that few candidates scored these marks.

RECOMMENDATIONS:

Biology teachers must endevour to start practical work a s early as grade 10 instead of waiting until grade 12
Spelling tests must be included in the assessment of pupils to enable pupils to be able to correctly spell biological and taxonomical terms.
Biology quiz competition among classes should be encouraged to make learning of biology interesting.
Field trips to various places of Biological interest should be carried out at least once a term to expose pupils to the natural habitats of some organisms.
Teachers must also try to expose pupils to past practical examination questions so that they will be able to acquire some skills needed for Biology Practicals
Group work or Projects must be given to students to encourage collaboration among

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
CHEMISTRY 2

1. GENERAL COMMENTS

The standard of the paper was appropriate for the level of the candidates. The questions selected covered a 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 poor in comparison to the previous examination. More candidates scored zero mark. Very 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 answer questions
- Giving the required details to questions that require descriptive answers
- Recalling definitions of terminologies
- Candidates answered questions according the instruction given, ie they did not attempt the questions set for candidates in Ghana

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 ions, formulae of compounds
- 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 for this paper
- Understanding the principles related to mathematical concepts and how each is applied in doing calculations
- Understanding the workability of diagrams showing preparation of gases, or separation techniques
- Spelling scientific terminologies correctly

Question 1

(a) *(i) Define the term fermentation.*
(ii) Name the catalyst that can be used for this process.

*(b) Name **two** factors which determines the choice of an indicator for an acid-base titration.*

(c) Consider the following reaction equation:
$Fe + H_2SO_4 \rightarrow FeSO_4 + H_2$

Calculate the mass of unreacted iron when 5.0 g of iron reacts with 10 cm^3 of 1.0 $moldm^{-3}$ H_2SO_4.

[Fe = 56.0]

*(d) Name **one**:*

(i) heavy chemical used in electrolytic cells:
(ii) fine chemical used in textile industries.

*(e) Explain **briefly** how a catalyst increases the rate of a chemical reaction.*

(f) (i) Write the chemical formula for the product formed when ethanoic acid reacts with ammonia.
*(ii) Give the name of the product formed in **1** (f)(i).*

*(g) List **three** properties of aluminium that makes it suitable for the manufacture of drink cans.*

*(h) State **two** industrial uses of alkylalkanoates.*

*(i) Name **two** steps involved in the crystallization of a salt from its solution.*

*(j) List **two** effects of global warming.*

(a) (i),(ii) Most candidates gave the correct definition of fermentation and mentioned yeast / zymase as an enzyme used in the process..

(b) Most candidates mentioned at least one correct factor which determines the choice of an indicator for an acid-base titration. The common answer was the strength of the acid or base. Candidates did not consider the ph, or sharpness of colour change at the end-point.

(c) A minority of candidates did the correct calculation of the mass of unreacted iron in the reaction equation given. Most candidates failed to interpret the question correctly.

(d) (i), (ii) Most candidates mentioned at least one correct chemical. A common error was stating a fine, or heavy chemical without reference to specific purpose mentioned in the question.

(e) Most candidates stated that a catalyst affects the rates of chemical reactions by increasing the frequency of collision between particles. Few candidates mentioned that a catalyst provides an alternative pathway of lower activated complex.

(f) A majority of candidates could not write the correct formula and name of the product of the reaction between ethanoic acid and ammonia. It was apparent that most candidates had no idea of the reaction involved.

(g) Most candidates gave at least two correct properties of aluminium which relate to its use in making cans. A common error was the consideration of the general properties of aluminium, such as its conductivity of heat and electricity.

(h) Many candidates gave one correct industrial use of alkylalkanoates as a raw material
in making soap. Candidates did not consider alkylalkanoates as solvents, flavouring agents, or plasticizers.

(i) Most candidates gave the correct steps involved in crystallization of a salt from its
solution. Some candidates mentioned evaporation to dryness, instead of partial evaporation.

(j) Almost all the candidates gave two correct effects of global warming.

Question 2

(a) (i) State the collision theory of reaction rates.

(ii) *Using the collision theory, explain **briefly** how temperature can affect the rate of a chemical reaction.*

(b) (i) Sketch a graphical representation of Charles' law.

(ii) Calculate the volume of oxygen that would be required for the complete combustion of 2.5 moles of ethanol at s.t.p.

[Molar volume at s.t.p = 22.4 dm^3]

(c) *(i)* *Define esterification.*
(ii) *Give **two** uses of alkanoates.*
(iii) *Give the products of the alkaline hydrolysis of ethyl ethanoate.*

(d) *A tin coated plate and a galvanized plate were exposed for the same length of time.*
(i) *Which of the t**wo** plates corrodes faster?*
(ii) *Explain **briefly** your answer in **2** (d)(i).*

(a) (i),(ii) Many candidates gave the correct statement of the collision theory. In part (ii), most of the candidates mentioned the gain in kinetic energy, but could only few candidates included the frequency and number of successful collisions in their explanation.

(b) (i),(ii) Many candidates drew the sketch of the graphical illustration of Charles' law. A common error was the incorrect labelling of axes, by not including units**.** In part (ii), many candidates failed to write the correct balanced equation for the complete combustion of ethanol and hence could not do the calculation correctly.

(c) (i),(ii),(iii) Few candidates gave the correct definition of the term esterification and deliquescence in part (i) . Many candidates stated that esterification is the reaction of an acid and a base. In part (ii), majority of the candidates mentioned at least one correct use of alkanoates, which relates to soap making. Candidates did not consider the use of alkanoates in food flavouring, cosmetics and as plasicizers. In part (iii), did not give the correct products of the alkaline hydrolysis of ethyl ethanoate.

(d) (i),(ii) Many candidates gave answers which suggests lack of understanding of the applications of the principle of redox reactions . There was much evidence of guessing. Even where candidates could have given the correct name of the plate which corrodes faster, yet they could not explain the reason for the choice of the metal plate.

Question 3

(a) *(i)* *Draw the structure of the sixth member of the alkenes.*
(ii) *Calculate the relative molecular mass of the sixth member of the alkene.*
(iii) *State **one** difference between cracking and reforming in the petroleum industry.*

[H = 1, C = 12]

(b) *(i)* *Define the term enthalpy of neutralization.*
(ii) *Describe **briefly** how the enthalpy of neutralization of the reaction of dilute hydrochloric acid and aqueous potassium hydroxide could be determined.*

(c) An electrochemical cell is constructed with copper and silver electrodes.

(i) State which of the electrodes will be the:

I. anode;

II. cathode.

*(ii) Give the reason for your answer in **3**(c)(i).*

*(iii) State the type of reaction occurring at **each** electrode.*

(iv) Write a balanced equation for the overall cell reaction.

(d) (i) Name the compound formed when iron is exposed to moist air for a long time.

*(ii) Write a balanced chemical equation for the reaction in **3**(d)(i).*

*(iii) Name **one** ore of iron.*

(a) (i),(ii),(iii) Few candidates drew the correct structure of the sixth member of the alkenes in part (i). A common error was substituting 6 in the general formula of alkenes and disregarding the fact that the first member of the alkene homologous series has two carbon atoms, (n = 2).In part (ii), the calculation of the relative molecular formula was not correctly done because the formula was not correctly deduced. In part (iii), very few candidates gave the correct difference between cracking and reforming. Majority of the candidates gave answers which suggest that they understood cracking, but do not understand reforming.

(b) (i),(ii) Majority of the candidates did not give the correct definition of the term enthalpy of neutralization in part (i). A common error was defining the term as the reaction of an acid and a base to form salt and water. In part (ii), almost all of the candidates failed to give the correct outline of how to determine the enthalpy of neutralization. There was evidence of knowledge of the concept of neutralization, but details of the description were lacking in the description.

(c) (i),(ii),(iii),(iv) Few candidates gave the correct order of the metals used as anode and cathode in part (i), but could not explain the reason for the choice of the metal interms of their redox property in part (ii). In part (iii) majority of the candidates could not state that oxidation occurs at the anode and reduction at the cathode. Most of the answers given by candidates were merely guessed.

(d) (i),(ii),(iii) Most of the candidates mentioned iron oxide , but failed to indicate the prefix, hydrated in part (i). In part (ii), very few candidates gave at least one correct balanced chemical equation for the reactions involved in rusting. In part (iii), almost all of the candidates mentioned haematite as an ore of iron. Few candidates gave the correct names of other ores, such as magnetite, siderite, siderite and pyrites.

Question 4

(a) (i) *Draw and label a diagram for the laboratory preparation of a dry sample of sulphur (IV) oxide.*

*(ii) Write a balanced chemical equation for the reaction in **4**(a)(i).*

*(iii) State the precaution that must be taken in the preparation of the gas stated in **4**(a)(i).*

*(iv) Give a reason why the precaution stated in **4**(a)(iii) must be taken.*

(b) (i) State Dalton's law of partial pressures.

(ii) The volume of a sample of methane collected over water at a temperature of 12 ^oC and a pressure of 700 mmHg was 30 cm^3. Calculate the volume of the dry gas at t.p.

[Saturated vapour pressure of water at 12 ^oC is 10 mmHg]

(c) (i) Write an equation for the reaction between chlorine and water.

*(ii) Why does litmus paper turn red when put in the resulting solution in **4**(c)(i)?*

(d) (i) State the trend in the boiling points of chlorine, bromine and iodine.

*(ii) Explain **briefly** why water has a higher boiling point than ammonia.*

(a) (i),(ii),(iii),(iv) In part (i),Few candidates attempted this question and drew the diagram correctly. There were errors in the diagram, due to lack of attention to details, such as not indicating heat, incorrect placement of delivery tubes ,not indicating the use of rubber bungs to prevent the escape of gas and the wrong method of collection of the gas.In part (ii), many candidates could not write the equation for the preparation of sulphur (IV) oxide correctly. Few candidates mentioned the appropriate safety precaution required in the preparation of the gas and the reason for the choice of the precaution.

(b) (i),(ii) Few candidates gave the correct statement of Dalton's law of partial pressure in part (i). Majority of the candidates failed to do the calculation correctly in part (ii). A common error was not converting the pressure and temperature to the appropriate units.

(c) (i),(ii) Few candidates wrote the correct balanced equation for the reaction between chlorine and water in part (i). In part (ii), majority of the candidates explained that litmus paper turned red because the resulting solution is acidic.

(d) (i),(ii) Few candidates gave the correct order of the boiling points of the halogens in part (i) . In part (ii) most of the candidates failed to mention the difference in hydrogen bonding between hydrogen and ammonia, which accounts for the difference in their boiling points.

Question 5

*(a) (i) State **two** industrial uses of hydrogen.*
(ii) Consider the equation below.

$Mg(HCO_3)_2 \rightarrow_{heat} MgCO_{3\,(g)} + H_2O_{(i)} + CO_{2\,(g)}$

I. State the type of hardness of water being removed as shown by the above equation.
*II. Give **two** disadvantages of hardness of water.*

(b) (i) In the extraction of aluminium by electrolysis, graphite electrodes are used. State the disadvantage of using this type of electrode.
(ii) Calcium oxide reacts with water to form slaked lime:
I. Write a balanced equation for this reaction;
*II State **one** use of slaked lime.*

(c) (i) What is meant by saponification?
(ii) List the raw materials needed for the manufacture of soap.
(iii) Name the main by-product obtained from the manufacture of soap.

*(d) With the aid of chemical equations explain **briefly** how iron is extracted in the blast furnace using iron ore, coke and limestone as raw materials at the :*

(i) bottom of the furnace;
(ii) middle of the furnace;
(iii) top of the furnace.

(a) (i),(ii) Many candidates stated at least one industrial use of hydrogen in part (i). In part (ii), many candidates mentioned the correct type of hardness of water illustrated by the equation and gave two correct disadvantages of hardness of water.

(b) (i), (ii) Few candidates stated that carbon (IV) oxide gas is produced at the anode in the electrolytic extraction of aluminium in part (i). In part (ii), majority of candidates wrote the correct balanced equation for the reaction between calcium oxide and water and one correct use of slaked lime in relation to neutralization.

(c) (i), (ii), (iii) Many candidates did not attempt this part of the question. . In part (ii), few candidates mentioned fats / oils only and failed to mention an alkali as another raw material in the manufacture of soap. In part (iii), most of the candidates could not name the correct by-product obtained from the manufacture of soap.

(d) (i),(ii),(iii) Majority of the candidates attempted this part of the question. There was a general knowledge of the extraction of iron, but candidates wrote the equations in an order which suggest lack of understanding of the sequence of reactions which occur in the blast furnace in parts (i),(ii)and (iii).

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
CHEMISTRY 3

Alternative A

1. **GENERAL COMMENTS**

- The questions were simple, straight forward and easy to understand and this, to a great extent, has 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 **65% or more** of the total allocated marks of **50**.
- Students 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).
- Apart from a few candidates (less than 10%) who displaced 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 quite obvious that majority of the candidates put much effort in exhibiting learned skills in the subject area.

2. **CANDIDATES' STRENGTHS**

- Ability to write in **INK**
- Ability to attempt all the questions
- Ability to average concordant titre values
- Ability to present work clearly and legibly
- Ability to present precise answers to questions.
- 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 candidates could be attributed to:

- Misinterpretation of questions
- Incomplete coverage of the syllabus
- Inadequate knowledge in the course content
- Lack of facts and reasons in answers provided
- Common spelling mistakes - words and names
- Low level of preparedness for the examination
- Lack of understanding of fundamental concepts and principles
- Inability to express themselves clearly in simple language.

- Insufficient practice/use of laboratory apparatus or chemicals.
- Lack of effort and inadequate preparation for the examination.
- Not dissolving **C** in distilled water before adding any other reagent.
- Failing to state the **colour of the resulting solution** formed when a salt is dissolved in distilled water.
- Failure to indicate that **green iron (II) salts are oxidized to brown iron (III) salts on standing**.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

***A** is a solution of potassium tetraoxomangante(VII).*
***B** is a solution of iron(II) chloride containing 4.80 g of the salt in 250 cm^3 of solution.*

*(a) Put **A** into the burette. Pipette 20.0 cm^3 or 25.0 cm^3 of **B** into a conical flask, add 20.0 cm^3 of $H_2SO_{4\,(ag)}$ and titrate with **A**. Repeat the titration to obtain **concordant** titre values. Tabulate your results and calculate the average volume of **A** used. The equation of the reaction is:*
$MnO^-_{4(aq)} + 5Fe^{2+}_{(aq)} + 8H^+_{(aq)} \rightarrow Mn^{2+}_{(aq)} + 5Fe^{3+}_{(aq)} + 4H2o_{(1)}$

(b) From your results and the information provided, calculate the:

*(i) concentration of **B** in $moldm^{-3}$;*
*(ii) concentration of **A** in $moldm^{-3}$;*
(iii) number of moles of Fe^{2+} in the volume of B pipetted.
[$FeC1_2$ = 127 $gmol^{-1}$]

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. Most were able to average concordant titre values. This earned them vital marks.
However, vital marks were lost by a ***fewcandidates*** because:

In (a),

they failed to:
- supply consistent burette readings
- supply the correct units to the table of burette readings

they:
- cancelled their tables of burette readings
- 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 lost vital marks because they failed to:
- supply the correct unit.
- convert the concentration in *g dm^{-3}* to *mol dm^{-3}*;
- supply their final answers to **three** significant figures.

In (b) (ii),
- few candidates failed to:
- supply the correct mole ratio of*1:5*;
- change subject correctly;
- substitute correctly;
- evaluate correctly;
- supply their final answers to **three** significant figures;
- supply the correct unit *(in mol dm^{-3})* to the molar concentration.

In (b)(iii),
- few candidates lost marks because they:
- used the concentration of **B** instead of **A** to calculate the moles;
- supplied their final answers to either less than or greater than***three significant figures.***
- only about 10% of the candidate 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.

Question 2

***C** and **D** are inorganic salts. Carry out the following exercises on them. Record your observations and identify any gas(es) evolved. State the conclusions you draw from the result of **each** test.*
*Credit will be given for strict adherence to the instructions, for observations precisely recorded and for accurate inferences. **All** tests, observations and inferences **must** be clearly entered in your answer booklet, in **ink** at the time they are made.*

*(a) Put all of **C** in a test tube and add about 5cm^3 of distilled water. Shake thoroughly and test the resulting solution with litmus paper. Divide the solution into **three** portions.*
(i) To the first portion, add $NaOH_{(aq)}$ in drops, then in excess.
(ii) To the second portion, add $NH_{3(aq)}$ in drops, then in excess.
(iii) To the third portion, add $AgNO_{3(aq)}$ followed by $HCI_{(aq)}$.
*(b) (i) Put all of **D** in a test tube and add about 5 cm^3 of distilled water. Shake thoroughly and feel the test tube.*
(ii) To about 2 cm^3 of the solution add $HC1_{(aq)}$.

This question was generally better answered by candidates in many centers. 50% of the candidates scored over half of the allocated marks.

Lose of marks by candidates in this question could be attributed to mainly **not**:

- following instructions;
- showing evidence of dissolving the salts **C** and **D** in water resulting in ***wrong tests;***
- feeling the test tube after dissolving **D** in distilled water;
- stating wrong formulae for ions e.g. Cl^{2-}, SO_4^{-}, SO_4^{+}, Cu^{+}, CO_3^{+}, 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;***
- 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 correct presentation of the table could have been as follows:

	Test	**Observation**	**Inference**
(a)	**C**$_{(s)}$ + H_2O + shaking Resulting solution + litmus paper	**C** dissolved to form a blue/greenish solution. Solution turns blue litmus paper red	Solution is **acidic**
(i)	1st portion + $NaOH_{(aq)}$ In drops Then in excess	Blue precipitate Precipitate insoluble	**Cu^{2+}** present
(ii)	2nd portion + $NH_{3(aq)}$ In drops Then in excess	Light/pale blue precipitate Precipitate dissolves to form a deep blue solution	**Cu^{2+}** present
(iii)	3rd + $AgNO_{3(aq)}$ **+** dil.HCl (excess)	**White** precipitate Precipitate **insoluble**	**Cl^-/S^{2-}/SO_3^{2-}/CO_3^{2-}** **Cl^-**present
(b)(i)	**D** + distilled water Touching/feeling	D dissolved to form a colourless solution Test tube feels cold on touching	Dissolution is endothermic
(ii)	**D$_{(aq)}$**+ $HCl_{(aq)}$	Effervescence occurred Colourless and odourless gas which turned lime water milky was evolved	CO_2 from CO_3^{2-} or HCO_3^-

Question 3

*State the **observations** that would be made when each of the following reactions is carried out in the laboratory:*

(a) addition of 2 cm^3 of bench H_2SO_4 to 2 cm^3 of barium chloride solution.

(b) addition of 2 cm^3 of dilute hydrochloric acid to 1 g of powdered iron(II) sulphide (FeS).

(c) addition of 2 cm^3 of dilute hydrochloric acid to 1 g of iron filings and allowed to stand for sometime.

- Most candidates lost vital marks for failing to state the colour:
- Of the $FeCl_2$ formed when FeS reacts with $HCl_{(aq)}$ in (b).
- Change of $FeCl_2$ from **green** to **brown** when the reaction mixture was left to stand for a while in (c).
- A few other candidates lost marks for not being able to describe the:
- Colour of the precipitate formed in (a).
- Smell of the gas evolved in (b)

An alternative way of presenting the results of these tests is given in the table below:

	TEST	**OBSERVATION**
(a)	$BaCl_{2(aq)}$+ $H_2SO_{4(aq)}$	**White** precipitate
(b)	$FeS_{(s)}$ + $HCl_{(aq)}$	– Effervescence/gas evolved – Gas has rotten egg smell. – Green solution formed.
(c)	Iron filings + $HCl_{(aq)}$ On standing for a while	– Effervescence occurred – Colourless, odourless gas evolved. – Solution changed from green to brown on standing.

RECOMMENDATIONS / SUGGESTIONS

- Schools should endeavor to provide vital information, in the **ReportForm**, 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.***
- W.A.E.C. (**Gambia Branch**) should endeavor to send at least one Chemistry representative to the Preliminary Coordination Meetings in Ghana/Nigeria so that he/she could be part of the team preparing the Final Marking Schemeand to be able to share his experiences from his personal encounters during marking sessions.
- The Chemistry Subject Officer should be present in the Main Coordination Meetings before the commencement of the marking exercise.
- Item writers should endeavor to **LabTestthechemicals** to fully ascertain their reactions under practical situations.

For instance, when $K_3Fe(CN)_6$ is added to an Fe^{2+} salt solution, the result is a dark/deep blue <u>precipitate</u> and not just a dark/deep blue <u>coloration</u>as stated in the Marking Scheme. Coloration is too open. It can be a precipitate or solution or residue. Let's be specific.

- In question 3, Alternative A, candidates were asked to state the observation that would be made on adding say 2 cm^3 of bench H_2SO_4 to 2 cm^3 of barium chloride solution.

In such a situation, you would observe a <u>white precipitate</u> and not $BaSO_4$ or barium tetraoxosulphate (VI) as stated in the marking scheme.
There is no way you can observe the <u>formula</u> or <u>name</u> of the white precipitate or any other substance in the test tube. No mark should have been allocated to the formula or name because these are <u>not observable features</u>.

- Students who scored less than 35% in the final mock exam in grade 12 should be exempted from taking the WASSCE in chemistry paper that year; instead they should enter for the WASSCE the following year so as to give them more time to be better prepared for the exam.

- 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 students 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 in the marking scheme. If it is **threesignificantfigures**, let's stick to ***three*** to help our Examiners and candidates alike.

In some years and some calculations, the Scheme would say 2 or 3 significant figures whilst in other years and calculations it would be silent on the number of significant figures. This leaves the allocation of the marks the discretion of the Examiner based on previous years.

In this case, what would be the position of New and/or Inexperienced Examiners.

We are measuring the performance of different candidates at different times but at the same level. So we need consistency.

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CHIEF EXAMINER'S REPORT
CHEMISTRY 3

Alternative B

1. GENERAL COMMENTS

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 of the candidates 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 displaced 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
- Attempting all the questions
- Using correct units to numerical answers
- 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

The low performance level by candidates could be attributed to:

- Stating wrong inferences.
- Misinterpretation of questions.
- Making incomplete or wrong observations.
- Lack of effort and adequate preparation for the examination.
- Failing to give numerical answers to 2 or 3 significant figures.
- Recording burette readings to an impossible degree of accuracy e.g. 16.77 cm^3, 23.01 cm^3, 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. CU^{2+}, cu^{2+}, CL^-, CO_3^{2+}, etc.

4. **DETAILED COMMENTS ON INDIVIDUAL QUESTIONS**

Question 1

***D** is a solution of a dibasic acid, H_2Y containing 1.4g in 500cm^3 solution. E is 0.105 $moldm^{-3}$KOH.*

(a) *Put **D** into the burette and titrate it against 20.0 cm^3or 25.0 cm^3 portions of **E** using methyl orange as indicator. Repeat the titration to obtain **concordant** titre values.*
*Tabulate your results and calculate the average volume of **D** used.*
The equation for the reaction is:
$H_2Y_{(aq)} + 2KOH_{(aq)} \rightarrow K_2Y_{(aq)} + 2H_2O_{(1)}$

(b) *From your results and the information provided, calculate the:*
(i) *concentration of **D** in $moldm^{-3}$;*
(ii) *molar mass of H_2Y;*
(iii) *relative atomic mass of Y;*
(iv) *number of hydrogen ions in 1 dm^3 of **D**.*
[$N_A = 6.02 \times 10^{23}$]

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, vital marks were lost by a ***fewcandidates*** because:

In (a),

- they failed to:
- supply consistent burette readings
- supply the correct units to the table of burette readings
- they:
- cancelled their tables of burette readings
- 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 mole ratio *(of 1:2)* of the acid to the base;
- change subject correctly;
- substitute correctly;
- evaluate correctly;
- supply their final answers to **three** significant figures;
- supply the correct unit *(in mol dm^{-3})* to the molar concentration.

In (b)(ii),

- few candidates failed to:
- Convert the concentration from *g cm^{-3}* to *g dm^{-3}*;
- Supply the correct unit *(in g dm^{-3})* to the mass concentration of the acid;
- Supply the correct unit *(in g mol^{-1})* to the molar mass of the acid;
- Supply the molar mass of the acid to ***three significant figures.***

In (b)(iii),

- 90% of the candidate who attempted it were able to score the required marks.
- However, marks were lost by a few candidates because they:
- Supplied the unit of *g mol^{-1}* to the relative atomic mass of **Y**.

  Relative atomic or molecular mass has no unit.
- Supplied more significant figures than necessary to the relative atomic mass of **Y**.

In (b)(iv),

- Less than 1% of the candidates were able to write ionization equation for the acid as follows:

  $H_2Y_{(aq)} \rightarrow 2H^+ + Y^{2-}$
- Over 95% of the candidates did not use the ***2 moles of hydrogen ions*** in calculating the number of moles of hydrogen ions. They ignored the fact that the acid is ***dibasic.*** The correct evaluation could have been:

  $(2 \times C_D \times 6.02 \times 10^{23})$ mol.

Question 2

***F** is a double salt. Carry out the following exercises on **F**. Record your observations and identify any gas(es) evolved. State the conclusions you draw from the result of **each** test.*

*(a) Put all of **F** in a beaker and add about 10 cm^3 of distilled water. Stir the resulting solution thoroughly. Test the solution with litmus paper.*

(b) (i) To about 2 cm^3 of the solution, add $BaC1_2$ solution followed by $HC1_{(aq)}$.

(ii) To another 2 cm^3 portion of the solution, add $NaOH_{(aq)}$ in drops and then in excess. Heat the mixture.

(iii) To another 2 cm^3 portion of the solution, add $K_3Fe(CN)_6$ solution.

This question was generally better answered by candidates in many centers. 50% of the candidates scored over half of the allocated marks.

Lose of marks by candidates in this question could be 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. Cl^{2-}, SO_4^{-}, SO_4^{+}, Al^{2+}, Zn^{+}, NH_3^{+}, 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;***
- 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)	**F**$_{(s)}$ + distilled water + stirring **F**$_{(aq)}$ litmus paper	Turns blue litmus paper red	Solution**F** is acidic
(b)(i)	**F**$_{(aq)}$ + $BaCl_{2(aq)}$ **+** dil.HCl (excess)	**White** precipitate Precipitate **insoluble**	**S^{2-}/SO_3^{2-}/SO_4^{2-} /$CO_3^{2-}$$SO_4^{2-}$**present
(ii)	**F**$_{(aq)}$ + $NaOH_{(aq)}$ In drops Then in excess + heat	Green(gelatinous)precipitate Precipitate **insoluble** Colourless gas with pungent smell evolved. Gas turns damp red litmus paper blue / forms dense white fumes with HCl. Precipitate turns reddish brown on standing.	**Fe^{2+}** **Fe^{2+}** **Fe^{3+}**from**Fe^{2+}**
(iii)	**F**$_{(aq)}$ + $K_3Fe(CN)_{6(aq)}$	Deep blue/dark blue/Prussian blue precipitate formed.	**Fe^{2+}** confirmed.

Question 3

*A solid sample is suspected to be **either** glucose, sucrose **or** starch. Using only **two** chemical tests describe how the solid could be identified.*

Majority of the candidates lost 3 vital marks for failing to mention **heat** in the test for glucose.
Almost all the candidates failed to infer that:
Glucose or sucrose is present when the test is negative for starch and
Sucrose or starch is present when the test is negative for glucose.

The table below shows an alternative way in which the tests could have been presented:

	TEST	OBSERVATION	INFERENCE
(a)	Sample + distilled water	Sample dissolved.	Sample is soluble.
(b)	Solution + Fehling's or Benedict's solution + **heat** **OR** Solution + Tollen's reagent + **heat.**	**Brick-red**precipitate. No visible reaction. **OR** Silver mirror deposit on wall of test tube. No visible reaction.	**Glucose**present. Sucrose/starch absent. **OR** **Glucose** present. Sucrose/starch absent.
(c)	Solution + iodine solution.	**Blue-black**colouration. No visible reaction.	**Starch** present. Glucose/sucrose absent.

RECOMMENDATIONS / SUGGESTIONS

- Schools should endeavor to provide vital information, in the **ReportForm**, 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.

- W.A.E.C. (**Gambia Branch**) should endeavor to send at least **one** Chemistry representative to the Preliminary Coordination Meetings in Ghana/Nigeria 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.

- The Chemistry Subject Officer should be present in the Main Coordination Meetings before the commencement of the marking exercise.

- Item writer should endeavor to **Lab Test the chemicals** to fully ascertain their reactions under practical situations.

For instance, when $K_3Fe(CN)_6$ is added to an Fe^{2+} salt solution, the result is a dark blue precipitate and not just a dark blue colorationas stated by the Marking Scheme. Coloration is too open. It can be a precipitate or solution.

- In question 3, Alternative A, candidates were asked to state the observation that would be made on adding say 2 cm^3 of bench H_2SO_4 to 2 cm^3 of barium chloride solution.

In such a situation, you would observe a <u>white precipitate</u> and not $BaSO_4$ or barium tetraoxosulphate (VI) as stated in the marking scheme.
There is no way you can observe the <u>formula</u> or <u>name</u> of the white precipitate or any other substance in the test tube. No mark should have been allocated to the formula or name because these are <u>not observable features</u>.

- That students who scored less than 35% in the final mock exam in grade 12 should be exempted from taking the WASSCE in chemistry paper that year; instead they should enter for the WASSCE the following year so as to give them more time to be better prepared for the exam.

- 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 students 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. If it is **threesignificantfigures**, let's stick on ***three*** to help our Examiners and candidates alike.

In some years and some calculations, the Scheme would say 2 or 3 significant figures while in other years and calculations it would be silent on the number of significant figures. This leaves the allocation of the marks the discretion of the Examiner

We are measuring the performance of different candidates at different times but at the same level. So we need consistency.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
HEALTH SCIENCE 2

1. GENERAL COMMENTS

The questions for the Health science ESSAY (Paper 2) was standard and the questions 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 75 % of the syllabus brought for the examination. The few candidates who were ill 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 in order to understand what it requires before answering it.
The marking scheme was explicit, for candidates who prepared themselves well for the examination to score good marks. About 40% of the candidates scored good marks, 30% 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 rural and urban candidates. The latter's performing below expectation.

2. CANDIDATES' STRENGTH

The candidates showed improvement in their ability to:
Give straight forward answers;
State the functions of proteins;
State observable inherited features in humans;
List the ways of preventing the spread of HIV/AIDS;
List the relief materials that should be given to victims of fire disaster;
Give the methods of refuse disposal;
Give the functions of the vertebral column;
List the ways of caring for the hair;
State the factors that promote healthy living.

3. CANDIDATES' WEAKNESS

The candidates' weaknesses include their inability to:
Write good and simple English Language;
Answer one question number on the same page;
Spell words and biological terms correctly;
Use terms correctly in a sentence;
Arrange ideas in a logical order;
Logically present their ideas;
Correctly write question numbers;
Give enough appropriate answers without repetition;
Draw diagrams accurately and neatly;
Correctly label parts of diagrams
Legibly write their answers for examiners to read.

4. SUGGESTED REMEDIES

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;
Teachers should endeavour to cover the syllabus;
Candidates should understand the questions before answering them;
The school authority should monitor to ensure that the teachers adhere to their curriculum delivery plan;
Appropriate external monitoring to improve teacher and students performances;
Teachers should read the chief examiners report in order to improve the candidates' technique of answering questions.
Teachers should endeavour to improve students' skills of drawing biological diagrams.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A (30 MARKS)
*Answer **all** questions.*

Question 1

*(a) List **four** constituents of protein.*

This question was well answered by only 25% of the candidates. Most of the candidates did not understand the meaning of constituents and ended up listing the sources of proteins.

*(b) State **two** functions of proteins.*

This question was well answered by almost 75% of the candidates. Almost 255 of the candidates wrote their points twice. Eg body building and for the growth of cell as different points which attract the same point.

Question 2

*(a) Name **four** structures of a typical animal cell.*

This question was well answered by **60%** of the candidates. 50% of the candidates who answered this question lose points because wrong spellings.

*(b) Mention **four** observable inherited features in humans.*

This question was well answered by almost 60% of the candidates. About 30% of the candidates were writing non observable features like blood group and genes.

Question 3

Draw and label fully a motor neurone.

The drawing of this diagram posses a great problem to the candidates. Half of the diagrams were very small with poor quality lines and wrong spellings for their labeling. This question was not attempted by 30% of the candidates.

Question 4

Mention two natural methods of family planning.

Only half of the candidates answered this question correctly. About 40% were only listing natural and artificial methods of family planning. The spelling of the methods also poses a great problem.

Question 5

*State **four** ways of caring for people with HIV/AIDS.*

60% of the candidates answered this question well. But 30% were listing methods of prevention for this question. Others were repeating their points. Eg stop sharing: sharp material; blades; needles which are all the same point.

Question 6

*State **four** ways of preventing the spread of HIV/AIDS.*

About 60% of the candidates answered this question well. Although 20% repeated their points.

Question 7

(a) (i) What is artificial respiration?

Only 30% of the candidates answered this question well. About 30% were explaining aerobic and anaerobic respirations.

*(ii) State **three** symptoms of a victim of epileptic fits.*

This question was answered by only 305 of the candidates. The rest were writing symptoms of other diseases.

(b) Explaining the following terms;

(i) First aid;
(ii) First aid kit;
(iii) Emergency conditions.

First aid and first aid kit were well answered by 50% of the candidates. About 30% were explaining the first aider as their answer. Emergency condition was not properly explained whilst others did not even attempt it.

(c) Mention six relief materials that should be given to victims of fire disaster.

This question was answered by half of the candidates. 25% misunderstood the question. They listed the materials found in a First aid kit.

Question 8

*(a) (i) State **three** methods of refuse disposal in homes.*

This question was answered by 70% of the candidates. About 30% of the candidates repeated their points. This makes them to lose points.

*(ii) State **two** advantages and disadvantages each of using of waste disposal vans to evacuate refuse in towns.*

Advantages;
Disadvantages.

This question was poorly answered. As 55% of the candidates were writing the advantages and disadvantages of the methods they named in a) I) above instead of the waste disposal van.

(b) Explain the following terms as used in environmental health;
(i) waste disposal;
(ii) pollution;
(iii) sanitation.

This question was answered by 40% of the candidates. The remaining candidates did not completely define the terms: waste disposal; pollution and sanitation. As a result lose points because of incomplete definition.

(c) State six measures to avoid safety hazards in an industry.

This question was answered by only 35% of the candidates. Most of the candidates did not understand the question. They wrote things different from measures to avoid safety hazards in the industry. About 20% wrote the same point many times which does not score any point. Eg provide protective gadgets, gloves, protective shoes, protective jackets, which are all under protective clothing.

Question 9

*(a) (i) Name **two** minerals found in bones.*

This question was well by 70% of the candidates. About 20% were listing food nutrients.

(ii) Draw and label fully a thoracic vertebra.

Half of the candidates scored less than half of the mark allocated this question. The line qualities of the diagrams were very poor, small for others and wrongly labeled.

*(iii) State **two** functions of the vertebral column.*

This question was well answered by 60% of the candidates.

*(b) State **three** ways of caring for the hair.*

This question was well answered although 30% of the students had problems in spelling plaiting, cream, shaving and combing.

*(c) (i) State **three**determinants of correct posture.*

This question was well answered, but 30% were repeating the same points as correct sitting, standing and walking posture which is the same point.

*(ii) State **five** factors to promote healthy living.*

This question was well answered by almost half of the candidates. Repetition of point was major problem here as well. Eg eating balanced diet, eating healthy food, proteins and vitamins all of which attract one mark.

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 who prepared well for the examination.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
HEALTH SCIENCE 3 PRACTICAL

1. GENERAL COMMENTS

The questions were appropriate for the level they were meant for. The standard was with the scope of the syllabus. The general performance of the candidates was below average. However, there were excellent scripts from candidates who were well prepared for the examination.

On the other hand, it appeared that some schools did not complete the syllabus and their candidates were unable to attempt all the questions in Health Science Paper 3.

Based on the answers given to the questions, it is clear that majority of the candidates failed to understand the questions asked. It is therefore good for candidates to learn how to read, analyse and interpret questions well for a better performance. Some candidates produced weak answers to questions that require the application of knowledge to situations, rather than simple recall of facts.

The marking scheme was flexible, which made enough prevision for candidates who had prepared themselves properly for the examination to gain very good marks. About 20% of the candidates scored very good marks, 30% with average scores and the rest with very poor marks.

2. CANDIDATES' STRENGTHS

(i) Ability to adhere to instructions by attempting all questions.
(ii) Ability to define/reproduce terms correctly.
(iii) Name the structures associated with the organ.
(iv) Legible presentation of materials by most of the candidates.
(v) Ability to identify the conditions as illustrated in diagram A and B, mention the materials used in condition B and state the symptoms experienced by the victim in condition B.

3. CANDIDATES WEAKNESSES

(i) Inability to identify diagrams
(ii) Inability to spell correctly scientific words.
(iii) The habit of recopying the questions all over again.
(iv) Failing to attempt all the questions as required.
(v) Inability to express themselves in simple English.
(vi) Inability to write legibly for examiners to see.

4. SUGGESTED REMEDIES

Teachers should use prescribed syllabus for exams, works hard to cover the syllabus and embark on revision before final exams.

Teachers need to have the passion for teaching and learning.

Spelling tests should be carried out intermittently to help improve the standards of students/candidates.

On the issue of poor hand writing, teachers should insist on their students writing legibly throughout the school year.

Trained and qualified teachers should be employed and well monitored.

Principals'/Heads of school should make funds available for field trips to teachers and students for clear visibility and understanding.

Charts/Videos should be used by teachers as part of their teaching aid to enhance easy and efficient learning.

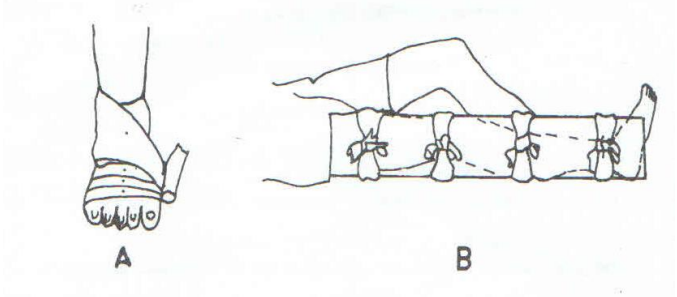
Teachers should constantly guide their students on how to read, interpret and answer questions so as to score good marks.

Teachers should always embark on practical lessons for better performance in Science.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

*Study the diagram below and answer questions **1**(a), (b), (c) and (d).*



*(a) Identify the conditions in **A** and **B**.*

Expected answers: A – dislocation/sprain B – fracture

*(b) Mention two materials used in condition **B***

Expected/correct answers – splint, Bandage

*(c) State four symptoms experienced by the victim in condition **B.***

Symptoms include

severe pain
inactive/immobility/loss of function
discoloration of the damaged spot
bleeding may occur
part concern swell/tenderness
broken bone.

(d) *State **two** first aid that should be given to the victim in condition **A**.*

In this question, more than 70% of the candidates were able to identify the condition in diagram A and B, mention the materials used in condition B, state the symptoms experience by the victim in condition B and the first aid treatment that could be given to the victim in condition A.

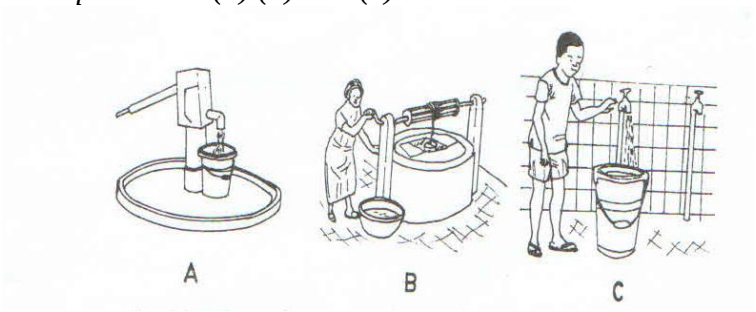
First aid treatment include:

support injured part in a comfortable position
use cold water/ice block/cold compress on the affected part.
use handkerchiefs or a bandage to bind the affected part/immobilise

keep injured part elevated.

Question 2

*The diagrams below illustrate types of water used in homes. Study them and answer questions **2**(a) (b) and (c).*



(a) *(i)* *Name the types of water in the diagram labelled **A**, **B** and **C**.*

(ii) *State **two** advantages of the type of water in diagram **C**.*

(iii) *State **two** disadvantages of the type of water in diagram **C**.*

(b) *State **one** way in which the water in the diagram labeled **B** could be contaminated.*

(c) *Mention two stages that the water in the diagram labeled **C** should undergo before use.*

In question two (2), 60% of the candidates named the types of water in the labeled diagrams, state two advantages and two disadvantages of the type of water in diagram C and one way in which the water in the diagram labeled B could be contaminated.

However, only few, about 5% of the candidates were able to mention the two stages that the water in diagram labeled C should undergo before use, therefore loosing marks.

2a(i) Expected answers
A – borehole
B – well water
C – tap/pipe borne

(ii) – very potable/hygienic/safe
– not easily contaminated
– its operation does not require energy during fetching.

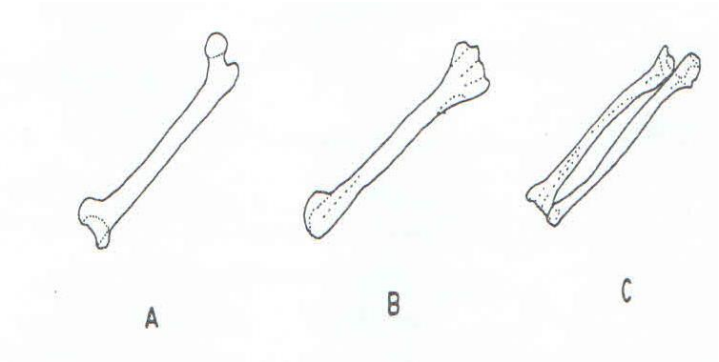
(iii) very expensive
– cost of maintenance is high
– source of water to be used is scarce

(b) Improper closure of the lid.
– dumping of dirts
– contamination from a near by sewage

(c) – filtration
– chlorination
– sedimentation
– flocculation/coagulation

Question 3

*The diagrams below illustrate bones in the human body. Study them and answer questions **3**(a) (b) and (c).*



*(a) (i) Name the diagrams labelled **A**, **B** and **C***
*(ii) Mention the type of skeleton the diagram labelled **A**, **B** and **C** belong to:*

*(b) Name **two** materials: found in the diagram labeled **A**, **B** and **C**.*

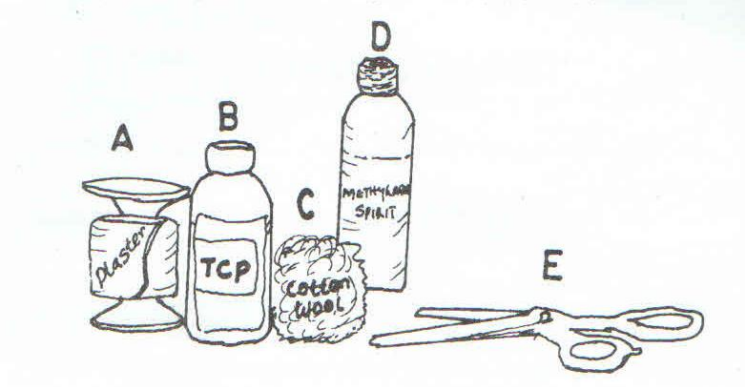
*(c) Mention **two** diseases that could affect the diagrams **A**, **B** and **C**.*

In this question, 60% of the candidates were able to identify the diagrams labeled A, B and C as femur, humerus and ulna and radius respectively. However, a good number of the candidates were mixing it up. E.g. humerus in place of femur and tibia and fibula in place of radius and ulna, thus loosing marks.

Quite a good number answered questions 3(a) (ii) and (b) correctly. However, question 3(c) was correctly answered by less than 20% of the candidates.

Question 4

*The diagrams below illustrate materials used in the treatment of injuries. Study them and answer question **4**(a), (b) and (c).*



(a) *State one function each of the diagrams labeled **A, B, C, D** and **E***

(b) *Mention **four** places in which the illustrated materials could be found.*

(c) *List one other material that serves the same purpose as the material in the diagram labeled **A**.*

4(a) *Expected answer/correct answers*

Function of diagram A.

for covering cuts/wounds
for holding materials such as gauze/cotton wool/bandage

Function of diagram B

for cleaning/disinfecting wounds and cuts
for cleaning mouth/mouth wash.

Function of diagram C

for applying liquid or cream on the skin
for dressing/cleaning/covering wound

Function of diagram D
for cleaning cuts/wound/bruises
to sterilize materials

Function of diagram E
for cutting materials/plaster/bandage

(b) places the labeled illustrated materials could be fond.

in the first aid box
home
schools
industries/factories
offices
hospitals
playground/sports field

(c) other materials that can serve the purpose of diagram include,bandages.

Question 5

(a) What is posture?

*(b) Mention **four** postural defects in humans.*

*(c) State **four** characteristics of correct posture.*

1(a) Correct answer
Is the position the body is held/aligment of the body, while standing/walking/running.

Wrong answer
Posture means jumping/walking/running

(b) Postural defects in humans

Correct spellings	Wrong spellings
– Scoliosis	Scolises
– kyphosis	kyprolysis
– Lordosis	Lordysisect.
– Bowleg	
– Flutfoot/club foot	
– K/knee	

NOTE: Spellings must be correct to score

(c) Characteristics of correct posture
– standing erect/upright
– head balance
– knee are straight

– feet squarely on the ground
– weight of body evenly distributed
– bones and muscles are alignment

Wrong answers
– Good sitting posture
– Good standing posture
– Good running posture
– Good walking posture

Question 6

*(a) State **four** ways of controlling insect-borne diseases*

*(b) State **two** major sources **each** of the following food nutrients:*

(i) plant protein
(ii) animal protein
(iii) iodine

Another well attempted question by almost all the candidates, however, some of them gave wrong answers which did not earn them any mark. Candidates should be able to apply what they learnt in real life situations.

6(a) – keep the surrounding/environment clean
– kill the insect/use of insecticide/brooms
– wear protective dressing/rub insect repellant
– keep houses/surroundings ventilated
– keep food covered
– drain stagnant water
– use net on beds/windows/doors

b(i) sources of plant protein
–soya bean
– cowpea/beans/legumes
– peas/groundnut
– maize
– wheat

(ii) Sources of animal fat
–meat/pork/mutton
– cheese
– butter
– egg
– milk

(iii) Source of iodine
– fresh fish
– sea food
– green vegetable
– iodized salt

Question 7

*(a) Name **five** nutritional deficiency disease in humans.*
(b) Describe how to test for protein in a food substance.

90% of the candidates correctly answered question 7(a). However, question 7(b) was attempted by less than 10% of the candidates and in most cases giving wrong answers. This indicates that they have not been involved in full practical work.

Question 8

*(a) Give **one** advantage of drug education.*

(b) Explain the following terms in relation to drug use:

(i) dependence;
(ii) abuse;
(iii) rehabilitation

80% of the candidates who attempted this question performed poorly. They cannot clearly explain the terminologies in relation to drug use, hence loosing marks. However, question 8(a) was correctly answered by majority of the candidates.

8(a) Advantages of drug education
– provide useful information on the effects of drug abuse, dependence and misuse.
– create awareness on substandard drugs
– disabuse/discourage/self medication

(b) (i) Dependence Correct answer

This is using/taking of drugs on a periodic or continuous basis without doctor's prescription.

Wrong answer
Depending on others for drugs

(ii) Abuse Correct answer

This is the indiscriminate/excessive use of drugs
for non-medical purpose or specific aliment that could adversely affect the physical, mental and social emotional health of an individual.

This is when someone abuse your mother or family.

(iii) Rehabilitation
– This is the process of maintaining/improving/restoring a drug victim.
– to live a normal life by helping/assisting the individual to stop taking drugs.
– through constant monitoring/total integration into family/society.

Wrong answer
This is the process of making something that is spoiled/damaged.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
PHYSICAL EDUCATION 2

1. GENERAL COMMENTS:

The questions for the WASSCE 2018 for school candidates for physical Education 2 were straightforward and within the limit of every good candidate. Generally, a wide variation in the performance of candidatesas observed from different centers. Like the previous years, the paper was framed to test candidates' knowledge of fundamental movements and body mechanics, history and philosophy of physical education in addition to human anatomy and exercise physiology. While some candidates presented their work in logical and acceptable manner, some from certain centers submitted their work in a haphazard manner that deserved no commendation.

2. CANDIDATES' STRENGTHS

Candidates who covered the syllabus as expected presented their work in a well laid out manner that was highly acceptable. Such exemplary work worth appreciation.

3. CANDIDATES' WEAKNESSES

- I ll preparation for the examination by a greater number of candidates.
- Some candidates wrote their answers in un-recommended coloured ball point pens and pencils which may be attributed to examination irregularity that may lead to cancellation of such candidate's entire paper.
- Poor spelling of operational terms

4. SUGGESTED REMEDIES

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

Question 1

*(a) Mention the **four** phases of the discus throw in athletics.*
(b) Explain the following terms:

(i) round robin in tournament;
(ii) scratch line in athletics.

This is a popular question attempted by over 98% of the candidates. Over 58% of those who attempted this question put their answers in a way thatshows that they were well thought before the examinations. On the average, Q1 (b) (i) and (ii) gave hard time to the majority of candidates and their scores were very low.

Question 2

*(a) (i) Name **one** facility in football game.*
*(ii) List **three** equipment used by the centre referee in football game.*
(b) Explain the following terms in volleyball game:

(i) side- out;
(ii) time-out.

This is another popular question attempted by well over 70% of the entire candidates. The marks scored by candidates in relation to Q2 (a) (i) and 2 (a) (ii) were commendable. But, in Q 2 (b), candidates could not satisfy the examiners because they were confused with the sub- question and their submissions attracted gross misinterpretation of the terminologies in the question. In fact, the majority of candidates were unable to explain clearly the terminologies stated thereof; hence, their scores were unsatisfactory.

Question 3

(*a) (i) Name the **three** types of competition in table tennis game.*
(ii) Explain how the player that would serve first is determined in table tennis game.

*(b) Mention **five** skills in table tennis game.*

This was not very popular; only about 27% of the candidates opted for this question. Over 80% of those who attempted this question could not get a fair share of the marks allocated in relation to Q3 (a) (i) and (ii). In any case, the (b) part of the question was well answered by those who opted for it.

SECTION A

Question 4

(a) (i) What is sports competition?
(ii) Mention three examples of international sports competition.

*(b) State **four** objectives of modern Olympic Games.*

Question 4 is drawn from a familiar topic in the syllabus. It is very popular among the candidates. Candidates' performance was relatively good in relation to Q 4 (a) (i) and (ii).
On the other hand few marks were lost due to candidates' inadequate ability to state vividly four objectives of modern Olympic Games .

Question 5 *(a)* *(i) Explain the term seeding in tournament.*
*(ii)Mention **two** games in which seeding could be used.*

*(b) State **five** advantages of single elimination in a tournament.*

This was not a popular question. Only about 22% of the candidates opted for it and slight above 64% of those who attempted it scored marks grossly below expectation.

*Question 6(a) (i) List **four** movements possible at a ball and socket joint.*
*(ii) State **four** functions of the skeletal system.*

*(b) Name the **two** muscles that aid the process of respiration.*

A very popular question. A good number of candidates were able to satisfy the commendable responses from well over 88% of those who attempted it. On the contrary, significant percentage of candidates lost the entire marks allocated to Q.6 (b) due to inadequate answers.

*Question 7(a) (i) List the **three** end- products of aerobic respiration.*
*(ii) Name the **three** types of muscles in the body.*

*(b) Name **four** types of synovial joint.*

This is not a popular question. Though; the (a) (i) part of it was excellently attempted by over 54% of the candidates that opted for it. On the contrary, Q7 (a) (ii) did not receive fair treatment in terms of candidates submissions; thus, woeful marks were recorded. In any case, Q7(b) was poorly answered by over 68% of the candidates that attempted it, hence their marks were valuable.

*Question 8(a) (i) List **five** conditions that require First Aid.*
*(ii) State **two** methods of stopping bleeding.*

*(b) State **three** ways of caring for sportswear.*

A very popular question with commendable responses from over 80% of the candidates that opted for it. Generally speaking, this was one of the best attempted questions by the candidates. infect candidates actually indicated that they were well taught and that they understood those topics in the syllabus.

Question 9 *(a)* *State **five** values that can be acquired by an individual through participation in spots for national development.*
(b) *Mention **five** outdoor recreational activities in which an adolescent could be involved.*

This was not a popular question. Only about 29% of the candidates opted for it and the sub-questions proved very difficult for the majority of candidates to tackle. In fact, the submission made by over 60% of those who opted for question (9) (a) was woeful. The unpopularity of this question suggested that teachers hardly cover this section of the syllabus; consequently, students normally have little or no knowledge about this topic. However, it is evident that candidates' submissions as regards Q. 9 (b) were excellent.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
PHYSICAL EDUCATION 3

Physical education 3 (Performance Test Examination) for the WASSCE Candidates 2018 has been hitch-free. Obviously, the questions followed the established pattern. The questions were direct, simple and all within the scope of the syllabus as candidates were required to apply practical demonstrations in relation to kinesiological principles of movement engineering. In fact, a large number of candidates were conversant with the desired skills; with many addressing simply the main issues raised in the questions.

There were some observable variations in the standard of practical demonstrations exhibited by candidates in different centres. In most of the centres, candidates portrayed quality evidence of absolute familiarity of the repertoire of the requirements of the syllabus; hence, their standard of practical demonstration was extremely commendable.

Comparatively, there were sufficient evidence of general improvement in candidates' performance in relation to the present Performance Test Examination compared to the previous Test Of Practice Examination. Indeed, no candidate seemed unable to complete the practical test and there was no confusion over the rubrics of the paper; except in a situation where, perhaps; due to administrative lapses, the materials required were either provided too late or not provided at-all. Above all, it is wise and necessary to place on record that there is an outstanding increase in the number of entrants this year than the previous year.

1. CANDIDATES' WEAKNESSES

Common areas of weaknesses among candidates include:

- The trend of performing certain skills by most candidates in certain centres showed poor quality tuition and lack of adequate preparedness for the examination.
- Negative attitude of the majority of candidates towards Athletics and games.
- In ability of same candidates to read and actually interpret the requirements of some of the questions due partly to poor understanding of English language

2. CANDIDATES' STRENGTHS

The majority of candidates exhibited an outstanding degree of positive performance due to the following reasons:

- The desire to do well was highly noticed from even the weak candidates
- Following appropriate sequence in skills demonstration.

3. Detailed comments on individual questions

Question 1

Demonstrate skillfully a discus throw covering a good distance, paying attention to the grip, stance, release and recovery.

A compulsory and popular question attempted by slightly above 98% of the candidates that sat to the examination. Appropriate skills were applied by over 80% of the candidates that opted for it and their scores were highly commendable.

Question 2

Skillfully execute the 200metres race through the phases of start, take-off, running form and finish as fast as possible.

This question allowed candidates a choice of it and there was a significant leaning towards it than question number 3. Indeed, the performance of candidates on this question was generally good with bulk scoring very high marks.

Question 3

In the 3,000 metres race, demonstrate the start, take-off, running form and finish to return a good time.

This was not a popular question ; only insignificant number of candidates ventured into it and their performance was on the average.

Question 4

In a standing position, demonstrate a bounce pass in a basketball game against the wall.

This was very popular among the candidates with excellent skills and almost all that opted for it obtained valuable marks.

Question 5

From the goal line in a hockey pitch, skillfully demonstrate push pass into the field of play to cover a good distance.

Highly un-popular among the candidates . In fact, the majority of candidates from a reasonable number of centres did not choose this question.

Question 6

In a badminton game, execute a service such that the shuttle travels high and deep into the opponent's court.

This question was not very popular among the candidates. The majority of candidates that opted for it lacked concentration and coordination and their scores were disappointing.

Question 7

*In a table tennis game, demonstrate the skill of backhand drive while playing a rally against an upright surface for thirty **(30)**seconds.*

Another popular number that attracted highly coordinated skills from the majority of candidates and their marks were good.

Question 8

Skillfully perform cartwheel showing the stance, take-off, hand position, execution and recovery .

This question was very popular among the candidates and attracted beautiful skills and techniques from a greater percentage of candidates that opted for it.

Question 9

Skillfully perform handstand showing the stance, take-off, execution, body position and recovery.

This was unpopular and attracted unacceptable approaches from the majority of the candidates that opted for it. Only very few candidates could demonstrate the required skills accurately.

Comments On Difficulty Of The Questions:
The questions were of good standard and thus, reflected the length and breath of the syllabus.

Comments On Incorrect Or Ambiguous Questions Or Questions Outside The Requirements Of The Syllabus
The questions were structured in such a way that **they** were all correct and met therequirements of the syllabus. In fact, they lacked 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.

Recommendations

- For candidates' future performance improvement; the following have been suggested;
  As a cardinal need candidates must be introduced to intensive practical work early enough to enable them acquire the foundation designed to enhance fundamental skills development and independent of thought as apportioned to well planned curriculum essential to understanding effectively the main skills and techniques in relation to kinesiological principles of movement engineering.
- As a matter of absolute necessity, provisions must be made for the ADAPTED / ATYPICAL PHYSICAL EDUCATION to enable them fit into the system.

Recommended Text Book.
Standard **p**hysical and **H**ealth **E**ducation **F**or**S**enior **S**econdary **S**chools:
By High Elder Ray. A .Onwubiko

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
PHYSICS 2

1. GENERAL COMMENTS

The paper was quite appropriate for candidates who prepared well. Any candidate who prepared well should be able to score at least 50% on this paper.
The questions covered a wide range of topics across the syllabus. All the questions were directly testing candidates knowledge of the syllabus was poor compared to last year However, there are more candidates who scored 30 marks and above out of a total of 60 as compared to last year.

2. CANDIDDATE'S STRENGHTS

The general performance of the candidates was not up to the required expectation. However, about 35% of the candidates could define Strain and State it formula, binding energy, list the classes of magnetic materials, peaceful uses of nuclear energy, State the acronym of LASER and draw a velocity-time graph.

3. CANDIDATES WEAKNESS

About 65% of the candidates scored below 20 marks out of a total of 60 marks. Most of them were unable to use correct units, formula and cannot state and explain the following:

- Materials used for making optical fibres
- Intrinsic semiconductor
- Difference between P-type and n-type semiconductors
- Specific latent heat of vaporization
- Diffraction, Critical angle.

In summary, this is the deficiency of scientific expression or words.

4. SUGGESTED REMEDIES

Candidates' performance in subsequent examinations can be improved by considering the following suggestions.

- The candidate's should try to cover as much of the syllabus as possible and with all thoroughness. No part of the syllabus should be left out.
- Candidates need to be conversant with physics related formulae.
- Candidates need to expand their knowledge in physics through practical application of basic physics concepts.
- Candidates should be assessed constantly by teachers and necessary adjustment should be made to address their weakness.

5. **DETAIL COMMENT**

Question 1

(a) Define strain.
(b) A rubber band is stretched to twice its original length. Calculate the strain on the rubber band.

This question is asking the effect of force on elastic materials are about 90% of the candidates could not scores the full 3 marks.

Question 2

*State **three** materials used for making optical fibres.*

This was a simple question candidates are expected to list materials used for marking optical fibres. About 30% of those who attempted the question able to score full 3 marks.

Question 3

*Name **three** classes of magnetic materials.*

This was one of the popular question and about 60% of the candidates who attempted it score full 3 marks.

Question 4

(a) What is an intrinsic semiconductor?
(b) Distinguish between the p-type and n-type semiconductors.

This was poorly attempted question less than 25% scored a mark.

Question 5
A missile is projected so as to attain its maximum range. Calculate the maximum height attained if the initial velocity of projection is 200 ms^{-1}. [g = 10 ms^{-2}].

This was a popular question with almost all the candidates attempted it but only few were able to scored full 3 marks.

Question 6

A black body radiates maximum energy when its surface temperature T and the corresponding wavelength λ_{max} are related by the equation λ_{max} T = constant. Given the values of the constant and surface temperature as 2.9 x 10^{-3} mK and 57 °Crespectively, calculate the frequency of the energy radiated.

More than 50% of the candidates did this question. About a quarter at these who did it scored full mark of 3.

Question 7

(a) What does the acronym LASER stand for?
(b) What is a laser?

This question was attempted by about 55% of the candidates. It was quite troublesome. It is obvious that many teachers did not reach this topic. Many candidates tried to apply concepts of LASER. Few candidates were able to score full 3 marks.

Question 8

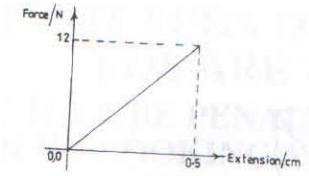
(a) Define uniform acceleration.
(b) Forces act on a car in motion. List the:

(i) horizontal forces and their directions;
(ii) vertical forces and their directions.

(c) A car starts from rest and accelerates uniformly for 20 s to attain a speed of 25 ms^{-1}. It maintains this speed for 30 s before decelerating uniformly to rest. The total time for the journey is 60 s.

(i) Sketch a velocity-time graph for the motion.
(ii) Use the graph to determine the:
(a) total distance travelled by the car;
(b) deceleration of the car.

(d)



The figure above illustrates force-extension graph for a stretched spiral spring. Determine the work done on the spring.

Question 9

*(a) List **two** factors **each** that affect heat loss by:*
(i) radiation;
(ii) convection.

*(b) State **two** factors that determine the quantity of heat in a body.*

(c) Explain the statement: The specific latent heat of vaporization of mercury is 2.72 x 10^5 J kg^{-1}.

(d) A jug of heat capacity 250 JK^{-1} contains water at 28 ℃. An electric heater of resistance 35 Ω connected to a 220 V source is used to raise the temperature of the water until it boils at 100 ℃ in 4 minutes. After another 5 minutes, 300 g of water has evaporated. Assuming no heat is lost to the surroundings, calculate the:

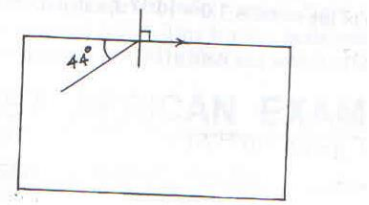
(i) mass of water in the jug before heating;
(ii) specific latent heat of vaporization of steam. [Specific heat capacity of water = 4200 J kg^{-1} k^{-1}].

Question 10

(a) Define diffraction.

(b) (i) Explain critical angle.

(ii)



The diagram above illustrates a ray of light passing through a rectangular transparent plastic block.

(A) Determine the value of the critical angle.
(B) Calculate the refractive index of the block.

(c) A pipe closed at one end has fundamental frequency of 200 Hz. The frequency f the first overtone of the closed pipe is equal to the frequency of the first overtone of an open pipe. Calculate the:

(i) fundamental frequency of the open pipe;
(ii) length of the closed pipe;
(iii) length of the open pipe.

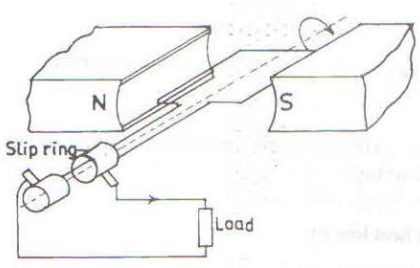
[Speed of sound in air = 330 ms^{-1}]

Question 11

(a) Define:

(i) reactance;
(ii) impedance in an a.c. circuit

(b)



The diagram above illustrates an a.c. generator. When the coil is rotated, an e.m.f. is induced in the coil.

(i) *Explain why an e.m.f. is induced.*
(ii) *State the purpose of the slip-rings.*
(iii) *Name and state the law used to determine the direction of the induced current.*
(iv) *State **two** ways to increase the induced e.m.f.*

(c) *A lamp is rated 12 V, 6 W. Calculate the amount of energy transformed by the lamp in 5 minutes.*

Question 12

(a) *Define binding energy in an atom.*
(b) *List **three** evidences to support the claim that X-rays are electromagnetic waves.*

(c) *List **three** peaceful uses of unclear energy.*
(d) *Light of wavelength 45×10^{-7} m is incident on a metal resulting in the emission of photo electrons. If the work function of the metal is 3.0×10^{-19} J, calculate the:*

(i) *frequency of the incident light;*
(ii) *energy of the incident light;*
(iii) *energy of the photoelectrons.*

[Speed of light = 3.0×10^{8} ms^{-1} , $h = 6.6 \times 10^{-34}$ Js].

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
PHYSICS 3 PRACTICAL ALT. A

1. GENERAL COMMENT ON THE PAPER

The standard of the practical questions for alternative A was quite appropriate for the level of the candidates. The questions selected covered the practical parts of the syllabus. All the questions were within the knowledge of the candidates.
The performance generally was impressive and varies much in comparison to the previous examination. However, very few candidates scored marks below 10 marks. Minority of the marks were above 30 out of 50 marks.

2. CANDIDATES' STRENGHT

Candidates exhibited some understanding in:
Drawing of graphs, tabulating reading, Precautions and Evaluation.

3. CANDIDATES' WEAKNESSES

Candidates showed some weaknesses in:
Accuracy, deduction, problems involving calculation and definition of terms.

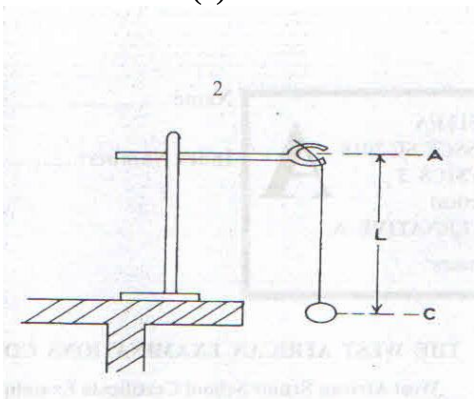
4. SUGGESTED REMEDIES

- Candidates needs to:
  prepare very well for the examination
- Access the past questions paper to be familiar with the formulae of the questions drawn before the actual examinations.
- Teachers need to review the chief examiner report regularly and try to address the weakness to the candidates in their various schools.
- Teachers in their various schools should endeavor to carry out more practical work for the candidates to perform.
- Teachers need to put more emphasis on the concept and build candidates knowledge in physics language.
- Candidates need to understand the various topics under which practical questions are drawn.

5. **DETAIL COMMENTS AT INDIVIDUAL QUESTION**

Question 1

(a)



You are provided with a pendulum bob, a metre rule, a stop watch, a retort stand with clamp and other necessary apparatus.

(i) *Suspend the pendulum bob from the clamp as illustrated in the diagram.*
(ii) *Adjust the pendulum such that **AC** = **L** = 90 cm.*
(iii) *Displace the pendulum bob slightly such that it oscillates in a vertical plane.*
(iv) *Measure and record the time **t** for 20 complete oscillations.*
(v) *Evaluate **T** and $\sqrt{\boldsymbol{L}}$.*
(vi) *Repeat the procedure for **four** other values of **L** = 80 cm, 70 cm, 60 cm and 50 cm.*
(vii) *Tabulate your readings.*
(viii) *Plot a graph with **T** on the vertical axis and $\sqrt{\boldsymbol{L}}$ on the horizontal axis.*
(ix) *Determine the slope, **s**, of the graph.*
(x) *Evaluate* $\boldsymbol{g} = \frac{4\pi^2}{S^2}$
(xi) *State **two** precautions taken to ensure accurate results.*

(b) *(i)* *Determine from your graph, the period of the pendulum for **L** = 75 cm.*
(ii) *A simple pendulum bob is set into simple harmonic motion. Sketch a diagram of the set up and indicate on it; the positions of:*

(a) *maximum velocity;*
(b) *maximum acceleration of the bob.*

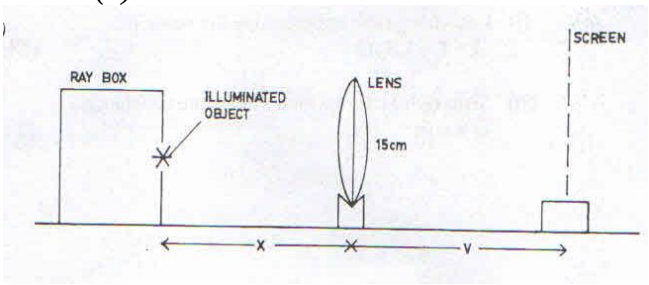
Candidates were to perform the following task among several others.

– Measurement an J recording of five different raw values of the separation hi between each of the five suspended points L of the pendulum and the time tasks for 20 oscillations.
– Evaluation of the periodic time T and $\sqrt{\boldsymbol{L}}$ etc.

A good number of candidates could not provide a simple table containing all the essential quanties as required. Candidates started the scale with T and $\sqrt{\boldsymbol{L}}$ axes from the origin (0,0) as demanded.

Question 2

(a)



You are provided with a metre rule, lens, screen, ray box and other necessary apparatus.

(i) *Set up the experiment as shown in the diagram above. Measure and record the diameter* $\boldsymbol{a_o}$ *of the illuminated object.*

(ii) *Place the object at a distance x = 25 cm from the lens. Adjust the screen until a sharp image is obtained on the screen.*

(iii) *Measure and record the diameter,* ***a****, of the image.*

(iv) *Measure and record the distance* ***v*** *between the lens and the screen.*

(v) *Evaluate* $\boldsymbol{y} = \frac{a}{a_o}$, $\mathbf{P} = \frac{1+y^2}{y}$ and $\mathbf{T} = x + v$.

(vi) *Repeat the procedure for* ***x*** *=30 cm, 35 cm, 40 cm and 45 cm. In* ***each*** *case, determine the corresponding values of* ***a, v, y, p*** *and* ***T****.*

(vii) *Tabulate your results.*

(viii) *Plot a graph of* ***P*** *on the vertical axis against* ***T*** *on the horizontal axis starting both axes from the origin* ***(0,0)****.*

(ix) *Determine the slope,* ***s****, of the graph.*

(x) *Determine the intercept,* ***c****, on the horizontal axis.*

(xi) *Evaluate* $\boldsymbol{k} = \frac{c}{2}$.

(xii) *State* ***two*** *precautions taken to ensure accurate results.*

(b) *(i)* *Explain the statement, the focal length of a converging lens is 20 cm.*

(ii) *An object is placed at a distance x from a converging lens of focal length 20 cm.* if the magnification of the real image formed by the lens is 5, calculate the value of x.

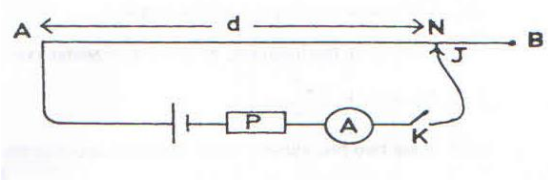
Candidates were required to use fig 2a to undertake the following tasks among several others.

– Five raw value of *x* being object distance measured from screen in which the image is obtained.
– Five raw values of the diameter a of the image.
– Tabulation of the results. Most candidates were able to present their results in a composite table. The two raw quantities *x* and a were recorded to the required accuracy.

However, some candidate did not pay much attention to a consistent. Significant figures in the columns. A lot of candidates were able to obtain the slope correctly followed by the correct computation.

Question 3

(a)



You are provided with an ammeter, resistor, key, metre bridge and other necessary apparatus.

(i) *Connect a circuit as shown in the diagram above.*
(ii) *Close the key and use the jockey to make contact with **AB** at **N** such that **AN** =**d** =25 cm.*
(iii) *Read and record the ammeter reading **I**.*
(iv) *Evaluate $\boldsymbol{I}^{-1}$.*
(v) *Repeat the procedures for values of **d** = 35 cm, 50 cm, 65 cm, and 80 cm. in each case record **I** and determine $\boldsymbol{I}^{-1}$.*
(vi) *Tabulate your results.*
(vii) *Plot a graph with log $\boldsymbol{I}^{-1}$ on the vertical axis and **d** on the horizontal axis.*
(viii) *Determine the slop, **s**, of the graph.*
(ix) *State **two** precautions taken to obtain accurate results.*

(b) *(i)* *Use your graph to determine the value of **d** = **I** = 1.5 A.*
(ii) *State **two** factors which affects the resistance of a wire.*

Candidates where able to identified apparatus and connected the circuit correctly to perform the following tasks:

– Measurement of the raw values of the connected length of wire AB the were used by calculating.

Determination of the current I corresponding to each value of I^{-1} candidate were able to tabulate their results. However, a respectable number of candidates did not record I, I^{-1} values to the required accuracy.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
PHYSICS 3 PRACTICALALT. C

1. GENERAL COMMENT ON THE PAPER

Comparatively, alternative C is the same standard as alternative A. The performance of candidates in alternative C was significant below the expected standard of the examination compared to alternative A. The level of performance of some candidates in alternative C largely attributed to negligence in presenting data and how they respond to the sub-questions.

2. CANDIDATES STRENGHT

Most candidates demonstrate the ability to present their reading in tabular form. They were able to measure, read and record the actual raw values of their measurement. They diligently comment the raw values using the given scales. About 40% of the candidates manifested clearly their skills of drawing graphs.

3. CANDIDATES WEAKNESS

The same candidates show weakness in the following;

- Plotting and evaluation using the graph was somehow a problem
- Inability to determine the slope, intercept using the graph. Most candidates' line could not cut both axes because of the inaccurate.
- inadequate knowledge in problem solving and incomplete precautions.
- Insufficient knowledge about standard form, decimal places and significant figure values.
- Inadequate of coverage of the syllabus and failure to follow instructions.
- inability to plotting and evaluation using the graph was some how a problem.

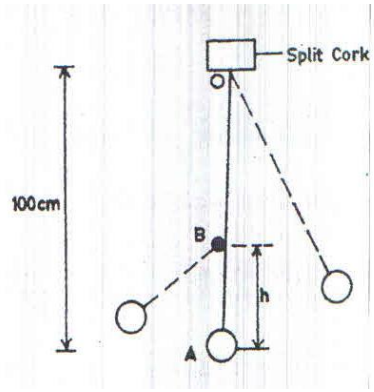
4. SUGGESTED REMEDIES

candidates need to :

- prepare very well for the examination
- access the past questions paper to be familiar with the format of the questions.
- Take time to read the questions and understand them before answering the questions.
- Candidates should have their individual instruments for the subject.
- Candidates needs to read and adhere to the instructions and improve their command of English language, so as to deal with the questions better.

5. **DETAIL COMMENT OF INDIVIDUAL QUESTION**

Question 1 (a)



You are provided with a retort stand with a clamp, thread, stop watch, stopper, bob and other necessary apparatus.

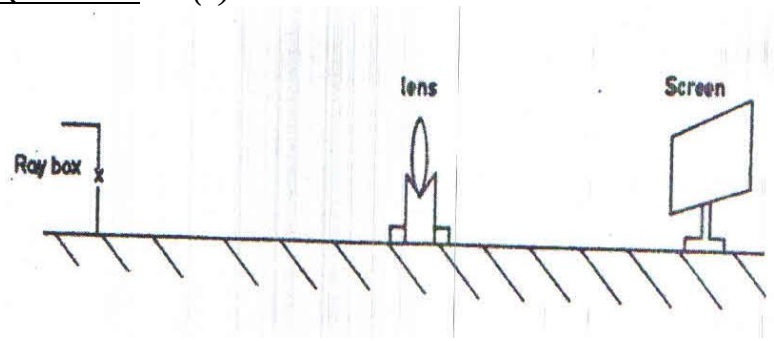
(i) *Suspend a simple pendulum such that its length **OA** = 100 cm and maintain it throughout the experiment.*
(ii) *Fix the stopper such that it just touches the string of the pendulum at **B** while in equilibrium position.*
(iii) *Set the distance **AB** –h = 45 cm.*
(iv) *Displace the pendulum through a small angle such that as it swings, the string makes contact with the stopper.*
(v) *Measure and record the time **t** for 20 oscillations.*
(vi) *Determine the period **T**.*
(vii) *Evaluate* $h^{\frac{1}{2}}$.
(viii) *Repeat the procedure for **four** other values of **h** = 55 cm, 65 cm, 75 cm and 85 cm.*
(ix) *Tabulate your readings.*
(x) *Plot a graph with* T^2 *on the vertical axis and h on the horizontal axis.*
(xi) *Determine the slope, s, of the graph.*
(xii) *Determine the intercept, c, on the vertical axis.*
(xii) *Evaluate* $\left(\frac{1}{s}\right)^2$.
(xiv) *State **two** precautions taken to ensure accurate results.*

(b) *(i)* *define amplitude of an oscillating body.*
(ii) *A body of mass of 0.5 kg revolves in a horizontal circle of radius 0.7 m with a period 0.5 s. Calculate the centripetal force acting on the body.*

The commonest error here was that it was not measured to 1 decimal place; we had round figures such as 45, 55 etc. times, t were given to at least 1 decimal place while period T was not recorded to at least 2 decimal place. The examiners had a serious problem with $h^{½}$ which clearly exposed the candidates to a poor knowledge of mathematical skills. First it is known that $h^{½}$ = h which by on rules should be evaluated to at least 3 significant figures.

Of course marks were heavily the right figure for the horizontal axis. However, the precautions were the right ones.

Question 2 *(a)*



You are provided with a ray box, lens holder, lens, metre rule, screen and other necessary apparatus.

(i) *Determine the appropriate focal length, **F**, of the lens.*

(ii) *Arrange the ray box, lens and screen in a collinear/straight line as shown in the diagram above.*

(iii) *Adjust the position of the screen such that its distance **L** from the ray box is 100 cm.*

(iv) *Move the lens between the ray box and the screen to a position $\boldsymbol{P_1}$, where a sharp image is formed on the screen. Record the position $\boldsymbol{P_1}$.*

(v) *New move the lens again to a position $\boldsymbol{P_2}$where another sharp image is formed on the screen, record the position $\boldsymbol{P_2}$.*

(vi) *Determine the distance d =* $\begin{vmatrix} P_1 - & P_2 \end{vmatrix}$.

(vii) *Evaluate* $\frac{d^2}{\boldsymbol{L}}$.

(viii) *Repeat the procedure for **four** other values of L = 95 cm, 90 cm, 85cm and 82cm. in **each** case determine d and* $\frac{d^2}{\boldsymbol{L}}$.

(ix) *Tabulate your results.*

(x) *Plot a graph with* $\frac{d^2}{\boldsymbol{L}}$ *on the vertical axis against **L** on the horizontal axis.*

(xi) *Determine the slope, s, of the graph and the intercept, c, on the **L** axis.*

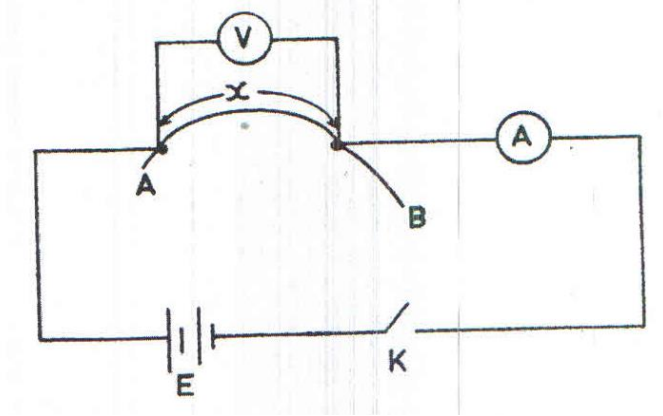
(xii) *State **two** precautions taken to ensure accurate results.*
[attach your traces to your answer booklet].

(b) *(i)* *Draw a ray diagram to show how a converging lens is used as a simple microscope.*

(ii) *An erect image 3 times the size of the object is formed by a converging lens of focal length 15 cm. Calculate the object distance.*

Most of the candidates had a problem with this question. The position P and L were clearly indicated on the diagram and in fact if the candidates know their theory they would agree with them. The precautions were good but in b(i) could not calculate the object distance.

Question 3 *(a)*



*You are provided with a an ammeter, constantan wire **AB**, battery **E,** voltmeter **V**, key **K** and other necessary apparatus.*

(i) *Measure and record the emf, **E**, of the battery.*
(ii) *Connect a circuit as shown in the diagram above such that length **AB** = x = 20 cm.*
(iii) *Close the key. Read and record the voltmeter reading **V**.*
(iv) *Also read and record the corresponding ammeter reading **I**.*

(v) *Evaluate* $\boldsymbol{Q} = \frac{\boldsymbol{V}}{\boldsymbol{I}}$, $\boldsymbol{V}^2$ *and* $\boldsymbol{P} = \frac{\boldsymbol{V^2}}{\boldsymbol{Q}}$.
(vi) *Repeat the procedure for **four** other values of **x** = 40 cm, 60 cm, 80 cm and 100 cm.*
(vii) *Tabulate your readings.*
(viii) *Plot a graph with **P** on the vertical axis and **x** on the horizontal axis.*
(ix) *Determine the slope, s, of the graph.*
(x) *Use your graph to determine the value of **x** for which **P** is maximum.*
(xi) *State **two** precautions taken to obtain accurate results.*

(b) *(i)* *State **two** advantages of connection lamps in parallel in a lighting circuit.*
(ii) *A lamp is rated 6 v, 0.5 A. Calculate the electrical energy transformed per second by the lamp when functioning.*

Not popular at all but it seems to be the easiest questions. However, we wish to suggest that schools need to acquire more electrical equipment so as to benefit from the easier questions. Furthermore these equipments must be connected in simple circuits for candidates to see the way forward. Precautions were good but in b(ii) candidates were unable to give the correct definition of …….. of a battery.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
SCIENCE 2

1. GENERAL COMMENTS

The marking process went on smoothly and the 100% vetting method was applied. The questions were of appropriate standard and within the limits of the syllabus. The paper contains good blend of application questions and easy-to- recall concepts. Nevertheless, the performance of candidates from some centers was very poor, about 10% of candidates scored zeroes. It was noticed that the candidates' abilities were better in physics compared with 2017 while Biology and Chemistry declined. Candidates lost many marks as a result of wrong spelling of scientific terms and wrong units. In general the performance of the candidates shows that most of the candidates were not well prepared for the examination. The trend of the continuous falling of standards in most centers cropped up again.

The marking scheme made enough provisions for candidates who had prepared themselves properly for the examination to gain very good marks. About 5% of the candidates scored very good marks, about 8% were within average scores and the rest very poor scores.

Despite the weakness mentioned above, some candidates had knowledge of how to apply formula to solve problems in calculations. Nevertheless, more effort is still needed from both teachers and students to further cement the gains.

It is also noticed that almost all candidates from some centers answered all question in section B creating difficulty and time delay for examiners to mark all the questions then cancel some out completely. This practice should be discouraged.

2. SUGGESTED REMEDIES AND RECOMMENDATIONS

- Penalty should be applied on candidate that answered more than the required number of questions in section B to discourage the act.
- As stated in the general reported above, the performance is generally poor, to overcome this, it is pertinent to engage students also in psychomotor domain which involve more of practical work as this makes learning more permanent thereby making recall easy during examination.
- Candidates should try to cover all aspects of the syllabus well before the examination for better performance.
- Teachers and candidates are encouraged to revise past examination questions together to build their confidence.
- Both students and teachers are encourages to visit relevant website to update themselves with the scientific discoveries and their applications.
- In answering questions, candidates are encourage to use legible hand writing and correct spelling for scientific terms.
- Candidates should use recommended text books to be on course.
- The use of the internet could also help to acquaint students with the latest development in science.

3. CANDIDATES' STRENGTHS

- It was noticed that the candidates abilities were better in Physics compared to Chemistry and Biology aspects.
- Candidates had knowledge of how to apply formula to solve problems in calculation questions. Never the less, more effort is still needed from both teachers and candidates to further cement the gains.
- Candidates showed improvement in their ability to adhere to stated instructions and give straight forward and concise answers.
- In few centers almost all candidates scored above average scores or marks. This strength must be encourage in such centers.

4. CANDIDATES' WEAKNESSES

- Candidates lost many marks as a result of wrong spelling of scientific terms and wrong units.
- Candidates' abilities in Biology aspect dropped greatly compared with 2017.
- Most of the candidates lack ability to express themselves in good English Language and to answer the reguired number of questions needed.

DETAILED COMMENTS

Part 1

Candidates were required to answer all question in this part

Question 1

*(a) Name **two** gaseous pollutants in air.*
*(b) State the source of **each** of the pollutants named in **1** (a).*
(c) Write a balanced chemical equation for the complete combustion of methane.

This question was attempted by many candidates but their performances were below average. About 10% of the candidates that attempted this question got it correct. In part (a) candidates correctly mentioned the two gaseous pollutants in air. In (b), candidates also stated the source of each of the pollutants mentioned in (a) and in (c), less than 5% of the candidates correctly write a balanced equation for the complete combustion of methane.

Question 2

(a) A water tank with a rectangular base measuring 1.5 m by 1.2 m contains 1550 kg of water.

Calculate:
(i) the weight of the water;
(ii) the pressure exerted by the water on the base of the tank.
[g = 10ms^{-2}]

This question was attempted by many candidates and their performances were poor. About 5% of the candidates that attempted this question correctly carried out the calculations. In part (i) candidates calculated it correctly but with a wrong unit, and in (ii) both the calculation and units were wrong. In both part most candidates could not state the correct formulae.

Question 2(ii) was to calculate the pressure exerted by water on the base of the tank. Again most of the candidates were unable to solve pressure of the water because they miss the formula. The correct formula supposed to be pressure = $Force \div Area$but 60% of the candidates used pressure =$Force \times Area$. Some also solved it correctly but did not give the correct units.

Question 3

*(a) State **one** function of haemoglobin in the body.*
(b) Name the mineral needed in the diet to produce haemoglobin.
*(c) State **two** effects of sickle-cell anaemia.*

Question 3(a) asked candidates to state the function of hemoglobin in the body but only few were able to respond correctly to it, that it transport oxygen and carbon dioxide. Majority stated that it provide protein, vitamin or carry oxygen. For 3(b) candidates were asked to name the mineral needed in diet to produce hemoglobin. There were only few candidates who gave iron as the correct mineral that is needed in the diet to produce hemoglobin. About 55% of the candidates gave nitrogen, vitamin, iodine as minerals in the body to produce haemoglobin. Question 3(c) was about the effect of sickle cell anaemia. Less than 5% of the candidates gave correct response to this question while others responded wrongly that sickle cell anaemia causes infertility, it causes low blood pressure, etc.

Question 4

(a) Distinguish between heat and temperature.
*(b) Give **two** properties of mercury as a suitable thermometric liquid.*

Question 4(a) was a physics question pertaining to the difference between heat and temperature. 60% of the candidates answered it wrongly by stating heat as the amount of heat transferred to a body and temperature as weather phenomenon which are not even correlated. In 4(b), candidates were asked to give the properties of mercury as a suitable thermometric liquid. Almost 45% of the candidates did not give the correct properties of mercury as a suitable thermometric liquid. Majority of them gave properties of water. For example, it boils at 100^{o} C or freezes that 0^{o} C instead of the properties of mercury.

PART II

Part two comprises of four questions. Candidates were asked to attempt **two** questions out of the four questions in this part.

Question 5

*(a) Describe **one** structural adaptation in relation to the function of **each** of the following blood vessels:*
(i) an artery; (ii) a vein.

(b) *(ii)* *Write a balanced chemical equation for the reaction between sodium and water*
(iii) *State **one** energy transformation that occurs during the reaction in 5(b)(i).*

(c) *(i)* *Name the **three** types of radiation that may be emitted from a radioactive isotope.*
(ii) *Describe **briefly** how **each** of the radiations in 5(c) (i) is deflected in a magnetic field.*

(d) *(i)* *Distinguish between a sensory neurone and a motor neurone.*
(ii) *State **three** effects of drug abuse on humans.*

(e) *(i)* *Define reflection of light.*
(ii) *State **two** differences between regular refection and diffuse reflection.*
(iii) *A boy stands 7.5 m in front of a plane mirror. Determine the distance of the boy's image from the: I. mirror; II. boy.*

Above 30% of the candidates attempted this question but majority of the candidates scored below average.

5(a) demands candidates to describe one structural adaptation of an artery and a vein. Less than 10% of the candidates answered this question correctly. Instead of the structural adaptation of artery and vein, they stated the function of artery that itcarries blood from the heart and vein carries blood towards the heart.

For 5(b)(i), majority of the candidates could not balance the chemical equation for the reaction between sodium and water. Some of the wrong answers given were:

$4Na + 2H_2O \longrightarrow NaOH + H_2$
$2Na + 4H_2O \longrightarrow 4NaOH + 4H_2$
Instead of $2Na + 2H_2O \longrightarrow 2NaOH + H_2$

Question 5(b)(ii) deals with an energy transformation that occurs during the reaction of 5(b)(i). About 48% of the candidates gave wrong transformation that occur during the stated reaction e.g

Light energy $\longrightarrow$ chemical energy
instead of chemical energy~~heat/thermal~~ energy

Question 5(c)(i) asked candidates to name the three types of radiation that may be emitted from a radioactive isotope. Less than 25% of the candidates were able to name the types of radiation that must be emitted from radioactive isotope. Majority of the candidates named types of heat transfer instead of radiation. Examples of the wrong answers given include radiation, conduction, convention, ultraviolet rays etc.

In Question 5 (c)(ii), candidates were asked to describe briefly how each of the types radiation in 5(c)(i) is deflected in a magnetic field. High percentage of the candidates named charges like positive, negative or neutral instead of describing how each type of radiation is deflected in a magnetic field.

Question 5(d)(i) asked candidates to distinguish between a sensory neuron and a motor neuron. Most of the candidates wrongly stated that sensory neuron is used by machine and motor neuron is used by bicycle.

Question 5(d)(ii), asked candidates to state three effects of drugs abuse on human. Less than 40% of the candidates were able to give the correct effects of drug on human but majority of the candidates stated that it leads to stealing, or cause one to relax, etc.

In question 5(e)(i), majority of the candidates defined reflection as light rays which passes through a surface instead bouncing back of light ray after hitting an obstacle.

In question 5(e)(ii), about 20% of the candidates were able to state the correct difference between regular reflection and diffuse reflection. 30% of them answered it wrongly by stating that regular reflection is produce by opaque object and diffuse reflection is produce by plane surface instead of regular reflection produce by smooth surface and diffused reflection is produce rough surface.

In question 5(e)(iii), candidates were asked to determine the distance of the boy's image from mirror and that of the boy. About 30%of them got the image distance.

Question 6

(a) (i) Define the term polymerization.
(ii) Write the equation for the polymerization of ethene.
*(iii) What is the name of the polymer formed in **6**(a)(ii)?*
(iv) Why is it difficult to dispose of the polymer formed in 6(a)(ii)?

*(b) Name the structure in cells of living organisms responsible for **each** of the following functions.*
(i) Control of all activities within the cell.
(ii) Control movement of materials in and out of the cell.
(iii) Release of energy.

(c) (i) Explain why an ecosystem needs an external supply of energy from sunlight.
(ii) Explain why combustion of fossil fuels is more harmful to the environment than combustion f wood.

(d) (i) Explain how identical twins are formed.
*(ii) A man heterozygous for blood group **B** marries a woman with blood group **O**. With the aid of a genetic diagram, determine the possible blood groups of the children.*

(e) (i) State the energy transformation that occurs when electricity is produced in a nuclear power station.
(ii) Calculate the thermal energy needed to beat 5000 kg of water from 20 ℃ to 100 ℃.

[Specific heat capacity of water is 4200J/kg℃.]

(f) Explain why elderly people find it difficult to focus on near objects.

About 45% of the candidates attempted this question. Only few of them managed to have good score from the total marks allocated for the question.
For question 6(a)(i), candidates were asked to define the term *polymerization*. Most of the candidates that attempted it gave a wrong definition of polymerization e.g joining of polymers to form monomers instead of joining of monomers to form polymers. For question 6(a)(ii), none of the candidates was able to write to the equation for polymerization of ethene. Some of the wrong answers they gave were:

$CH_2 = CH_2 \rightarrow [CH_2 - CH_2]$ they left out the letter, n, which makes the entire equation wrong.

For question 6(a)(iii), less than 5% of the candidates was able to name the polymer formed in 6 (a) (ii) hence they cannot give the correct equation or the name. For 6 (a)(iv), majority of the candidates could not state why it is difficult to dispose the polymer formed.Some even decided not to give any answer to it.

In question 6(b), Candidates were asked to name the structures in cells of living organism responsible for some functions stated.

(i) Control of all activities of the cell. About 40% of the candidates that attempted it got it right while majority got it wrong. E.g wrong spelling of*nucleus* as *nuclease*.

(ii) Control movements of materials in and out cells. Most of the candidates wrote cytoplasm as the answer instead of the cell membrane.

(iii) Large number of the candidates was unable to give the structure responsible for the release of energy in cells which is mitochondrion and some of them spelled it wrongly like michondria, metochandran etc.

Question 6 (c)(i) asked candidates to explain why an ecosystem needs an external supply of energy from sunlight. Majority of the candidates gave response like *is used to provide* electricity instead of saying green plants requires sunlight for photosynthesis or requires green plants for survival.

Question 6(c) (ii) asked candidates to explain why combustion of fossil fuel is more harmful to the environment than combustion of wood. Majority of the candidates instead fail to mention that SO_2 released in combustion of fuel is a toxic substance while that of the combustion of wood has no toxic substance.

Question 6 (d) (i), asked candidates to explain how identical twins are formed. Less than 10% of the candidates were able to respond very well to this question by stating that identical twins are form from the fertilization of a single which multiplies and spilt into two separate individual. One popular wrong explanation given by the candidates was identical twins are form as a result of sperm fertilization two eggs at a go.

For question 6(d)(ii), majority of the candidates were unable to draw the genetic diagram of a man heterozygous for blood group B who marries a woman with blood group B. Most of them use single letter for the genotype, e.g. instead of B O for man and O O for woman they gave B for man and O for woman. Also, majority have problem in the crossing of genotype to produce the possible blood group of the children.

Question 6(e)(i) deals with the transformation of energy that occurs when electricity is produced in a nuclear power station. Out of the number of candidates that attempted this question, only few were able to give the correct transformation that may occur in a nuclear power station.

In 6(e)(ii),most of the candidates could not calculate the thermal energy needed to heat 5000 kg of water from 20 ^{O}C to 100^{O}C because they did not know formula that should be applied. Instead of Energy =MCT, Majority use energy = MC ÷T. This was a major problem for most of the candidates

Question 6(f) demand candidates to explain why elderly people find it difficult to focus on near objects. The correct answers expected from candidates was weakened ciliary muscles or loss of lens elasticity but about 65% of the candidates stated that it is because of their eyes are old as a result of their old age.

Question 7

(a) A solar powered pump is used to fill a water trough from a well. The pipe from the pump to the trough 9 m long.

Use this information to answer questions that follow.

*(i) State the energy transformation in **each** of the following stages when the pump is switched on:*

I. sunlight provides energy for the solar panels.
II. an electric motor connected to the solar panels drives the pump.
III. the pump moves water from the well to the trough.

(ii) If it takes 12s for water to move from the well to the trough, calculate the average speed of the water through the pipe.

(iii) When the pump is working steadily, it takes 2 minutes to pump 10 kg of water from the well into the trough. Calculate:

I. the work done in raising the water.
II. the power output of the pump.

*(b) (i) Explain **briefly each** of the following terms:*

I. endangered species;
II. conservation;
III. biodiversity.

*(ii) State **two** reasons why is it necessary to conserve ecosystems.*

*(c) Give **one** use of **each** of the following petroleum fractions.*
(i) Refinery gas (ii) Kerosine (iii) Naptha (iv) Diesel oil (v) Bitumen.

About 50% of the candidates attempted this question and only few of them perform very well.
Question 7(a)(i) asked candidates to state the energy transformation that occurs in each of the stages when the pump is switched :

I. Energy transformation which takes place when sunlight provides energy for the solar panels. Majority of the candidates gave wrong answers like kinetic energy → electrical energy instead of writing solar energy → electrical energy.

II. Energy transformation which occurs when the electric motor connected the solar panel drives the pump. Less than 20% of the candidates were unable to state the correct energy conversion,e.g. electrical energy → kinetic energy. Among the wrong answers given is potential energy → light energy.

III.This question deals with the energy transformation which occurs when the pump moves water from the well to the trough. The correct answer that was expected from the candidates was kinetic energy to potential energy. But about 65% of the candidates got this wrong by stating transformation like mechanical energy to kinetic energy.

Question 7(a)(ii)asked candidates to calculate the average speed of water through a pipe which connect a well to the trough. Majority of the candidates find it difficult in using the correct formula. For 7a(iii).majority of the candidates scored 0 because of using the wrong formula. The same thing applies to the power output.

Question 7b(i)demands candidates to explain each of the following terms:

I- Endangered species: Most of the candidates explain it as the large animal like lion that are very dangerous instead of explaining as a group of animals/plants threatened with extinction.

II- Conservation- less than 30% of the candidates gave correct explanation to conservation i.e the preservation or efficient use of resources but most of the candidates termed it as resources that are safe in the environment which Is wrong.

III- Biodiversity- This is the variation of different life forms found in a particular area but 97% of the candidates term it as the living and non- living components of the environment.

Question 7(b)(ii) asked candidates to state two reason why it is necessary to conserve ecosystem. About 24% of the candidates answered it perfectly. i.eit provide food, provide fuel, provide areas for recreation etc. Majority of the candidates got it wrong because they just explained the term ecosystem instead of giving the reason of conversing ecosystem.

Question 7(c) asked candidates to give one use of each of the following petroleum fractions.

i. Refinery gas: for cooking or heating but most of the candidates that attempted stated that it is used for domestic purpose.

ii. Kerosine: Most candidates stated it is used for washing where as it is used for fuel for cooking, jet engine and lightening

iii. Neptha: Most candidates stated that it is used for cooking or lightening instead of saying it is used for production of petro chemicals.

iv. Bitumen: Used for making road or for making belt. About 30% of those who attempted this question stated that it is used for lightening or heating which is very wrong.

Question 8

(a) (i) Polydactyly is a dominant allele in some people who are born with six toes. The allele for five toes is recessive. State the correct term to describe.

*I. a genotype with **two** identical alleles;*
*II. a genotype with **two** different alletes;*
III. the type of variation shown in polydactyly, where there are distinct phenotypes.

*(ii) Suggest **two** causes of polydactyly in a family with **no** history of the condition*

*(b) (i) Explain why elements in group **I** are reactive while elements in group **VIII** in the periodic table are not reactive.*

(ii) Explain how galvanizing a piece of iron nail prevents rusting.

*(iii) State **one** other method of preventing rusting.*

(c) (i) The speed of sound in air is 330 ms^{-1}. Explain why the speed of sound is greater in water than in air.

(ii) A student stands 83 m from a brick wall with a balloon filled with air. The balloon burst and 0.5 s later, the student hears an echo. Calculate the speed of sound in air.

(d) Aluminium has 13 protons and oxygen has 8 protons.

(i) Write the electronic configuration of the atoms of each of the elements.

(ii) Deduce the group and period to which each of the elements belong.

(iii) Deduce the charges on the ions of each of the elements.

(iv) State the formula of the compound formed between the two elements.

(v) State the type of bond formed in 8(d)(iv).

About 20% of the candidates attempted this question. Almost all of them scored below average marks.

The correct answer for Question 8 (a)(i) supposed to be homozygous but most candidates spelled in wrongly e.g.Homosygus, etc.

For question 8(a)(ii), the correct term *heterozygous* but again candidates missed the spelling.

The correct answer for question 8(a)(iii) is discontinuous variation but most candidates stated wrong terms like, allele, genotypes, etc.

Question 8(a)(ii) demands candidates to suggest two causes of polydactyl in a family with no history of condition. The two possible suggestions could be *mutation* and*ionizing radiation*. Almost all the candidates that have chosen the particular question leave it unanswered.

For question 8(b)(i), About 68% of the candidates that attempted it have it wrong. About 10% stated that elements in group one have complete electrons in their outermost shells while that of group 8 did not have complete electrons in their outermost shell which is very wrong.

For question 8(b)(ii), less than 2% of the candidates were able to explain how galvanizing a piece of iron nail prevent rusting because, for most candidates stated that it can be prevented by greasing instead of:

- Zinc is more reactive than iron.
- Zinc atoms lose electrons from zinc ions.
- This prevents the oxidation of iron.

For Question 8 (b)(iii), about 45% of the candidates that attempted it gave the correct method of preventing rusting i.e painting, electroplating, greasing etc. Most of them got it wrong because of the incorrect spelling of words.

In Question 8(c)(i), large percentage of the candidates could not explain why the speed of sound is greater in water than in air. Among the reasons that they gave was that sound penetrate of water than air instead of stating vibrations are passed on more quickly/shorter time between collision. The correct solution for this question 8 (c)(i) is Speed=2d ÷ t = 2 × 83 ÷ 0.5 = 332m/s

Majority of the candidates missed the formula and multiplied the figures given i.e 2 × 83 × 0.5 = 2490m/s. Some of them forgot the write the unit.

Question 8(d)(i) asked candidates to write the electronic configuration of Aluminum and Oxygen . Large percentages of the candidates draw the structure of electrons around the nucleus of the atoms instead of writing the electronic configuration of both elements.

For Question 8(d)(iii), majority of the candidates were unable to give the ions for aluminum and oxygen.

In Question 8 (d)(iv), large percentage of the candidates gave $2AlO_3$ as compound formed between Aluminum and Oxygen which was very wrong. Only few of them stated it correctly i.e. Al_2O_3.

For Question 8(d)(v), most of the candidates gave covalent bond as the type of bond formed between aluminum and oxygen instead of writing ionic or electrovalent bond. About 20%of the candidates were able to give the correct answer to this particular question.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
SCIENCE 3

1. GENERAL COMMENTS

The standard of this year's paper was as good as those of the previous years. The questions were standard, straightforward and within the scope of the practical component of the syllabus. As expected, the paper comprised of questions from all the three main areas of science. The language and structure of the questions was straightforward and easy to discern. Despite these favourable features, candidates' performance was poor. In fact, over 70% of the candidates could not score up to 30% of the total score.

2. CANDIDATES' STRENGTHS

candidates' strengths are few and far between. Sporadically, they showed strength in.

- reading the time in question 2;
- measurement of distances as in question 2;
- calculation of temperature rise in question 2.

3. CANDIDATES' WEAKNESSES

- Spelling errors.
- Weak practical knowledge
- Inability to interpret questions well
- Inadequate preparation
- Failure to adhere to rubrics
- Poor handwriting
- Poor numbering of answers, especially for sub-questions
- Inability to write chemical equations
- Inability to plot graphs
- Weakness in mathematical calculation.

4. SUGGESTED REMEDIES

- Adequate preparation is crucial for any examination. Candidates intending to take the examination must ensure that they are adequately prepared before attempting this examination.
- More practical lessons should be incorporated in the teaching and learning of science.
- Candidates must ensure absolute adherence to rubrics of questions.
- Teachers should educate their pupils on the importance of numbering their answers correctly.

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)* *Name **one** instrument used to measure **each** of the following ecological features.*

(i) *Turbidity of water*
(ii) *Light intensity*
(iii) *Relative humidity*
(iv) *Wind direction*
(v) *Amount of rainfall*

(b) *State **one** use of **each** of the following equipment.*

(i) *Spring balance*
(ii) *Quadrat*
(iii) *Liebig condenser*
(iv) *Volumetric flask*
(v) *Galvanometer*

The first part of this question required candidates to name one instrument used for measuring each of the following ecological instrument:

-turbidity of water: secchi disc,
-light intensity: photometer
- relative humidity: hygrometer
-wind direction: wind vane
-amount rainfall: rain gauge.

The general of performance of candidates in this part was poor. The reasons for the poor performance lie heavily on candidates inability to spell the names correctly. For example, *secchi disc* was spelt as *sachi dish, secchi dish* etc, *hygrometer* was written as *hydrometer, wind vane* was written as *wind vain/vein* and *rain gauge* was spelt as *rain guage*.

The second part of question one required candidates to state the use of each of the following equipment: spring balance, quadrat, liebig condenser, volumetric flask and galvanometer. Again candidates' performance was deemed to be poor. In fact, over 70% of the candidates performed poorly. The answers written by candidates which accounted for this poor performance are as follows:

- *Spring balance*- it is used to measure mass, instead of weight.
- *Quadrat*- it is used for sampling organisms in a given area. It should be noted that, the actual purpose of this instrument is for measuring the number of organisms in a given area.
-*Liebig condenser*- it is used to cool substances or vapour. The correct use of this instrument is to condense vapour or to change gas/vapour to liquid. Cooling is just the way the change from gas to liquid could be achieved.

-*Volumetric flask*- it is used for measuring volume of liquid or solution. Candidates and teachers should understand that this instrument is not a measuring tool, but an instrument for preparing standard solutions.
Galvanometer- it is used for measuring electric current. This is also not a measuring instrument, but an instrument used for detecting the flow/direction of electric current.

<u>Question 2</u> *A regular source of power supplies heat to a liquid whose temperature,* ***T*** *is observed with time,* ***t****. The initial temperature of the liquid is* $\boldsymbol{T_1}$

Fig. 2*(a) is the thermometer showing the lengths of the mercury columns,* ***X*** = **Xo X1, X2, X3, X4, X5** and **X6**corresponding to the temperatures, T= **0**^{o}C, T_1, **T2,T3,T4,T5**, and**T6**.

Fig.2*(b) is a stop watch showing corresponding readings of the times, t taken by the liquid to rise from the initial temperature,* $\boldsymbol{T_1}$*. Study* ***Fig. 2****(a) and* ***2*** *(b) carefully and answer the questions that follow.*

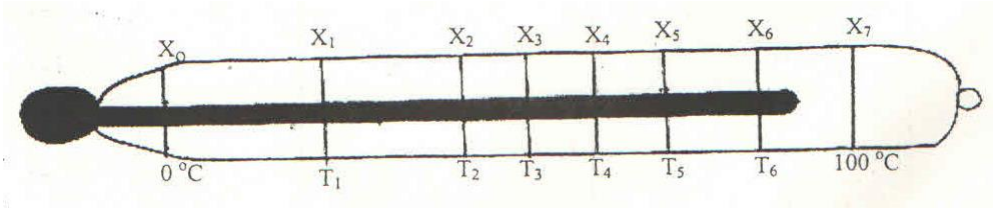


Fig. 2*(a) A themometer drawn to scale showing readings of temperature,T* ^{o}C.
Scale = 1 cm: 8.3^{o}C

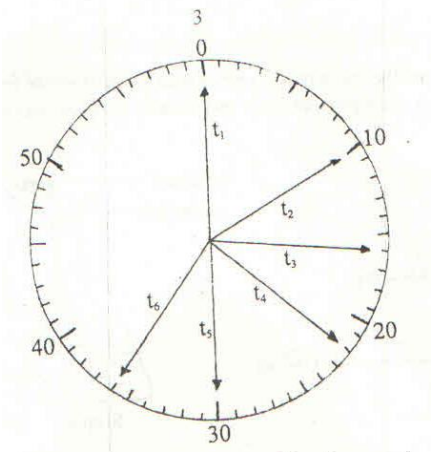


Fig. 2 (b) a stop watch showing readings of time in seconds

(a) (i) *Measure and record the length of the mercury columns,* ***XoX*** = ***XoX1, XoX2,*** **XoX3, XoX4, XoX5** and **XoX6**.
(ii) *Hence, deduce the temperatures corresponding to* ***T*** = $\boldsymbol{T_1}$, $\boldsymbol{T_2,T_3,T_4,T_5}$, *and* $\boldsymbol{T_6}$.

(b) *Determine the rise in temperature,* ΔT = $\boldsymbol{T_1}$-$\boldsymbol{T_1}$, $\boldsymbol{T_2}$- $\boldsymbol{T_1}$, $\boldsymbol{T_3}$- $\boldsymbol{T_1}$, $\boldsymbol{T_4}$- $\boldsymbol{T_1}$, $\boldsymbol{T_5}$- $\boldsymbol{T_1}$*and* $\boldsymbol{T_6}$- $\boldsymbol{T_1}$ *of the liquid.*

(c) *Measure the times,* ***t*** = $\boldsymbol{t_1,t_2,t_3,t_4,t_5}$, *and* $\boldsymbol{t_6}$ *corresponding to the temperature.*

Copy and complete the table below:

Length of mercury column, XoX (cm)	***XoX₁ =***	***XoX₂ =***	***XoX₃ =***	***XoX₄ =***	***XoX₅ =***	***XoX₆=***
Temperature T (^oC)	***T₁ =***	***T₂ =***	***T₃ =***	***T₄ =***	***T₅ =***	***T₆ =***
Rise in Temperature $\Delta T(^oC)$	***T₁-T₁ =***	***T₂- T₁ =***	***T₃- T₁ =***	***T₄- T₁ =***	***T₅- T₁=***	***T₆-T₁ =***
Time, t (s)	***t₁=***	***t₂ =***	***t₃ =***	***t₄ =***	***t₅ =***	***t₆ =***

*(d) (i) Plot a graph of the rise in temperature, Δ**T** on the vertical axis against the time, **t** on the horizontal axis.*

*(ii) State the relationship between Δ**T**and **t.***

This question required candidates to measure the lengths of the mercury columns XoX_1, XoX_2, XoX_3, XoX_4, XoX_5 and XoX_6 from a thermometer diagramand use a scale factor of 1cm=8.3^{o}C to deduce the temperatures corresponding toT_1,T_2, T_3, T_4, T_5 and T_6. Using these values, candidates are to determine the rise in temperature= 0 ^{o}C, T_1, T_2,T_3,T_4,T_5, and T_6.

In addition, candidates were also required to read the times, t= t_1, t_2, t_3, t_4, t_5 and t_6 from a stop watch diagram corresponding to the temperatures and then plot a graph of *rise intemperature* on the vertical axis against time on the horizontal axis .

About 50% of the candidates did well in this question. Their strong areas are,

- Reading of the times from the stop watch diagram;
- Reading of the lengths of the mercury columns from the thermometer diagram.
- Determination of the temperature rise. This was so good that, even candidates with wrong temperatures, calculated the temperature rise correctly

The weaknesses of candidates in this question are,

- Use of the scale factor to deduce the corresponding temperatures T. Some candidates simply copied the lengths of the mercury columns. This showed a lack of understanding this aspect of science.
- The plotting of the points on the graph was really poor this year.
- Stating the relationship between ΔT and t. Most of the candidates did not understand the relationship between these two variables.
- Some candidates misplaced their answers. For example, the lengths of the mercury columns were recorded under the temperature column, so as time under the column for ΔT.

Question 3 ***Fig. 3****is a illustration of the steps used to prepare calcium chloride from dilute hydrochloric acid and calcium carbonate. Study the figure carefully and answer the questions that follow:*

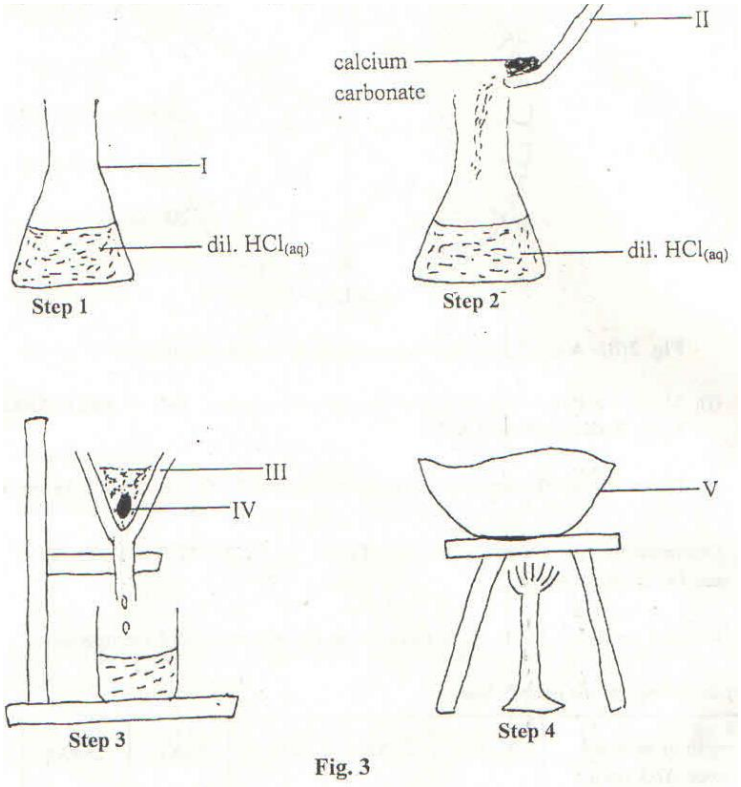


Fig. 3

(a) *Name the parts labelled* ***I, II, III, IV*** *and* ***V.***

(b) *Describe* ***each*** *step shown in* ***Fig.3.***

(c) *(i)* *State what should be done to ensure that all the acid reacted.*

(ii) *State* ***one*** *observation that could be made in* ***step 2****.*

(iii) *State* ***two*** *ways you could tell that all the acid in* ***step 2*** *reacted.*

(iv) *Write a balanced chemical equation for the reaction that occurred in* ***step 2****.*

This question was based on n diagrammatic representation of the steps(labelled as steps I, II, III and IV) used to prepare calcium chloride from dilute hydrochloric acid and calcium carbonate.
The performance of candidates in this question was just a little over 30%. The reasons for this poor performance can be understood by looking at the answers to the sub-questions.

Part (a) required candidates to name the parts labelled **I**, **II**, **III**, **IV** and **V**. The expected answers are, I(conical flask), II(spatula), III(filter funnel), IV(unreacted calcium carbonate/ calcium carbonate/ residue and V(evaporating dish). The poor performance in this part mostly emanated from wrong spellings such as, conical flash, evaporating disc, spatala and funnel instead of filter funnel. Knowing that there are different types funnels, just writing funnel did not score.
Part (b) required candidates to describe each steps shown in the diagrams for the preparation of calcium chloride. Again the performance in this is part was poor. The expected answers were,
Step 1: dilute hydrochloric acid is poured into a conical flask.
Step 2: calcium carbonate is added to the dilute hydrochloric acid in the flask
Step 3: the mixture from step 2 is filtered

Step 4: the solution/filtrate obtained from step 3 is evaporated to obtain the salt.

From candidates' responses, it seemed that candidates had little or no knowledge of this process. Most of the answers were vague. For example, for step 1: candidates wrote mixture of water and dilute hydrochloric acid or hydrochloric in a container, step 3: they simply wrote filtration and heating for step 4. These answers clearly demonstrated that candidates had little or no knowledge of this process. Consequently, their performance in the next sections of this question was worse than in the previous sections.

Part (c) required candidates to:

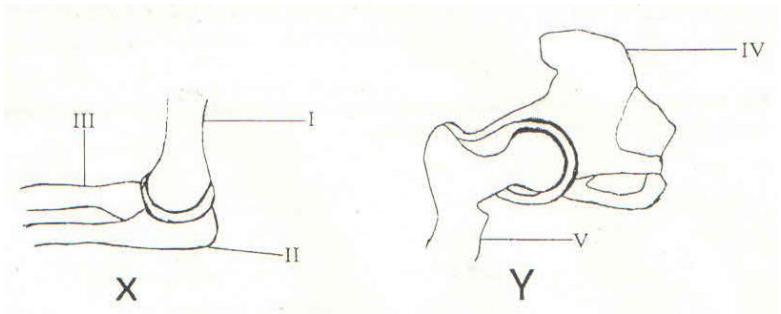
(i) state the what should be done to ensure that all the acid has reacted. The expected answer is, excess calcium carbonate should added to the acid. About 80% of the candidates could not come up with this answer;

(ii) state one observation that could be made in step 2. The expected answer is bubbles produced/effervescence or fizzing sound or calcium carbonate dissolves. Again, the performance is equally poor. Many candidates didn't know what to write;

(iii) state two ways you could tell that all the acid in step 2 reacted. The expected answers are, bubbles/effervescence stops, fizzing sound stops or unreacted calcium carbonate seen at bottom of the conical flask. The performance of candidates in this question compares closely to that of part (ii). What was quite noticeable and interesting about these questions (i.e, ii and iii) is that, any candidate that got (ii) right, gets (iii) as well and vice-versa;

(iv) write a balanced chemical equation for the reaction that occurred in step 2. The expected answer is, $HCl_{(aq)} + CaCO_{3(s)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + H_2O_{(l)}$. This question also received a fair share of candidates weakness. About 85% of the candidates could not write the equation correctly. Even the candidates that had some idea about this equation, had issues with the formula of either calcium carbonate, hydrochloric acid, calcium chloride and in worst cases, even that of water.

Question 4 *(a)* *The diagrams labelled **X** and **Y** illustrate parts of the mammalian skeleton. Study it carefully and answer the questions that follow.*



(i) *Identify structure:*
I. *X;*
II. *Y.*

(ii) *Name the parts labelled **I, II, III, IV** and **V**.*

(iii) *State the locations of **X** and **Y** in the human body.*

(iv) *State the type of movement associated with structure **X** and **Y**.*

(b) ***Fig. 4*** *is an illustration of part of the human respiratory system. Study it carefully an answer the questions that follow.*

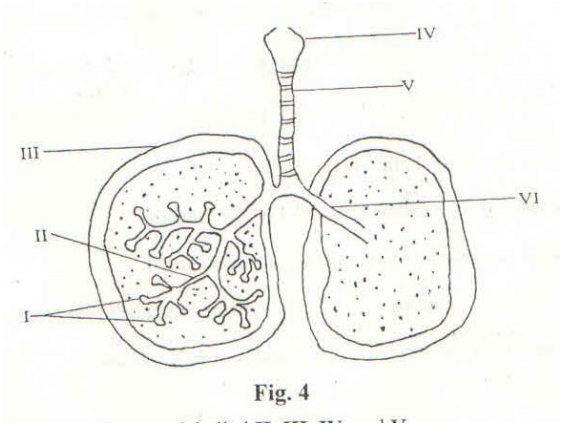


Fig. 4

(i) *Name* ***each*** *of the parts labelled* ***II, III, IV,*** *and* ***V****.*

(ii) *I.* *State the role of the part labelled* ***I****.*
II. *State* ***two*** *structural features of the part labelled I which enhance the role stated in* ***4****(b)(ii)****I.***

(iii) *I.* *Name the outer protective covering of the part of the system illustrated.*
II. *Name* ***two*** *structures which make up the outer protective covering mentioned in* ***4****(b)(iii)****I****.*

This question is in two parts. Part (a) was about the parts of the mammalian skeleton labelled **X** and **Y** and part (b) was about an illustration of part of the human respiratory system. About 50% of candidates did well here. A closer look at how candidates fared in the different areas will explain the observed performance.

In part (a), candidates were required to

(i) identify **X** (the hinge joint) and **Y**(the ball and socket joint). Candidate did well in this area. However, a good number of them spelt hinge as hing. Consequently, they lost the mark.

(ii) name the parts of **X** and **Y** labelled **I** (humerus), **II** (ulna), **III** (radius), **IV** (pelvic bone/girdle) and **V** (femur). Candidates' performance in this part was also fairly good. However, they lost a good number of marks through spelling errors.

(iii) state the locations of **X** (at the elbow, knee) and **Y** (at the shoulder, hip) in the human body. Candidates' performance in this part was not encouraging. The answers were swapped for one another.

(iv) state the type of movement associated with **X** and **Y**. Candidates' performance in this part was generally good.

In part (b), candidates were required to

(i) name parts of the human respiratory system labelled as **II**(bronchiole), **III**(pleural membrane), **IV**(pharynx) and **V**(trachea/wind pipe). Candidates did well in labelling bronchiole and trachea, despite the sporadic spelling errors. This was not the same for pleural membrane and pharynx. Only about 10% of the candidates knew the names of these parts.

(ii) state the role of the part labelled **I**(the alveoli) and two structural features of this part which enhanced its stated role. Candidates performance in this part was below average.

Question 5 *(a)* *Fig.5(a) illustrates a set up to separate a mixture in the laboratory.*
Study the illustration carefully and answer the question that follow.

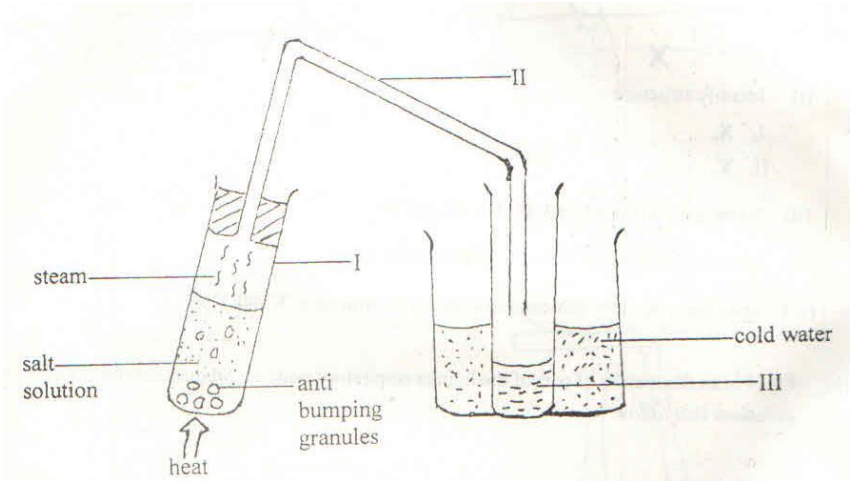


Fig.5(a)

(i) *Name **each** of the parts labelled **I, II** and **III**.*
(ii) *Name the method of separation illustrated by the diagram.*
(iii) *What physical process takes place in the part labelled **II**?*
(iv) *How could the process taking place in the part labelled **II** be made more efficient?*
(v) *State the function of the anti-bumping granules in the experiment.*

(b) ***Fig.5****(b) is an illustration of the set up to determine the volume of air used in burning. Study the illustration carefully and answer the questions that follow.*

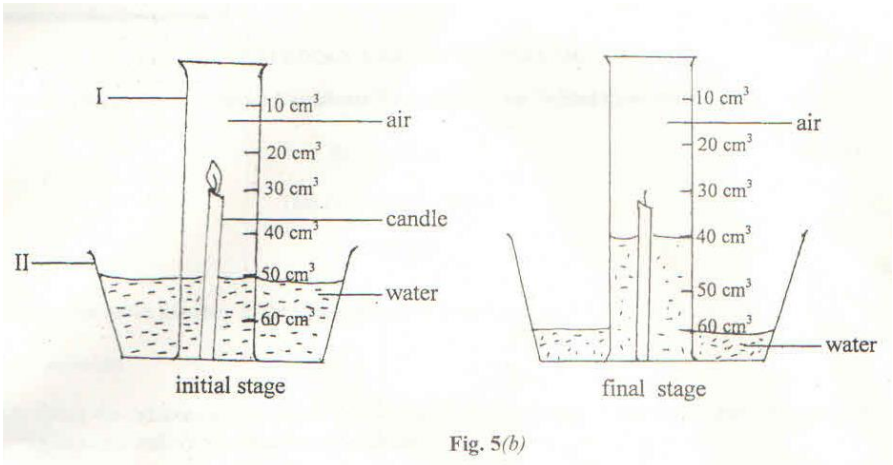


Fig. 5*(b)*

*(i) Name **each** of the parts labelled **I** and **II**.*
*(ii) State **one** visible observation in the set up.*
*(iii) Give a **reason** for your answer in 5(b)(ii).*
(iv) Read and record the volume of air at the initial and final stage.
(v) Calculate the percentage volume of air used in the experiment.

This question consisted of two main parts. Part (a) was a simple diagram illustrating a set-up for separating a mixture (salt solution) in the laboratory and part (b) was about a set-up used to determine the volume of air used in burning. The generally performance of candidates was poor.

In part (a), candidates were required to.

(i) Name the parts labelled I(test tube), II(delivery tube) and III(distilled/pure water).

(ii) Name the method of separation(i.e. simple distillation) illustrated by the diagram.

(iii) State the physical process(i.e. condensation) taking place in the part labelled II.

(iv) State how the process taking part in the part labelled II could be made more efficient.

(v) State the function of the ant-bumping granules in the experiment.

Candidates failed to perform as expected because of the following weaknesses:

- Spelling errors for the labelled parts I and II and in some cases not knowing the names of the parts. Part III was even called water solution, instead of distilled/pure water.
- About 70% of the candidates could not state how the process taking place in the part labelled II could be made more efficient. The expected answer is, using a Liebig condenser/circulating cold water around the part. It appeared that the candidates did not understand the question. The function of the ant-bumping granules was the worst answered part in this question. Nearly 95% of candidates could not answer this question.

In part (b), candidates were asked to:

- name the parts labelled I(measuring cylinder) and II(water trough);
- State one visible observation in the set- up;
- Give a reason for the stated observation;
- Read and record the volume of air at the initial and final stage.
- Calculate the percentage volume of air used in the experiment.

Once again the performance of candidates was poor. They did particularly poorly in giving the reason for the candle going off in the final stage in part (iii) and calculation of percentage volume of air used in burning.

COMMERCIAL SUBJECTS

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
COMMERCIAL SUBJECTS

1. STANDARD OF THE PAPERS

All the Chief examiners for the Commercial Subjects reported that the questions set were standard and within the scope of the syllabi.

2. CANDIDATES' PERFORMANCE

The Chief Examiners for Business Management and Principles of Cost Accounting indicated that the performance of candidates this year was better than last year's. However, the chief Examiners for Commerce and Financial Accounting reported a drop in candidates' performance compared to the previous years.

3. CANDIDATES' STRENGTHS

According to the Chief Examiners of the Commercial Subjects, candidates demonstrated the following strengths:

- Ability to present their work with clarity and orderliness.
- Good interpretation of questions.
- Ability to recall definitions of basic commercial terms.

4. CANDIDATES' WEAKNESSES

Candidates' weaknesses were reported as follows:

- Inadequate expression of ideas.
- Absolute disregard of instructions.
- Misinterpretation of questions.
- Most of the candidates were not well prepared for the examination.
- Inadequate coverage of the syllabi.

5. SUGGESTED REMEDIES

The Chief Examiners of the Commercial Subjects recommended the following to improve performance:

- Candidates should endeavour to cover all areas of the syllabi before the examination.
- Adequate reading materials should be made available to candidates.
- Candidates should be guided on the requirements of words like state, suggest, list, define and explain.
- Candidates should be encouraged to read and understand instructions before answering questions.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
BUSINESS MANAGEMENT 2

1. GENERAL COMMENTS

The questions for this year's WASSCE were straight forward and presented in simple terms. There were no vague were all set within the syllabus.
Generally, the performance of candidates this year was better than last year's. About 59% of the candidates performed better.

About 41% of the candidates were not able to present any reasonable answers. There was abundance evidence from the scripts that a good number of candidates were not properly prepared for the examination.

2. CANDIDATES' STRENGTHS

Candidates' strengths were not evenly distributed among the centres. Existing centres maintained fairly appreciable standard and performance was better than the previous year.

This was not so for the new centres whose standard was not satisfactory. However, there was about a 10% improvement in respect to the new centres and 20% overall improvement.

On the whole, candidate's performance was better in questions:
1 a, b, 3, 4C, 5a, b ad c, 6C and 8a. This shows that most of the candidates who attempted these questions were well prepared for the examination.

3. CANDIDATES' WEAKNESSES

Poor performance of candidates was due to the following:

- Inability to identify the requirements of questions.
- Absolute disregard for instructions
- Inappropriate use of terminologies
- Poor presentation of answers
- Inadequate expression of ideas
- Inadequate preparation for the examination
- Inability to understand and interpret `CASE STUDY'.

4. SUGGESTED REMEDIES

Performance can be improved if the following recommendations are implemented:
- Adequate reading materials are made available to candidates
- Sufficient preparation and adequate coverage of the syllabus.
- Candidates should be guided by teachers especially experienced ones on the requirements of words like state, suggest, list, define, and explain as used in questions.

- School authorities should try and get subject teachers to read the chief examiner's Report to be abreast with the mistakes made by candidates:
- Teachers should revise topics from time to time, setting questions on them and going through them to keep candidates memory fresh. It should be noted that all topics in the syllabus are equally important.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1 *Read the case below carefully and answer the question which follow:*

TIGHT FIT DESIGNS

Tight fit Designs was established ten years ago to produce garments. Its Managing director, Julian Spain, set up structures that helped in co-ordinating the activities of the various branches towards the achievement of the goals of the company.

The company has been a leader in the garment industry until recently when new companies entered the market with substitute products which posed a threat for Tight Fit designs. It currently has three branches in Freetown, Bo and Makeni.

Prior to the competition, Tight Fit Designs had highly motivated staff who participated in decision-making of the company. The company also had a strong brand name. the new entrants attracted and employed some of the competent staff of Tight fit designs.

Gradually, Tight Fit Designs started losing its market share because the new entrants used promotional activities to attract some of the loyal customers of Tight Fit Designs. The Managing Director of Tight Fit designs and his team tried a number of strategies to cope with the competition but with little success. Julian Spain therefore decided to resign as Managing Director of the company and a new Managing director was appointed.

The new Managing Director who has sound background in marketing introduced many strategies on how to increase the Company's market share. He requested for a big promotional budget from the Board of directors which was approved. These strategies attracted some of the old customers of Tight Fit designs as well as new ones. However, the customers could not be retained.

(a) *State **two** approaches adopted by Julian Spain tht led to the initial success of Tight Fit Designs.*
(b) *State **three** challenges facing Tight Fit Disigns.*
(c) *Explain **three** promotional activities used by the new entrants to gain a share of the market.*
(d) *Give **three** recommendations the new Managing Director of Tight Fit Designs can do to improve on the performance of the company.*

Candidates were asked to read a passage and answer the questions on it.
Though it was a compulsory question, about 2% of the candidates did not answer it.
About 2% copied portions of the case study as answers for questions of their choice.
The question was on marketing and required candidates to identify challenges the business was experiencing and to state recommendations the Managing Director could take to improve on the performance of the business.

About 40% were not able to identify the problems and to come up with appropriate recommendations. The (c) part of the question required candidates to explain promotional activities used by the competitors of TIGHT FIT DESIGNS. About 58% of the candidates would not explain various promotional mixes, namely: advertising, sales promotion, personal selling and publicity.

Low marks were scored for the (d) part, because candidates could not come up with convincing reasons or ways of improving on the performance of the business.

Questions 2

(a) What is a certificate of deposit?
*(b) Outline **six** characteristics of a negotiable instrument.*

This question was answered by about 28% of the candidates. The first part was a mere recall of the definition of certificate of deposit. Most of the candidates gave vague answers, and could not distinguish between a current account and savings account. For the second part candidates could not state the characteristics of a negotiable instrument. About 50% listed parties to a cheque, while others gave advantages of a cheque. Low marks were scored for the two parts of question.2.

Question 3

(a) What is a brand name?
(b) Explain six reasons for branding.

This question was popular with the candidates and also attempted by about 65% of them. The (a) part required candidates to define a "brand name". About 20% gave correct answers.
The (b) Part was to gave reasons for branding. The answers were split between labeling and Trade mark. About 35% of the candidates gave correct answers.

Though it was popular, but poorly answered by the candidates who attempted it. Teachers should explain clearly the definitions of; Trademarks, labeling and branding. These terms though relate to products and the company but has different meanings.

Question 4

(a) Explain the following roles of managers:
(i) decisional role;
(ii) informational role;
(iii) interpersonal role.
*(b) List **three** characteristics of an entrepreneur.*
*(c) Explain **three** management functions.*

A popular questions answered by about 75% of candidates and majority of them scored low marks. The perennial problem of candidates inability to make use of appropriates words and terms came up in (c). For the (a) part candidates didn't understand the role of managers and therefore wrote on functions of managers.

Question 5

(a) What is recruitment?
*(b) List **four** internal sources of recruitment in an organization.*
*(c) Explain **four** advantages of internal recruitment.*

This question was answered by about 82% of the candidates. For part (a) almost all of those who attempted it got good marks. However, a small percentage gave incomplete answers such as: It is the process of employing a staff or is when a person is given a job in an organization.

The (b) part required candidates to explain the advantages of internal recruitment. About half of candidates who answered this question wrote on advantages of external recruitment instead of internal recruitment. Candidates are advised to understand the differences between internal and external recruitment.Their inability to read questions carefully is one of the main causes for the mismatch.

Question 6

(a) Explain the following types of agents:

(i) broker;
(ii) auctioneer;
(iii) factor.

(b) Differentiate between del credere Agent and a Commission agent.
(c) Abudu appointed Musa as his agent. Abudu got to know that Musa was accepting bribe in carrying out his work. Give three actions the principal could take against his agent.

This was another popular question answer by about 80% of the candidates. About 40% of the candidates gave the correct responses to types of agents. It was obvious that the rest of the candidates did not know the types of agents stated on the paper. This may be due to lack of facts and understanding of the question.

Question 7

(a) Differentiate between data and information.
*(b) Outline **six** uses of computers in business.*

Part (a) of this question required candidates to distinguish between data and information. It was a popular question answered by about 78% of the candidates who scored low marks. Less than 5% of those who attempted it were able to scored good marks. Others gave answers that have no relationship with the question.

Part (b) required candidates to outline the uses of computer in business. Only few of the (30%) were able to give correct answers, other wrote on advantages of computer to business. Perhaps candidates' poor performance to this question was centralized on their inadequate knowledge of basic concepts of computer.

Question 8

(a) Explain each of the following principles of insurance:
(i) contribution;
(ii) proximate cause;
(iii) subrogation.
*(b) List and explain **three** tools of Monetary Control.*

Part (a) was answered by about 50% of the candidates. Most of them were unable to appropriately give complete definition of the three principles of insurance. There was enough evidence to show that the candidates had very little knowledge about Insurance principles. This may be due to lack of adequate preparation on the part of the candidates.

Part (b) was not a popular question. About 15% scored low marks. The reason why many candidates didn't attempt this question was that most of them restricted their study to selected topics. Teachers should know that the whole syllabus must be covered. They should not rely on guesswork. They should not rely on the fact that because a topic did not appear at the last exam it may be included in the current or next year exam. It may not necessarily be the case.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
COMMERCE 2

1. GENERAL COMMENTS

The Paper reflected the overall standard of the candidates tested. The questions drawn were all within the scope of the syllabus. However, there was a further drop in performance compared to previous years. The poor performance could largely be attributed to ill-preparedness of candidates leading to their inability to accurately interpret and understand the demands of the questions. A greater proportion of the candidates who performed poorly, freely wrote their answers at will with little reference to what the question required.

2. CANDIDATES' WEAKNESSES

Candidates' poor performance centered on their inability to correctly interpret the requirements of the questions. For instance, a word or two is written as a response to a question that required explanation. It was also evident that majority of the candidates could not appropriately use basic commercial terms applicable in daily business transactions.

3. CANDIDATES' STRENGTHS

There was evidence of outstanding performance candidates as some were able to score good marks. The content of their answers was much closely linked with the marking scheme. Also, candidates showed strength in orderly presentation of their answers with the use of appropriate commercial terms. Their scripts were also readable and this is commendable.

4. CONCLUSION RECOMMENDATIONS

(i) There is need to review the teaching syllabus to reflect the new trends in the subject.
(ii) Regular class exercises and assignments will help to assess the students' level of understanding on each topic taught.
(iii) Teachers should endeavour to cover all areas of the syllabus well ahead of the exams to give enough time for revision. However, students should be acquainted with sections of the syllabus not taught by their teachers. This would help them greatly in their revision work.
(iv) Teachers are advised to revise past questions and discuss the answers with their students in class. This should be done alongside the normal teaching periods.

(v) Teachers are also encouraged to introduce their students to WASSCE standard questions right from Grade-10. This will help familiarize themselves with such standard before their final examinations.
(vi) The use of the internet as well as watching and reading business, news could also help to acquaint students with the latest development in commerce.

5. **DETAILED COMMENTS**

Question 1

*(a) Explain **two** factors that limit the application of division of labour.*
*(b) State **three** disadvantages of division of labour.*
*(c) State **five** advantages of division of labour.*

This was a popular question and the performance was fairly good. However, 30% of those who attempted it could not adequately explain the factors that limit the application of division of labour as demanded in (1a). Suggested answers were insufficient capital, and not just capital, 'small size of the market and not just size of the market etc. ,followed by the explanation of each.

Question 2

Mr. Touray wants to establish a retail shop for the sale of consumer goods.
*(a) State **five** factors he should consider before locating his shop.*
*(b) Explain **five** ways a wholesaler can aid Mr. Touray's business.*

Most of the candidates who attempted this question performed very well in part (b) but poorly in (a). In their attempt to state the factors to be considered in locating a shop, answers like pricing policy, nearness to raw materials, terms of trade etc. were stated. These are certainly not correct answers. Suggested answers were; availability of capital, nature of the goods, level of competition, sources of supply of products etc.

Question 3

Differentiate between public enterprises and public companies under the following headings:
(i) formation;
(ii) ownership;
(iii) Purpose;
(iv) management;
(v) sources of funds.

This question was grossly misinterpreted by majority of the candidates. 75% of them gave wrong answers. For instance, a **public company is formed by an Act of parliament whilst a public enterprise is formed through incorporation; a public company is owned by the government whilst a public enterprise is owned by shareholders etc**. Answers like these are wrong and they were found in many of the scripts of candidates. However, those who prepared well scored very good marks.

Question 4

Adama's Pure Water Production Company Ltd. has the following officers: General manager, Marketing manager, Administration manager, Purchasing manager, Production manager, Accounts manager, Marketing officers, Production supervisors, Accounts officers, Purchasing officers and Administration officers.

(a) Draw an organizational chart for the company.
*(b) State **two** functions each of the following departments of the company:*

(i) Accounts;
(ii) Administration;
(iii) Marketing;
(iv) Production.

Part(a) of this question was correctly done by majority of the candidates. However, some candidates could not adequately place the different officials in their appropriate levels of authority. For instance, **a marketing manager and an administrative manager have the same level of authority and should not be placed below each other**. Similarly, all officers have the same level of authority and should be placed under their respective managers in the chart. Candidates who did inter-departmental crossing of officers scored nothing for that. Also, candidates who has no knowledge about organizational charts presented their work in the form of a pie charts.

Question 5

*(a) State **four** ways in which marketing is important to a business.*
(b) Jones Ltd, a textile manufacturer has been advised to use sales promotion to stimulate sales.

*List and explain **four** promotional tools Jones Ltd. could use.*

In this question, most candidates could not recognize the fact that they should only concentrate on the importance of marketing to a business as required in (a). They wrote the importance of marketing in general. In part (b) also, very few candidates were able to identify the four promotional tools Jones Ltd. could use to stimulate sales. 90% of them highlighted the advertising media such as radio, television the print media etc. Such answers were wrong. Suggested answers include trade fairs and exhibitions, free samples, discounts, coupons, gifts, advertising, party selling, personal selling etc.

Question 6

(a) What is a second tier security market?
*(b) State **four** advantages of the second tier security market to companies.*
*(c) State **five** requirements for listing in the second tier security market.*

90% of those who attempted this question were able to score at most 10% of the marks allocated to it. It was glaring that the questions were not familiar to most candidates. Indeed, some candidates were confused to the extent that they gave the definition of stock exchange market and dilated on its advantages in an attempt to answer parts (a) and (b).

Suggested answers were; ***a second-tier security market is one where securities of companies that cannot be traded in the first-tier security market (stock exchange market) are quoted*** (a). Advantages of a second-tier security market included; helps companies to save advertising cost when shares are floated, provides financial advice to companies in areas of profitable investments, assists and compliments the efforts of the stock exchange market by buying/selling the shares of companies which cannot be traded on the stock exchange market etc.

Question 7

(a) What is a contract?
*(b) List and explain **four** reasons for consumer protection, stating in each case one relevant government law aimed at its enforcement.*

99% of those who attempted this question were able to score all the marks allocated to part(a). However, candidates found it extremely difficult to understand and interpret the demands of part(b). Consequently, some wrote lengthy essays on all aspects of consumer protection with no reference to the requirements of the question. Some of the reasons for consumer protection are; to deter consumer exploitation by manufacturers through the Price Control Act, to deter sellers from using deceptive weights and measures through the Weights and Measures Act, to deter sellers from using misleading advertisement through the Trade Description Act etc.

Question 8

The following extracts were taken from the books of Teesan Enterprise on 31st October 2010:

	Le
Cash in hand	6, 750
Stock of raw materials	12, 000
Trade debtors	30, 000
Plant and Machinery	72, 000
Motor van	31, 000
Loan	50, 000
Trade creditors	43, 000

Calculate:

(a) Liquid capital;
(b) Fixed assets;
(c) Teesan enterprises' capital;
(d) Working capital.

Arithmetic calculations using basic accounting knowledge is a an area where candidates are frequently tested in recent times and their performance has not been good. This year however, immense improvement was shown. Majority of the candidates were able to perform calculations neatly and accurately, However, a major weakness that was noticed in some scripts was the failure to insert the currency sign(Le) in their calculations.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
FINANCIAL ACCOUNTING 2

1. GENERAL COMMENTS

The overall performance of the candidates was not good due to the fact that most the questions were drawn from unfamiliar topics. Besides, they were straight forward and within the level of the candidates'. Though not very good, this year's performance could be rated a little above the previous years. The most popular questions were 2, 3, 6, 7 and 9. The least attempted questions were 1, 4, 5 and 8.

2. CANDIDATES' STRENGHT

Majority of the candidates attempted questions number, 2, 3, 6, 7 and 9. Most of themperformed very well in most of the questions stated above. Some presented their work with clarity and orderliness which earned them excellent marks in some of the questions.

3. CANDIDATES' WEAKNESSES

Question 5 was the very least attempted question.Very few candidates did well and the rest scored zero mark. The fact is that, students as well as teachers find the concept difficult to comprehend. So, very little was done on the topic depreciation of Fixed Assets.

Some candidates answered some of the questions without stating the Account headings. They also stated incorrect descriptions of transactions or failed to write the interpretations signifying what the figures stood for or represented. Where some questions required adjustments before the main question could be answered correctly, some candidates did the adjustments elsewhere and carried the final figure to the main answer therebymaking them to loose marks.
Others simply copied all the questions they selected into the answer booklet,showing a lack of preparation for the examination.
Also, some candidates' handwriting was illegible in their presentation of information as solutions to the questions. This, affected them in terms of the marks awarded.

4. SUGGESTED REMEDIES

- The candidates should learn how to read questions fully, So that the instructions as to what accounts to be prepared would have been well understood.
- They should also indicate the correct accounts' names.
- Candidates should intensify reading and practice exercises to enable them their widen knowledge and develop their skills and competence in Financial Accounting.
- Candidates should acquaint themselves with WASSCE past question to give them an idea of what to expect during exams.
- Candidate should their hand writing as some of them lost marks as a result of illegible writing.

5. DETAIL ED COMMENT ON INDIVIDUAL QUESTIONS

Question 1

(a) *Mention **three** disadvantages to a business that does not keep proper accounting records.*

(b) Explain the following characteristics of accounting information:

(i) relevance;
(ii) comparability;
(iii) consistency;
(iv) reliability.

*(c) State **two** limitations in the use of accounting information for business decision making.*

Over 35% of the candidates answered the question and most of them scored very poor marks. This was so because they could not explain (1b) which required the candidates to explain the characteristics of accounting information in reference to the points mentioned.

In the sub question (b) majority of the candidates either scored low marks or zero.

Question 2

(a) Explain with examples, the following components of cost in a Manufacturing Account:

(i) direct material cast;
(ii) direct labour cost;
(iii) factory overhead.

*(b) Describe the **three** types of stocks in a manufacturing concern.*

Question i, ii, and iii were answered well by most of the candidates. The only problem was that quite a number of them failed to give a practical example in the manufacturing business situation.
Majority of the candidates who attempted this question and stated stock of raw materials. stock of finished goods and stock of Work in progress with clear explanation scored very good marks.

Question 3

(a) Which business organisations have the need to prepare departmental accounts?
(b) State two reasons for preparing departmental accounts.
(c) State how the following incomes and expenses are apportioned in departmental accounts;

(i) discount allowed;
(ii) discount received;
(iii) rent and rates;

(iv) staff related costs;
(v) depreciation;
(vi) canteen expenses;
(vii) electricity;
(viii) advertising;
(ix) bad debts.

Though Majority of candidates attempted this question, they were not able to state the nature of business organisation that needed to prepare a departmental account.
Majority of the candidates scored very high marks in part b and c.

Question 4

*(a) List **six** users of accounting information.*
*(b) State the formula and the use of **each** of the following accounting ratios:*
(i) quick ratio;
(ii) net profit margin;
(iii) total assets turnover;
(iv) creditors payment period (in days).

Many of the candidates were able to list correctly the users of accounting information thereby scoring very good marks.

Few candidates were able to state the formulas for quick ratio, net profit margin and creditors payment period (in days) but could not state the total assets turnover. Besides, most of the candidates could not state the use of each of the formulas mentioned.

Question 5

Baako Ltd purchased motor vehicle as follows:

Date	***Quantity***	***GH¢***
01/01/13	*1*	*800, 000*
01/07/13	*1*	*400,000*
01/04/15	*1*	*699,000*

*The company adopts a straight line method of depreciation at the rate of 10% per annum from the date of purchase. A separate account is prepared for provision for depreciation. On 30th June 2014, the motor vehicle which was purchased on 1st July 2013 was sold for GH¢**240, 000.***

You are required to prepare:

(a) Motor Vehicle account for the year 2013, 2014 and 2015.
(b) Provision for Depreciation on Motor Vehicle Account for the year 2013, 2014, and 2015.
(c) Motor Vehicle Disposal account.

Less than 10% of the candidates attempted this question. This was as a result of avoidance of the topic by teachers and students for the reason that the concept was confusing and very difficult to teach especially when the students are average. However, a couple of candidates scored very good marks while the majority scored zero.

Question 6

On 31st December 2016, the bank column of the cash book of Aminata Enterprise showed a debit balance of D48, 500. However, the bank statement showed a credit balance of D54, 900 as on the same date.
A detailed comparison of entries revealed the following:

- *Customers' cheques amounting toD8, 450 had not been credited by the bank as at 31/12/2016.*
- *Cheques amounting to D8, 850 had not been presented for payment as at 31/12/2016.*
- *Bank charges of D1, 000 and interest on investments of D2, 500 collected by the banker appeared only in the bank statement.*
- *On the 30/12/2016, there was a wrong credit of D3, 500 in the bank statement.*
- *Kesse Enterprise, a customer, had paid into the bank directly a sum of D3, 000 on 29th December, 2016. This had not been recorded in the cash book.*
- *A cheque for D2, 000 received from Jallo Enterprise, a customer, which was deposited had been returned unpaid. This had not been entered in the cash book.*
    - *Your are required to:*
    - *Write up the adjusted cash book.*
    - *Prepare a bank reconciliation statement as at 31/12/2016.*

This question was answered by 65% of the candidates, and their performance was good as some candidates scored the total mark.

Question 7

Olu, a sole trade has the following financial details for the year ended 31st December 2016.

Cash Book (Summary)

	₦		₦
Balance b/d	*6,000*	*Creditors*	*12, 000*
Sales	*10,000*	*Salaries*	*5, 000*
Debtors	*20, 000*	*Rent and rates*	*4, 000*
		Insurance	*1, 000*
		Balance c/d	*14, 000*
	36, 000		***36, 000***

Additional information:

	1st January, 2016	*31st December, 2016*
	₦	₦
Stock	*4, 000*	*2, 000*
Land and building	*15, 000*	*15, 000*
Motor vehicle	*6, 000*	*4, 000*
Debtors	*2, 000*	*3, 000*
Creditors	*1, 000*	*500*
Insurance owing	*2, 000*	*6, 000*

You are required to prepare:

(a) Statement of affairs as at 1st January 2016.
(b) Trading and Profit and Loss Account for the year ended 31st December 2016.
(c) Balance sheet as at 31st December 2016.

85% of the candidates responded to this question. The reason was that it was drawn from a familiar topic. Most of them prepared the Statement of Affairs correctly to determine the opening capital, draft the Trading and Profit and Loss Account as well the Balance Sheet. Though not all of them did the right thing but on averagethey performed well.

Question 8

Boyson social Club presented the following statements for the year ended 31st December 2016.

Boyson Social Club
Receipt s and Payments account

	Le		Le
Balance b/f	5, 700	Maintenance of building	12, 600
Subscriptions	54, 500	Maintenance of grounds	6, 400
Bar Sales	13, 040	Prizes for fun fair	8, 400
Fun fair proceeds	4, 300	Bar Purchases	8, 000
Donations	2, 000	Bar expenses	2, 000
Life membership		Funeral expenses	10, 200
Dues	5, 400	Staff salaries	30, 000
Sale of magazines	12, 560	General expenses	3, 600
		Donations to hospital	12, 500
		Printing of magazines	5, 300
		Balance c/d	11, 000
	97, 500		**97, 500**

Additional Information:

	01/01/16	*31/12/16*
	Le	*Le*
Subscription-in-arrears	*3, 900*	*7, 400*
Subscription-in-advance	*8, 400*	*6, 300*
Bar debtors	*2, 630*	*3, 930*
Bar stock	*1, 500*	*2, 200*
Bar expenses owing	*540*	*370*

***Five** new members had not paid membership dues of Le 300 each for the year.*

You are required to prepare for Boyson social Club for the year ended 31/12/16.
(a) Subscriptions Account
(b) Bar Trading Account
(c) Income and Expenditure account for the year ended 31st December, 2016.

This question was one the least attempted by the candidates.The majority of candidates who attempted the question performed poorly. The fact was that most candidates lacked knowledge of the principles of double entry thus their inability to apply it correctly to Accounts of Non-Trading organisations.

Question 9

The trial balance of obirah for the year ended 31st December 2016 was provided as follows:

	₦	₦
Capital		*630, 000*
Drawings	69, 000	
Opening stock	300, 000	
Purchases and Sales	1, 050, 000	1, 200, 000
Returns	15, 000	18, 600
Debtors and Creditors	29, 400	21, 000
Provision for doubtful debts		2, 400
Salaries	90, 000	
Rates	18, 000	
Insurance	93, 000	
Telephone	3, 000	
Furniture at cost	120, 000	
Machinery at cost	90, 000	
Provision for depreciation		
Furniture		30, 000
Machinery		15, 000
Bad debts	600	
Bank balance	39, 000	
	1, 917, 000	**1, 917, 000**

Additional information:		₦
(i)	*Closing stock 31/12/16*	*360, 000*
(ii)	*Rates prepaid*	*1, 500*
(iii)	*Telephone outstanding*	*660*
(iv)	*Accrued salaries*	*15, 000*
(v)	*Provision for doubtful debts is to be increased to 10% of debtors*	
(vi)	*Depreciation on furniture at 10% on book value.*	
(vii)	*Depreciation on machinery at 20% on cost.*	

Your are required to prepare for Obinah:

The Trading, Profit and Loss account for the year ended 31st December, 2016 and a Balance sheet as at that date.

95% of the candidates answered this question. Majority of the candidates who attempted it scored high marks as the topic from which the question was drawn wasa familiar area of the syllabus.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
PRINCIPLES OF COST ACCOUNTING 2

1. GENERAL COMMENTS

The standard of the paper was within the scope of the syllabus and it was comparable to the standard of those for the previous exams.
Candidates were examined in the following areas: Labour Remuneration, Service Accounting, Breakeven Analysis, Cost Classification, Interlocking Accounts, Variance, Budget preparation, Stock Control Levels and Overhead Analysis.
The questions tested candidates in both theoretical and practical requirements in a fair proportion, as 40% of the marks related to written (theory) questions. Fortunately, candidates performed better in the theoretical requirements as compared with the calculations.

The number of candidates who sat to the WASSCE Principles of Cost Accounting paper 2 in The Gambia was 264. The paper was considered to be fair.
It was noted that there was little evidence of time shortage. A small number of candidates answered questions 4 and 9. The performances on these questions were unsatisfactory especially question 9 which was much more appalling. It is essential that candidates read questions and rubrics carefully before selecting the questions to be answered. In some centres, some candidates deliberately answered more questions than required.
Although the standard of presentation was good for high performing candidates, there are still some candidates who need to take greater care with their presentations in order to improve their marks. Some candidates compressed their answers onto one single page, rather than spreading out their answers in a more presentable fashion, making it difficult for examiners to read figures and calculations.

2. CANDIDATES' STRENGTHS

Candidates who prepared and were ready for the examinations scored more than **HALF** of the total marks. Question 8 was handled well by most students. Candidates with high understanding of costing principles and effectively completed the syllabus, scored high marks.

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 orderly and logical presentation of answers was below average.

4. SUGGESTED REMEDIES

Candidates are advised not to take the exams for granted. They should ensure that they take steps to complete the syllabus and worked through series of questions before the exams. They should read and fully understand the questions before attempting it. They are advised to attempt all the two and three questions required in section A and section B respectively. They should know that it is not the aim of any examiner to fail candidates. Finally, candidates should endeavour to get recommended cost accounting textbooks and stop relying on pamphlets which are mere supplementary materials.

5. DETAIL COMMENTS ON INDIVIDUAL QUESTIONS

SECTION A

Question 1

*(a) List **five** qualities of good cost accounting information.*
*(b) State **five** differences between financial accounting and cost accounting.*

(a) Candidates generally demonstrated good understanding on **qualities of good costing information**. However, some candidates were busy writing about costing principles and others were engaged in mere repetitions which make them to lose marks.
(b) A good majority of the candidates demonstrated a good understanding of differences **between financial accounting and cost accounting**. Yet again, it is disappointing to report that only a minority of the candidates got the full marks and, as a result, the majority were unable to access the full **SIX** marks.

Question 2

(a) Explain the reason why overhead absorption rate should be predetermined.
(b) Explain over-absorption and under-absorption of overheads.
(c) State the difference between overhead apportionment and overhead absorption.

This was a question on **Overheads**. For the first part of the question, candidates were required to explain the reason why overhead absorption rate should be predetermined. Candidates were expected to mention that "to include a portion of overheads in the determination of cost of products that are completed before the end of the year in order to determine the selling price".This part of the question was poorly attempted.
The (b) part of the question was well attempted. Candidates were able to explain *over-absorption and under-absorption of overheads* well.
Meanwhile, the last part of the question was well answered by the students who attempted it. Candidates were able to state the difference between overhead apportionment and overhead absorption.

Question 3

(a) Explain standard costing?
(b) Explain four types of standards used in industries.

Candidates did well in explaining standard costing. However, few candidates missed out as they failed to bring out the key terms in the explanation. It should be noted that standard costing is the technique which establishes pre-determined estimates of the costs of products and services and then compares these predetermined costa with actuals incurred for analysis of any variances.
The approach to the part (b) of the question by most candidates weregood. High performing Candidates were able to give and explain types of standards as ideal standard, attainable standard, basic standard and current standard.However, other candidates could not explain type of standards correctly and instead were listing and explaining various variances like material variance, labour variance among others.

Question 4

This was an essay type question budgeting. Candidates were required to:

(a) What is budgetary control?

(b) Explain the objective for preparing the following subsidiary budgets:

(i) cash
(ii) production
(iii) sales
(iv) capital expenditure

Few candidates attempted this question and those who attempted it messed up. They could not explain budgetary control well. Some of them were merely explaining budget instead. It should be understood that budgetary control is a control technique whereby actual results are compared with budgets and any differences are identified and corrected. The approach to the part (b) of the question was not good either as candidates struggled to score the maximum mark.Candidates were expected to explain cash budgets, production budget, sales budget and capital expenditure Marks were awarded for clear explanation of the various items required in the question.

SECTION B

Question 5

Enjoyment limited produces sweet dee according to customers' specifications. The company received an order for 250 units which it had produced and delivered. Details of the inputs required to produce a unit of sweet dee are as follows:

Direct materials
Pee - 4 kg @ GH¢6 per kg
Key - 5 kg @ GH¢9 per kg
Direct labour
Grade A 12 hours @ GH¢ 12 per hour
Grade B 6 hours @ GH¢ 4 per hour
Direct expenses - GH¢ 24
Overheads are charged at 25% of direct wages
You are required to prepare a statement showing the;

(a) cost of producing one unit of sweet dee;

(b) profit on the sales of the order for 250 units at a margin of 25%.

Most of the candidates attempted this question. The approach to the question was SATISFATORY. It is worth noting that most candidates correctly worked up to production cost but were confused calculating profit on the sales of the order for 250 units at a margin of 25%. Some candidates lose marks for their inability to calculate profit margin on cost of production.

Question 6

Dodzi Manufacturing is planning its production operations for its product, Champion Rice, for the next year.
Information for the past year showed the following:

Production (bags)	*Cost (D)*
24,000	*1,296,000*
38,000	*1,800,000*

A bag of rice is sold for D51 and the business is targeting a profit of D 300,000 for the next year.
You are required to calculate:

(a) Variable cost per unit
(b) Contribution per unit
(c) Fixed cost
(d) Breakeven point in units
(e) Breakeven point in sales value
(f) Number of bags to be produced and sold to meet the target profit.

This was a breakeven question. Most of the candidates attempted this question. The approach to the question was SATISFATORY. Some candidates lose marks for the wrong formula. It is worth mentioning that candidates need to recall the formulae which attract some marks.
High performing candidates scored maximum marks in the question. However, others had difficulty in calculating variable cost per unit using high and low method.
The requirement of the (a) part of the question is highlighted below:

Production (bags)		Cost (D)
High	24,000	1,296,000
Low	38,000	1,800,000
Difference	14,000	504,000

Variable cost per unit D504,000/14,000 = D36
The other part of the question, marks were awarded for the formulas, the substitution and the final answer.

Question 7

Grace International school is in the process of billing students for the next term. The school comprises of 400 boarding students and 2, 000 day students.
Cost estimates for the term are as follows:

	Le
Feeding	*72, 000*
Electricity	*16, 000*
Water	*8, 000*
Transportation	*10, 000*
Uniform	*24, 000*
Hostel	*18, 000*
Maintenance	*6, 000*
Incidentals	*12, 000*
Tuition	*480, 000*
Administration	*43, 200*
	689, 200

Additional Information:

- *Feeding and Hostel cost are to be charged to boarders **only.***
- *25% of electricity and water cost is to be charged to boarders.*
- *90% of transport cost is to be charged to day students.*
- *All other expenses are to be chargedto **all** students equally.*

*You are required to prepare the terminal bill for **each**:*
(a) boarding student;
(b) day student.

The performance of the candidates is barely unsatisfactory. Most of them did not know how to handle this question and as a result performed poorly. Only few candidates attempted this question in preparing the terminal bill for both boarding and day students. The errors made by candidates did not follow any particular pattern and most solutions were characterized by series of wrong entries resulting in candidates who attempted this question scoring very low marks.

Question 8

Alibi Company Limited has established the following stock levels for its business:

maximum usage	*550, 000 units;*
minimum usage	*350, 000 units;*
re-order quantity	*600, 000 units.*

*It takes between **two** and **four** months for orders to be delivered.*

You required to calculate the:

(a) re-order level;
(b) maximum stock level;
(c) minimum stock level:
(d) average stock level.

About 95% of the candidates attempted this question. Most candidates apparently did well in this question. However, few other candidates could not use the formula well. Candidates were expected to show the workings as follows:

ALABI COMPANY LIMITED

(a) Reorder Level = Maximum Usage x Maximum lead time
550,000 x 4 = 2,200,000 units
(b) Maximum Stock level = ROL + EOQ – (Min Usage x Min lead Time)
2,200,000 + 600,000 – (350,000 x 2) = 2,100,000 units
(c) Minimum Stock level = ROL – (Average Usage x Average Lead Time)
2,200,000 – (450,000 x 3) = 850,000 units
(d) Average Stock Level = $\frac{\text{Maximum Stock Level + Minimum Stock Level}}{2}$

$\frac{2,100,000 + 850,000}{2}$ = 1,475,000 units

Marks were awarded for the workings leading to the final answers. Marks were also awarded for formulas and correct substitution.

Question 9

Employees of Kayode Limited work a 40-hour week during which each workers is expected to produce a basic of 4, 000 units of product.
Employees are paid Le 50 per unit produced and to motivate workers, Kayode Limited has instituted the following incentive scheme:

Production (Units)	*payment (Le per unit)*
4001 - 5000	*60*
5001 - 6000	*70*
Above 6000	*80*

All employees pay 6% of basic wages to Social Security Fund and 5% towards a provident fund. Income tax is charged at 5% for wages up to Le 250, 000 and 10% for any extra income. Provident fund is subject to tax.

Production for the week is as follows:

	Units produced
Kolawole	*4, 560*
Kamara	*5, 250*
Kwame	*3, 900*
Kunte	*6, 100*

Your are required to prepare:

(a) schedule of earnings for production showing the total earmings to ***each*** *employee;*
(b) a payroll sheet for Kayode Limited for the week.

It was very disappointing to note how many candidates seemed incapable of attempting the preparation of the payroll sheet.Most candidates did not do well and hence marks were lost in a rather careless way by some candidates. Most of them were unable to calculate the bonus and other statutory deductions correctly.
The approach to the question was also poor and the few candidates who attempted the question, only two candidates scored the maximum marks.

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
HOME SCIENCES

1. STANDARD OF THE PAPERS

The Chief Examiners in the Home Sciences reported that the standard of the papers compared favourably with those of the previous years. They also stated that the questions were straightforward and within the scope of the syllabuses.

2. CANDIDATES' PERFORMANCE

The Chief Examiners' reports indicate that Candidates' performance was unsatisfactory in Clothing and Textiles 2 and Clothing and Textiles 3 as 80% of the candidates failed to score an average mark. Candidates were however able to complete the required tasks in Home Management 3 and Foods and Nutrition 3 respectively. It was also reported that the candidates' performance in Foods and Nutrition 2 was satisfactory.

3. CANDIDATES' STRENGTHS

Candidates were able to attempt the required number of questions in Home Management 2, Foods and Nutrition 2 and Clothing and Textiles 2. Most candidates were also able to complete the tasks in the practical examinations and some made impressive displays of their completed work in the manner they served their meals in Foods & Nutrition 3.

4. CANDIDATES' WEAKNESSES

Some candidates showed a lack of manipulative skills in the practical examinations. Wrong utensils and equipment were used during the exam in carrying out certain tasks and this made them to lose some marks. Multitasking was also a big challenge for most of them. Most times candidates tended to misinterpret the questions. In Home Management 2 candidates could not understand most of the questions. Many candidates spent too much time copying the questions on their answer books.

5. SUGGESTED REMEDIES

To improve on the performance of candidates, the chief Examiners of the Home Sciences made the following suggestions:

- Candidates should have access to the chief examiners' reports.
- Qualified Teachers should be appointed to teach the subject.
- Candidates should seek proper tutoring and ensure that they get regular practical lessons.
- The entire syllabus should be properly covered in revision.
- Candidates should be taught to understand the questions before attempting them.

- School Administrators should ensure that Home Science Labs are well equipped and Candidates should be introduced to a lot of practical work to enhance their understanding of the proper use of utensils and equipment, and making right measurements when preparing food and/or sewing.
- Candidates must get and read the prescribed textbooks.
- Candidates should be exposed to topics on recipe and recipe development.
- Schools should organize open days so that students are motivated.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
CLOTHING AND TEXTILES (2)

The Clothing and Textile paper (2) for 2018 WASSCE for school Candidates was fair. The questions were drawn within the Syllabus.

This year's performance was unsatisfactory. Candidates performed poorly and as usual it was nothing to be proud of.
Comparatively the trend remains the same as far as performance is concerned. 80% of the Candidates did not get the average mark which is 20 out of 40 for the paper (2) the candidature too has dropped drastically as compared to last year.

1. CANDIDATE'S STRENGTHS

- Candidates were able to choose 4 questions out of six

2. CANDIDATES WEAKNESSES

- Candidates were not able to illustrate using diagrams
- Poor construction of sentences
- Misinterpretation of questions

3. SUGGESTED REMEDIES

- The chief examiners report should reach the schools on time.
- Teachers should be encouraged to read the chief examiners report
- Qualified teachers should be appointed to teach the subject
- School administrators should make sure the clothing lab is well furnished.
- Schools should organized open days so that students will be motivated.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) Define design in clothing construction.
*(b) List **four** elements of design*
*(c) With the aid of **two**diagrams explain the difference between formal balance and informal balance as used in clothing design.*
*(d) Suggest **two** suitable styles for the following figure types*

(i) Flat chest
(ii) Thick chest.

This question was attempted by 60% of the candidates. They were not able to score high marks because the question was misunderstood by 50% of the Candidates in the (a) part, Candidates could not simply define design in Clothing and Textiles. 60% of the Candidates define design as a drawing to beautify a dress.
In clothing construction a design can be defined as: A sketch or a plan which guides the production of a garment.

In the (b) part, the Elements of design include; Texture, Form, Line, Dot, Colour, Shape, Space.

In (c) the diagrams drawn should show that in formal balance the design is the same on both sides and that in an informal balance, the design is different on each side.

In the (d) part, 40% of the Candidates were able to state few suitable styles for the two figure types as

(i) Flat chest: . horizontal line designs
. boat shaped neck
. fullness at bust area
. cowl neckline.

(ii) Thick chest: . V. neckline
. Keyhole neck line
. Short sleeves, long sleeves
. Scoped neckline

Question 2

*(a) Outline **four** pre – shopping activities that will aid the individual to shop wisely.*

This was the most popular question 90% of the candidates attempted it and were able to score marks ranging from 4 – 12.
In the (a) part, candidates were able to give answers such as:

- Do a market survey
- Do window shopping
- Take inventory of your wardrobe
- Make a shopping list
- Decide how much money to be spent
- Check available wardrobe space

*(b) State **three** points each on the following factors to consider when purchasing clothing for an 8 year old child.*
(i) style
(ii) fabric

The (b) part answers are:
(i) Style for the 8 year old

- Easy to wear and remove
- Loose enough to allow movement
- Style should be simple
- Easy fasteners

(ii) Fabric

- should be durable
- design should be bold
- should be easy to care for
- should be less expensive.

*(c) State **two** advantages and one disadvantage of purchasing clothing items in bulk for the family.*
*(d) State **two** duties of a retailer.*

In the (c), the advantages of purchasing clothing items in bulk for the family includes saving money, time and energy.

- The disadvantages of purchasing clothing items in bulk for the family are that it encourages wastage. Storage for the clothing may be a problem and most of the clothing may go out of fashion before they're used.

(d) In the (d) part, 60% of the Candidates were able to state the duties of a Retailer. This includes

- buying and selling clothing items;
- Serving customers;
- displaying items attractively for customers to view;
- advice customers on purchases.

Question 3

(a) Explain edge finishes as used in clothing construction
(b) Give two examples each of suitable edge finishes for the following
(i) linen wall hanging
(ii) style line of a flat color
(iii) waistline of a skirt
(iv) edge of circular apron
(v) hem of a child's petticoat

*(c) With the aid of **two** diagrams show how to attach a sleeve to a blouse.*

This question was attempted by 80% of the candidates but it was poorly done.
In (a) candidates were not able to explain edge finishes only 5% were able to draw diagrams. The answer should have read:

- Edge finishes are treatments given to raw edges of articles to prevent it from fraying or curling.

In (b) the answer should be:Suitable edge finishes for;

(i) linen wall hanging are hemming, binding, shell edging, over locking, piping, embroidery

(ii) style line of a flat collar are piping, binding, attaching frills, facing, lace edging

(iii) waistline of a skirt include attaching band, casing, facing and binding.

(iv) edge of circular apron include binding, facing, shell edging, piping, scalloping and lace edging.

(v) hem of a child's petticoat are shell edging, hemming, lace edging, over locking, binding, scallop, facing

Question 4

State three characteristics **each** of the following fabrics;

(a) calico
(b) linen
(c) flannel
(d) corduroy
(e) gingham

This was the simplest and most popular question 90% of the candidates attempted it but were only able to give the correct characteristics of Linen and calico, this can be attributed to the fact that linen and calico are popularly used in the Gambia.

(i) Calico,does not fray, burns readily, easy to launder, shrinks, stronger when wet,durable and cool to wear

(ii) Linen is hardwearing, creases badly, hangs well, frays badly, firm to sew, keeps shape well, cool to wear and withstands high temperature.

(iii) Flannelpleats well, does not fray, firm to handle, does not crease, easy to launder and cool to wear

(iv) Corduroy is hard wearing, firm to handle, keeps shape well, easy to launder, does not crease, has a nap and is cool to wear

(v) Gingham is easy to handle, easy to press, gathers well, durable, does not fray, creases badly and burns readily.

Question 5

a) Explain the following terms used in clothing and textiles
(i) modeling
(ii) fashion show
(iii) exhibition

*b) State **three** factors to consider when selecting clothing items for exhibition.*
*c) State **four** points to consider when mounting an exhibition for clothing items.*
*d) State **two** reasons for organizing fashion show*

60% of the candidates attempted it but was poorly answered.
Less than 5% of the candidates were able to explain one or two of the terms.

The (b) part of this question was poorly answered by 95% of the candidates. Apparently it seems that the Candidates did not understand the question. 70% wrote on wardrobe planning which had nothing to do with the question.

In the (c) part, they couldn't state the points to consider when mounting exhibition for clothing item. Thepoint to consider include color scheme, security, designs (interior and exterior), attraction, venue, location, space, ventilation, weather and advertisement.

In the (d) part, 50% of the Candidates gave good reasons for organizing fashion shows as

- to attract customers
- to display the latest design
- to encourage sales
- to advertise goods and services

Question 6

*a) (i) Mention **two** fabrics suitable for making underwear.*
*(ii) State **two** properties of one of the fabrics mentioned in (a)(i) above.*

*b) Identify **two** areas of a dress where piping can be applied.*

*c) State **two** differences and one similarity between piping and facing.*

*d) (i) Give **two** examples of accessories which may have an opening.*
*(ii) Suggest **two** appropriate fastenings for one of the accessories listed in (d) (i).*

This question was attempted by 40% of the candidates and the performance was fairly good.

In the a(i) of the question the candidates were able to mention cotton & nylon as suitable fabric for making underwear.

Materials such as rayon, polyester, cotton blend, polyester blend and silk can also be used.

(ii) Candidates could not identify areas of a dress where piping can be applied. 50% of them could only state pockets,hemof dress and necklines.

Collars, cuffs, centre front of dresses, armholes, hem edge and anwaist bandsare also areas where piping can be applied.

In the (c) part, less than 5% of the candidates could answer this part of the question and even the candidates that attempted it answered it poorly.The answer should have read:

In the (d) part,90% of the candidates were able to give examples ofaccessories with openings as hats, shoes, bags, purse, wallet, slippers, earrings, necklace, wrist watch and bracelet

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
CLOTHING&TEXTILES PRACTICAL (3)

1. GENERAL COMMENTS

The2018 clothing and textile practical wasfair. The standard of the paper was average and the instructions were easy and straight forward despite that, candidate's performance was unsatisfactory
Some of the reasons that can be attributed to the poor performance can be:.
Lack of compete at teachers in Clothing and textiles
Gambia College not producing clothing teachers.
Student's nonchalant attitude towards the subject
Teacher's attitude towards the subject (charging exuberant sums of money)
School administration not giving the subject the attention that it needs.
Lack of Clothing equipment in schools.
No clothing room in most of the schools.
Not enough exposure in the practical work
Lack of commercial patterns in schools
Inadequate teaching materials for clothing.
The following Four pattern pieces were provided and candidates were expected to cut out and make a child's play dress.

A - Front dress
B - Back dress
C - Pocket
D - Pocket band

2. CANDIDATES PERFORMANCE

Candidate's performance was satisfactory. They could have scored high marks if the instructions were read and carefully followed.

3. CANDIDATE'S STRENGTH

Candidates were able to improvise using the needle where there was a problem with the sewing machine
Candidates were able to do the open seam
Most candidates were able to finish on time.
Candidates were able to prepare and attach the pocket.

4. CANDIDATE'S WEAKNESSES

Candidates did not follow the instructions on the question paper
Open seam was too bulky
Candidates were unable to fix the hook and bar properly
Poor button-hole stitch

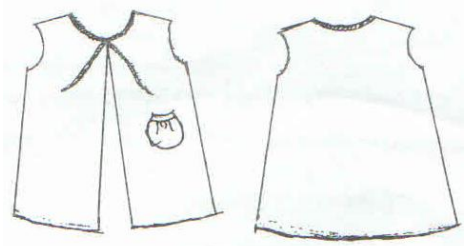
5. SUGGESTED REMEDIES

School administrations should encourage the teaching of Clothing in schools from grade seven.
MOBSE should collaborate with WAEC to run in-service training courses for Clothing teachers.

Competent teachers should be appointed to teach the subject
Clothing rooms should be well equipped.
Principals should encourage students to take the subject by providing most of the materials needed for their course work.
School administration should make sure that staff and students read the Chief Examiners report and take not of the concerns.

6. **DETAILED COMMENTS ON QUESTION**

Question 1 *You are expected to cut out and make a child's play dress so that the finished article will look as in Figures 1 and 2 below:*



Front View
Figure 1

Back View
Figure 2

(a) Layout the pattern pieces economically on the fabric, pin and cut out.
(b) Transfer all necessary pattern markings.

LAYING OUT AND CUTTING OUT OF PATTERN PIECES
In the laying and cutting out of the pattern pieces, 60%of the candidates did not lay and cut out the pattern pieces correctly. Some of them were unable to separate the pattern pieces despite the clear instructions. 25 to 30 % of them could not handle the scissors correctly. The wrong type of scissors was used; it was either too small or too big to be handled.
60% of the candidates find it difficult to transfer the pattern markings on the pattern to the fabric. The pattern markings were wrongly interpreted by some candidates. The place on fold symbol was not followed by 40% of the candidates and as a result of that more than the required pattern pieces were obtained and the pattern pieces were wrongly cut.
It is a concern that schools could not provide the correct dress maker's carbon for their candidates. Ordinary typing carbon paper was used which was wrong.Schools should have improvised by using crayon on A4 paper
Candidates spent too much time in the laying out and cutting out of the pattern pieces.
90% of the candidates made use of the sewing machine and iron.

Question 2

(a) Gather edge of pocket and attach band to pocket edge.
(b) Attach pocket to front dress.
(c) Join front and back shoulders using French seam.
(d) Edge stitch wrap on both sides of front dress.
(e) Bind neck edge of dress using the bias strip.
Leave 10 cm of bias strip hanging on both ends.
Hem edge of bias strips.
(f) Join the sides of dress using open seam. Neaten and press.
(g) Turn the hem and tack. Fix it down with slip hemming about 10 cm long.
(h) Attach label.

MAKING UP

In the (a) part which reads: gather edge of pocket and attach band to pocket edge: 40% of the candidates were able to do running stitch to the edge of the pocket and gather, 20% had problems to evenly distribute the gathers and as a result some parts were bulkier.

In the (b) part, 60% of candidates were able to attach the pocket to the front dress. 40% did not follow the pattern marking where the pocket was to be attached and therefore the pockets were wrongly placed.

The (c) part which reads: join the front and back shoulders using French seam. 80% of the candidates were able to do the seam accurately and scored full marks. 10% had bulky seam while the 10% made the wrong seam. Eg, open seam.

The (d) which reads: edge stitch wrap on both sides of the front dress. Most of the candidates could not understand edge stitch wrap. Only 5% could do the edge stitch using top sewing/blanket stitch, the other 95% used back stitch.

In the (e) part which reads, bind neck edge of dress using the bias strip. Leave 10 cm of bias strip hanging on both ends. Hem edge of bias strips: candidates were able to attach the bias binding to the neck edge comfortably. 50% were able to measure and leave the 10 cm of bias and neatly hemmed it whiles the 50% cut the bias.

The (f) part which reads: join the sides of the dress using open seam. Neaten and press. 95% of the candidates were able to join the sides of the dress using open seam. The section which reds neaten and press was neglected by 98% of the candidates. None of the candidates were able to neaten using either top stitch or decorative stitches. Few were able to press.

The (g) part of the question reads: turn the hem and tack. Fix it down with slip hemming about 10 cm long. 90% of the candidates were able to turn the hem but 99% did not bother to tack. 80% hemmed but did not use slip hemming as per the instruction. The 10 cm long was not observed by 99% of the candidates. Some of the hems were bulky.

In the (h) which reads attach label. This instruction was carried out by 100% of the candidates. They were able to write their names/index number on a piece of paper and attach securely.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
FOODS AND NUTRITION 2

1. GENERAL COMMENTS

The WASSCE for school candidates 2018 foods and nutrition examination was fair. The questions were all drawn from the examination syllabus.
The candidates' performance was fairly satisfactory. It was observed that last year's performance was better than this year. Only 55%of the candidates could obtain marks ranging from 20 out of 40. This can be attributed to the fact that this year, the questions were drawn from topics that are not taught by most teachers.

2. CANDIDATES' STRENGTH

- They were able to attempt four questions out of the six
- They were able to identify the diagram of the grain.

3. CANDIDATES WEAKNESSES

- Candidates had problems of constructing good sentences.
- Spelling was a mayor Problem.
- Decimation was also a problem.
- Interpretation of the question was also a problem.

Question 1

(a) What are herbs and spices?

*(b) State **four** functions of herbs and spices in food preparation.*

*(c) Give **four** examples **each** of*
(i) herbs;
(ii) spices.

This question was attempted by 90% of the candidates. It was satisfactorily answered by 60% of the candidates.

In the (a) part of the question candidates were able to define herbs and spices as food additives added to improve flavour, color and taste of food

In the (b) part, 70%of the candidates were able to state the functions of herbs and spices in food preparation as:

- tenderizer
- improves flavour
- use as garnish
- adds variety to meals
- used as beverage.

In the (c) part which reads:, give four examples of herbs and spices , 50%,of the candidates find it difficult to distinguish between herbs and spices. Some herbs such as parsley were taken as spices while curry was taken as a herb.

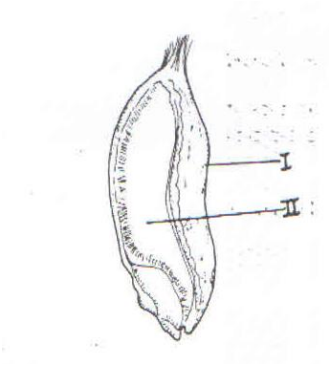
Examples of herbs are

- mint leaves
- thyme
- sage
- garlic
- onion

Examples of Spices are

- nutmeg
- cinnamon
- cloves
- pepper
- turmeric.

*The diagram below is an illustration of a cereal grain. Study it and answer question **2**.*



Question 2

*(a) Identity the parts labelled **I** and **II**.*

*(b) State the composition of the parts identified in **2**(a)*

*(c) (i) State **six** uses of cereals in cookery.*

*(ii) List **two** macro nutrients found in cereals.*

This was not a popular question. Less than 50%of the candidates attempted it and only 20%of them were satisfactory.
In the (a), part, less than 5% could identify the part labelled as
(i) bran and (ii) endoderm.

In the (b) part,

(bran) is made up of many layers of cellulose and rich in mineral salts and B vitamins.

(endosperm) forms the largest part of the grains and it is rich in carbohydrate and protein.

In(c) (i) the uses of cereals in cookery are as follows :
- add bulk to food
- enhance colour of food
- for making drinks
- as binding agent
- For making desert
- making snacks.

In the (c) (ii) only less than 10%could state the macro nutrients found in cereals. Candidates were mentioning the food groups. The answer should have read:
- protein
-carbohydrate
-vitamins
-mineral salts..

Question 3

(a) (i) State the three functional groups of food.

{ii) State one example of food group for each of the groups mentioned in 3(a)(i)

*(b) State **four** importance of food to man.*

This question was attempted by 80% of the candidates.

The functional groups are

-Body builders
-protective
-energy giving

In the(b) part, candidates were able to use their experience to answer the questions. The importance of food to man can be:

- to satisfy hunger
-as a tool for hospitality
-to show concern to the sick
-to protect the body against diseases
-to repair wornout tissue
-to determine social status.

Question 4

(a) Explain the term work ethics

*(b) Explain **four** qualities that make up good work ethics.*

This question was the most popular question. 98% of the candidates attempted it but unfortunately the question was mis-interpreted. 70% of the candidates were defining table manners. The answer should have read:

Work ethics is the moral practice by employers for a successful job performance.

The (b) part should read: the quality that makeup good work ethics are:.

- punctuality : employers and employees are expected to respect Time
-honesty : employees and employers should be truthful and faithful.
- Respectful : they should all have respect for each other.
- empathy : ability to have feelings for each other and treat each other the way you want to be treated.
-reliability : trustworthiness, ability to resist negative pressure or coercion.
- fairness : for a successful business, there should be fairness in dealing with each other.

Question 5

(a) What is the importance of time and energy management in food preparation?

*(b) State **five** reason for adapting and changing recipes.*

*(c) (i) List **two** labour saving devices used in the preparation of vegetable puree.*
*(ii) State **one** function of **each** of the devices listed in **5(**c)(i).*

This wasn't a popular question. Less than 40% attempted it and unfortunately it wasn't properly answered.

The importance of time management in food preparation can be
- to reduce stress
-to reduce fatigue
- for work simplifications
- to eliminate boredom
-to eliminate unnecessary movement and poor posture in order to conserve time and energy.

Question 6

(a) Explain the concept of Conservative method of cooking,.

*(b) List **four** examples of conservative methods of cooking.*

*(i) List **four** examples of conservative methods of cooking.*
*(ii) Give **one** example **each** of food items that are appropriate for **each** of the methods listed in **6**(b)(i).*

*(c) State **four** advantages of conservative methods of cooking.*

Less than 5% of the candidates attempted this question and even the candidates did not perform to expectation.

The answer to the(a) part should have read:
Conservative methods of cooking are methods by which nutrients in food are conserved or retained.

The (b)(i) should read examples of conservative method of cooking are
- stewing
- steaming
- sautéing
- poaching
- stir frying.

(ii) examples of food items that were appropriate for each of the methods listed in 6(b) (i) are;
Stewing - meat, fish, vegetables, fruits.
Steaming - pudding, fish, vegetables, abala, oleleh
Sautéing - vegetables, fish.
Poaching - fish, eggs, vegetables.

SUGGESTIONS

- School administration should ensure the chief Examiners Report is read by the teacher.

- Qualified Foods and Nutrition teachers should be employed to teach the subject.

- Candidates should be encouraged to read supplementary books, journals

- Candidates should be encouraged to use the Internet.

- Candidates should be exposed to practical work.

- Teachers should make sure all the syllabus is covered.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
FOOD AND NUTRITION 3

1. GENERAL COMMENTS

The 2018 practical examination question for School Candidates was fair as it is part of planning meals for special (invalids) people.

Candidates' performance was much better as compared to last year.
The overall performance was average. 50% of the candidates were able to interpret the question and chose dishes that were good for invalids.

2. CANDIDATES' STRENGTHS

Candidates were able to finish on time
Candidates were able to interpret the question
Candidates were able to clear and wash their used dishes
Candidates were able to serve using the appropriate serving dishes.
Candidates were able to use labeled plastic bottles for their drinks.

3. CANDIDATES WEAKNESSES

Most candidates did not indicate the type of invalid they were cooking for.
Wrong method of cooking for invalids (methods should have been steaming , boiling)
Wrong use of equipment e.g. using a knife to stir food.
Candidates inability to set and line a tray

4. SUGGESTED REMEDIES

Candidates should make more effort by reading beyond their notes. They should make use of the internet, supplementary books or journals.
Schools should employ qualified home economics teachers.
They should be doing more practical work.
Teachers should make sure they read the annual Chief examiners report to know some of the faults and their remedies

5. DETAIL COMMENTS ON QUESTION

(a) Using any cereal of your choice; prepare, cook and serve the following for an invalid:
(i) a snack dish;
(ii) a suitable dish for lunch.

(b) prepare and serve a suitable accompaniment each for (a)(i) and (a)(ii) above.

(c) set the lunch tray.

It was observed that 80% of the candidates did not indicate the type of person they were preparing meals for. They should have indicated the type and that should have determined the food to be prepared.
In the (A) part of the question, 90% did well by choosing the appropriate cereal dishes that is required.
Snack dishes eg, coos pancakes, cakes, tarts, pies, turnovers, rice oleleh, abala, etc

Candidates were able to prepare a drink to go with the snacks and drinks such as wonjor, ginger drink, baobab drink or fruit drink made from citrus fruits were served in a labeled bottle.
30% of the candidates served the refreshment on the table rather than placed it on the lined tray.

Lunch dishes eg, onepot dishes using cereals, cooscoos, 'benechine', 'findi', 'mbahal',etc

In the (B) part of the question, 90% prepared accompaniments such as stews, soups, gravy, jam sauce etc.

70% were able to use the appropriate type of utensils the invalid such as dainty plates and bowls

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
HOME MANAGEMENT 2

1. GENERAL COMMENT

The 2018 West African Senior School certificate examination for school candidates Home Management 2 test questions were derived from both the theoretical and practical topics within the home management syllabus scope of the Senior Secondary course programme of grade 10 to 12. It has also been internationally moderated, coordinated and conducted accordingly.
The following observations / findings were made:

2. CANDIDATES' STRENGTHS

90% of candidates chose 5 questions out of 6 as instructed on the paper
98 % of candidates stated the numbers of the chosen questions on their answer booklets.

3. CANDIDATES' WEAKNESSES

Some candidates manifested incomplete coverage of course program.
About 25% demonstrated incompetency in the interpretation of the questions chosen
Misunderstood terms manifested in the candidates responses to some questions.
Some candidates do not understand the mode of answering questions that bears key words like' state, explain, enumerate/list , procedures, principles, purposes, guidelines etc.'
Wrong spellings of words in their responses therefore giving them different meanings.

4. SUGGESTED REMEDIES

School candidates should make effective use of both the WASSCE home management teaching and examination syllabus before the examination period to acquaint themselves with all topics of the Home Management syllabus.
Candidates should have access to the annual chief examiners report on Home Management to acquaint them with some of the observations made on the past exams and mode of answering questions.
Candidates should attend regular Home Management lessons before registering for the exams.
Home Management teachers/facilitators should not recommend students for the exam if they were not serious during the teaching and learning periods.
The Ministry of Basic and Secondary Education (MoBSE) in collaboration with WAEC - Gambia should conduct training workshop or pre & in service training programs for all Home Management teachers for building their capacities to effectively and efficiently improve the teaching and learning activities in this subject to serve as both facilitator and evaluator.

5. DETAILED COMMENT ON INDIVIDUAL QUESTIONS

Question 1 *(a)* *Define wealth*
(b) *Explain **two** types of wealth.*
(c) *State **four** advantages of saving money.*

The above question was very popular. The performance of candidates on the 'c' part of the question was satisfactory. Candidates scored 50% of the allocated marks.However, the performance on the 'a' was very poor.
Instead of defining wealth as an asset, some candidates defined wealth as a person. Others supplied unclear statements like " it makes easy work if an accident happen at home without money at hand."
The performance on the 'b' part was also unsatisfactory. The explanation given on the types of wealth show that the topic was misunderstood. Instead of types, candidates explained how wealth is acquired e.g. "through inheritance"

Question 2 *(a)* *What is stain?*
(b) *Mention **two** types of stain.*
(c) *Outline the procedure used for removing the following stains:*
(i) *Iron rust;*
(ii) *Palm oil;*
(iii) *Blood.*

The above question was unpopular. Incomplete coverage and lack of mastery of the topic was manifested.
The performance of candidates on the 'a' and 'b' parts of the above question was average. The explanation on the definition and types of stainswere all mixed up. Some gave guessed answers. The types of stains are 'permanent and temporary' for most candidates.
The performance on the 'c' part was very unsatisfactory. The procedures for the removal of stain was not explained in a logical manner .No stain remover was mentioned. Wrong usage of vocabulary was common eg 'wash' instead of 'launder'. The use of hot water for the removal of blood stain, removing iron rust by lubrication, removal of palm oil by just drying under the sun and no washing, was missed by most candidates.

Question 3

(a) *Mention the **two** patterns of time use.*
(b) *State **five** principles for effective use of time.*
(c) *State **three** purposes of work simplification.*

A popular question chosen byalmost all candidates buttheir performance was weak in step 'a', very poor in step 'b' and satisfactory in the 'c' sections of the question. It could be observed that candidates misunderstood the question by the mode of responses. In question 3'b' and 'c' most candidates enumerated words like' time, strength, energy ' etc. that does not explain anything regarding the question.
The word principles in the 'b' section of the question was a misunderstood word. Candidates replaced the word with purposes and therefore supplied wrong answers.

Question 4
(a) *List **four** household equipment used for cleaning the kitchen*
(b) *Explain how **any two** of the equipment listed in **4**(a) above can be cared for.*
(c) *State **two** guidelines for choosing household equipment.*

The above question was very popular. The performance in 'a' part was very good. Almost all candidates were able to score 50% of the allocated marks. However, the performance in the 'b' part was very unsatisfactory.Inadequate responses were supplied. Almost all candidates could not mention the care for the mentioned household equipment in the 'a' section. Irrelevant answers supplied was meant for the usage.

Question 5

(a) Define self medication.
*(b) State **four** consequences of self medication.*
*(c) State **four** guidelines for caring for people with HIV.*

Another very popular question that 98% of candidates chose and performedsatisfactorily in the 'a' and 'b' sections. Most candidates scored more than 50% of the allocated marks. However the performance on the 'c' part was very poor. Most candidates supplied answers that were meant for airborne diseases like tuberculosis such as 'isolation of the individual.'

Question 6

(a) Define the term Buffet services.
*(b) State **five** guidelines for Buffet services.*
*(c) State **three** guidelines for table setting.*

The above question was popular. However, the overall performance of candidates was weak. The only part that candidates tried was in the 'a' part where they were asked to define buffet services. In the 'b' and 'c' parts, Irrelevant and out of the topic responses were supplied.

Candidates could not differentiate betweenguidelines for buffet services and guidelines for table setting. They gave irrelevant and wrong answers like: 'look for the money available, 'it is time to enjoy, ' etc.'

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
HOME MANAGEMENT 3

1. GENERAL COMMENT

The 2018 WASSCE(SC) Home Management practical 3 examination test questions 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, coordinated and conducted at the qualified school centers accordingly.
The practical examination test question was divided into four activities as follows:

2. CANDIDATE'S STRENGTHS

Punctual at the centres
Showed interest and determination in the practical exam
Adhered to instructions on activities
Mentioned the activities on the preparatory practical paper.

3. CANDIDATES' WEAKNESSES

Lack of multi-tasking skills
Lack of time management
Lack of practical skills in most of the activities
Manifested lack of practice on most of the activities
Most candidates cannot interpret the question; statements like "it is suitable for the question", "it is easy to prepare", etc. were given. Reasons were given for selecting materials and ingredients instead of reasons for the choice of activity.
Wrong vocabulary used; 'cleaning ' for 'washing' bed sheets and pillow cases
No aspect of gradual cleaning and clearing mentioned or demonstrated during the preparation and cooking process in the candidates' order of works / time plans until at the end of the whole exercise.

4. SUGGESTED REMEDIES

Candidates should make effective use of the annual chief examiners report on Home Management.
Candidates should master the subject matter in both theory and practice.
Candidates should make effective use of both the teaching and examination syllabus.
Home management subject teachers should serve as bothfacilitator (guidance) and evaluator during teaching and learning activities at schools.
Home management subject teachers should conduct practical lessons at schools in accordance with the topics in the syllabus only.
Candidates should experience not only summative theoryassessment but also internal practical formative assessment too to acquire skills and knowledge.
Schools should provide remedial classes as motivational measures to assist candidates who were weak or inexperienced in the subject to reach mastery level and qualify as a candidate.

5. **DETAILED COMMENT QUESTION**

Your pregnant mother is due for delivery.

A. Clean the room she will stay after delivery;
B. Clean and make the baby's cot;
C. Launder a bed sheet and two pillow cases;
D. Prepare and serve a suitable soup with an accompaniment for her.

Candidates were assessed on all the four activities of the test questions as listed above at the examination centres.

Question A - Clean the room she will stay after delivery

No practical skills in cleaning a room especially the sequence, most candidates will first and foremost sweep the floor and then mop the ceiling.
Most of them will just mop the floor once.
None of the candidates scrubbed or wiped the tiled floor or to remove excess detergent.
The soapy water and rag used for moping the floor were the same that they used for cleaning the walls and windows of their rooms
Most candidates' ceilings were just dusted with brooms leaving the ceiling sections with cobwebs.
Only few candidatesfollowed the logical sequences in cleaning their rooms. These were manifestation of lack of practical skills at schools.

Question B - Clean and make the baby's cot;

Most candidates lacked skills in cot making. Most of them did not dust, wipe the bed and none of them sprayed the cot to get rid of insects and aired before making. Apart from bed sheets, candidates had no mattress covers, blankets, mosquito nets or porous fabrics, flat pillows etc.

Question C - Launder a bed sheet and two pillow cases;

Steeped the articles by pouring hot water and detergent on them. This process made it difficult to loosen stains on the articles.
Most of them did not apply starch on their cotton bed sheets and pillow cases. The usage of blue on white coloured bed sheets was very unsatisfactory. The blue solution was not strained in a blue bag and therefore left stains on the dry articles.
Very poor qualities of lines (ropes) provided at centres where candidates dried their laundered bed sheets and pillow cases. The lines were so weak that hungarticles dropped low and got stained from the ground. This challenge affected the marks of candidate on both manipulative skills and results on the articles in that activity.
Insteadof filling their local irons with the hot charcoal they have finished cooking with to press their laundered articles, candidates lit the charcoal in those irons and wasted a lot of time in ironing their laundered articles. Only one candidate aired her ironed bed sheets and pillow cases and folded them.
At some centres, none of the candidates pressed their laundered articles.

Question D - Prepare and serve a suitable soup with an accompaniment for her.

Candidate's performance on the above activity of the test was satisfactory at few centres. Practical skills in suitable soup and accompaniment preparation and cooking for an invalid were lacking. Most candidates demonstrated the following:

- Incorrect proportion of chief ingredients used.
- Too much ingredients prepared, cooked and served, than economically required by the question.
- Usage of wrong equipment in food preparation, cooking and serving.
- The prepared soups were watery
- The cooked rice were hard and indigestible for an invalid
- Serving bowls too big and not ideal for the cooked dish
- Lack skills in table setting - Big centre pieces- flower vases too big and artificial flowers used, tissue papers used for napkins
- The table cloths of most candidates were hanging at different levels; Balancing as an element of design was not applied during the presentation of the set table.

TECHNICAL/VOCATIONAL SECTION

WASSCE FOR SCHOOL CANDIDATES, 2018
RÉSUMÉ OF CHIEF EXAMINERS' REPORTS
TECHNICAL AND VOCATIONAL SUBJECTS

1. STANDARD OF THE PAPERS

All the Chief Examiners reported that the standard of the papers of the various subjects was appropriate. The questions covered almost all topics in the various subjects and tested a wide variety of knowledge and skills.

2. CANDIDATES' PERFORMANCE

The Chief Examiners for Applied Electricity 3, Auto Mechanics 3, Technical Drawing 3, Woodwork 3, Metalwork 2 & 3 and Visual Art 3 C reported that the performance of the candidates was generally good. The Chief Examiners for Technical Drawing 2 and Visual art 3 A reported that the performance of the candidates declined when compared to previous year, 2018. However, the Chief Examiners for Applied Electricity 2, Auto Mechanics 2, Woodwork 2 Visual Art 3 B and Visual Art 2 reported that the overall performance of the candidates was generally low.

3. CANDIDATES' STRENGTHS

The following strengths were identified by the Chief Examiners:

- The presentation of their facts were sequential according to the question.
- Some candidates were able to produced good work and they have obeyed instructions.
- Some candidates were able to make very good drawings.
- The use of correct scale and the required dimensions.
- The features needed in the free hand sketches were well presented for each drawing given.
- Skills in providing good quality of lines and skills in the use of instruments.
- Their ability in selecting the correct tools and equipment for the job in hand.

4. CANDIDATES' WEAKNESSES

Besides, the above strengths, some of the weaknesses were also identified by the Chief Examiners, as follow;

- Spellings of technical terms.
- Lack of knowledge of the subject matter.
- Poor numbering of questions.
- Poor drawing ability and composition
- Some candidates found it difficult to make proper sketches and labelling of diagrams was a problem.
- Inability to provide the proper safety gears for the production needed in the workshop.

5. SUGGESTED REMEDIES

The Chief Examiners proposed the following suggestions:

- Principals of schools are required to provide adequate tools and materials during practical lessons so that students would be able to familiarize themselves with the tools to avoid such difficulties during exams.
- Practical assessment should always be conducted with the proper safety gears and enough practical machines should be provided for candidates during the assessment period.
- Teachers should also try to cover a wide range of topics in the syllabus.
- The use of correct dimensions must be emphasized.
- More practice is required on mechanical and building tools, and candidates must demonstrate the awareness of resemblance and proportionality in their free hand sketching.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
METALWORK 2

THEORY PAPER (ESSAY TYPE)

1. INTRODUCTION AND GENERAL COMMENTS

The metalwork essay type questions consisted of five questions out of which, only four were to be answered. Twelve schools did the examinations with a total of 267 candidates.

The standard of the questions were most appropriate for the level of the grade 12 candidates. The five questions covered a lot of grounds on the metalwork syllabus and tested a wide variety of knowledge and skills.

About 50% of the candidates were able to make very good drawings but labeling and putting in the required features was a problem. Another area that candidates found difficult was the area on the properties of metals. Teachers need to concentrate some time on the properties of metals which is an important sector of the Metalwork Syllabus. Casting was another problematic question for the candidates but marks were appropriately allocated for the different questions.

2. CANDIDATES' STRENGTHS

- The candidates answered all the five questions in the paper.
- Some candidates (about 55%) understood the question and did well.
- Some of the candidates were able to make very good drawings.

3. CANDIDATES' WEAKNESSES

- Some of the candidates had no idea what the questions were asking for.
- Candidates found it difficult to make proper sketches and labeling of diagrams was a problem.

4. SUGGESTED REMEDIES

That all candidates doing metalwork to also do technical drawing.
That candidates have special drawing and sketching lessons.
That emphasis be made on the importance of all aspects of the syllabus.

5. DETAILED REPORT BY INDIVIDUAL QUESTION

Question1

*(a) (i) State **three** precautions to be observed when using the one (hacksaw) blade.*
*(ii) State **one** advantage of the adjustable hacksaw over the fixed hacksaw.*

*(b) State **two** differences between a **four** jaw chuck and a **three** jaw chuck.*

(c) Sketch the parting off tool in use.

This question was asking about the most commonly used tool in the workshop, The precautions to be taken when using a hacksaw blade was a daily question that you should ask yourself.
I am happy to note that the question was well treated by approximately 75% of the candidates. Teachers should concentrate more on safety precaution of the basic hand tools in the workshop.

The advantages of the adjustable hacksaw frame were very well answered by almost 80% of the candidates, who attempted the question. This shows that the candidates knew and understood the question very well,
This was a tricky question for those who attempted it. Most of our workshops do not have lathe machines and as such candidates found it difficult to answer it. Those who had an idea of it (20%) did well to answer it. Teachers should also pay attention to lathe machine work.
Lathe tools are very difficult to know if you are not familiar with them. Teachers must also pay more attention in treating the lathe, lathe tool and lathe parts. Their operation is also vital.

Question2

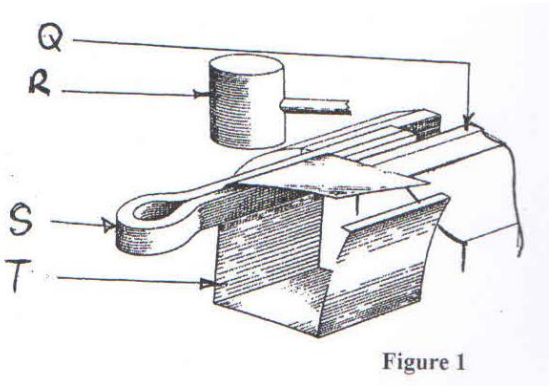


Figure 1

(a) *Identify the parts labeled **Q, R, S** and **T**.*

(b) *(i)* *State the function of the tool labeled **R**.*
(ii) *State the reason why the tool labeled **R** is preferred to strike the artifact.*

(c) *Explain the term polishing as applied in metal finishes.*

(d) *Sketch the buttress thread form.*

(e) *State **one** use of the buttress thread form.*

Candidates (about 65%) are quite familiar with this question. Sheet metal work is very common in the workshop. Candidates did well in answering this question. Labeling of parts of an operation should be emphasized by the teachers who are teaching the subject.

(i) The function of the labeled parts were well answered by the candidates.

(ii) The use of mallets in sheet metal work should also be explained. This is very important in surface finishing. The candidates about 45% did well.

Metal finishing is very important in metal work as it brings out the beauty of the artifact. Teachers should emphasize on it practically.
Threads and their forms are very important in the metal work syllabus. Candidates could not differentiate the different forms of threads and their functions. Teachers should spend more time on threads, their forms and functions.

Question 3

*(a) State **one** workshop test **each** to identify the following metals:*
(i) mild steel; (ii) aluminium.

*(b) Arrange the following metals from the **most** ductile to the **least** ductile:*
(i) low carbon steel; (ii) copper; (iii) lead;
(iv) aluminium.

This question (a & b) deals with metals and their properties. Candidates do not know much about metals and their properties. About 30% of the candidates who attempted this question did not do well. Teachers again should spend more time on "metals and their properties".

(c) Explain the following terms as used in foundry work:
(i) gating; (ii) pouring.
(d) What is fettling in casting?

This was a very common question and candidates must spend more time in the workshop treating this topic. The candidates (about 35%) attempted and did very well.

Foundry terms should be known by all candidates.

Question 4

*(a) State **two** methods of carrying out investigation in a design process.*

(b) With the aid of a sketch, show the process of swaging in forging.

*(c) State **two** qualities of a quenching medium.*

*(d) List **three** driving tools.*

Design is always a problem for the candidates sitting to the grade 12 examinations. Teachers must teach candidates about "design". It counts a lot in any examination but most teachers seem not to be very familiar with it.
Design is always a difficult question for candidates. Teachers must lay more emphasis on it. Candidates did not do well on this question. Only about 25% of the candidates attempted it.

Sketching and labeling of parts must be emphasised. This comes in the examination paper every year. Teachers should have special classes for sketching to make them proficient.

Heat-treatment is another area which candidates should be familiar with. Teachers must be encouraged to spend more time on heat treatment of metals. The candidates did poorly on this question. Only 30% of the candidates did this and got good marks from it.

Candidates did well in this question and describe the tools well. Most of them were able to draw the driving tools. Well done teacher

Question 5 *(a)* *State the difference between hollowing and raising.*

(b) *Explain the following terms in machining:*
(i) chamfering; (ii) knurling.

(c) *List **two** metals that do **not** require coolant when being cut.*

(d) *Explain the soft soldering process with reference to:*
(i) cleaning; (ii) heating; (iii) joining.

This question was a sheet metal work question. Candidates could not differentiate the difference between "hollowing" and "raising". Beating metal work is of vital importance in the workshop. Teachers should emphasize on the importance of the topic in the syllabus.
As mentioned earlier, machining was a problem for Gambian candidates. The reasons was not just one sided but teachers are not very familiar with them. Teachers of this subject must spend one year at the GTTI to learn about the lathe machine.
Still buttressing on metals and their properties. Most candidates were guessing on this question. As mentioned earlier, most of the metal workshops in the Gambia are without lathe machines. Many candidates do not know about coolants. This is another challenge for the teachers. The more they are exposed to teaching of lathe machine the better it becomes. The list given was quite good but candidates 20% do not know what coolants are and their uses.

Soldering was a common topic in the workshop. Most of the candidates (about 75%) know about the topic "soldering" and the terms use under this topic. The candidates used their knowledge of the topic and answered the question well. Keep it up teachers.

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CONCLUSION
In conclusion, the questions, as mentioned above were all answered by the candidates. Teachers should be congratulated but encouraged to do more.

RECOMMENDED READING

Metalwork for schools - J.N. Green
Theory and Practice in Metalwork – GEORGE LOVE

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
METALWORK 3 (practical)

PRACTICAL PAPER – FITTING

1. GENERAL COMMENT

This paper consisted of two practical exercises, out of which, one was to be attempted. One was a FITTING EXERCISE and the second, a MACHINING EXERCISE. The machining exercise was not choose by any candidate in the Gambia. All candidates (100 percent) went in for the fitting exercise which was to the level of the candidates. The total number of candidates was 267.

The exercise covered all the basic hand tools and their uses. The following operations were also addressed:

(1) Marking-out - Scribing
- Centre Punching
- Use of the Steel Rule
- Hack sawing
- Files and filing (different types)
- Hammers and hammering
- Drills and drilling machine
- Chiselling (the Parts A and B)
- Use of the Try Square

The use of all these tools and equipment were a real challenge to all the candidates because it revealed familiarity with their uses. The exercise was good and candidates measured to the challenges but some failed to even understand the question and the drawings.

2. CANDIDATES' STRENGTHS

Most candidates (about 45%) did extremely well in the general use of the hand tools.

3. CANDIDATES' WEAKNESSES

One very prominent thing that came up was the fact that the marking-out was not properly done. Most of the measurements were not correct and this led to poor production of the artefact.

4. CANDIDATES' PERFORMANCE

The sizes of PARTS A and B were good. Marking-out is one of the most important things in any practical work. As I always emphasise, If properly done, it would go a long way in helping the candidates to finish the assignment accurately.

Some candidates found it difficult to file to the required measurements but others did extremely well with it. Looking at the work, it seemed that some candidates never did any practical work before much more using the tools.

5. **SUGGESTED REMEDIES**

Teacher should put more emphasis on reading of drawing the proper use of hand tool. Teachers should concentrate more on marking out, filing and drilling exercise.

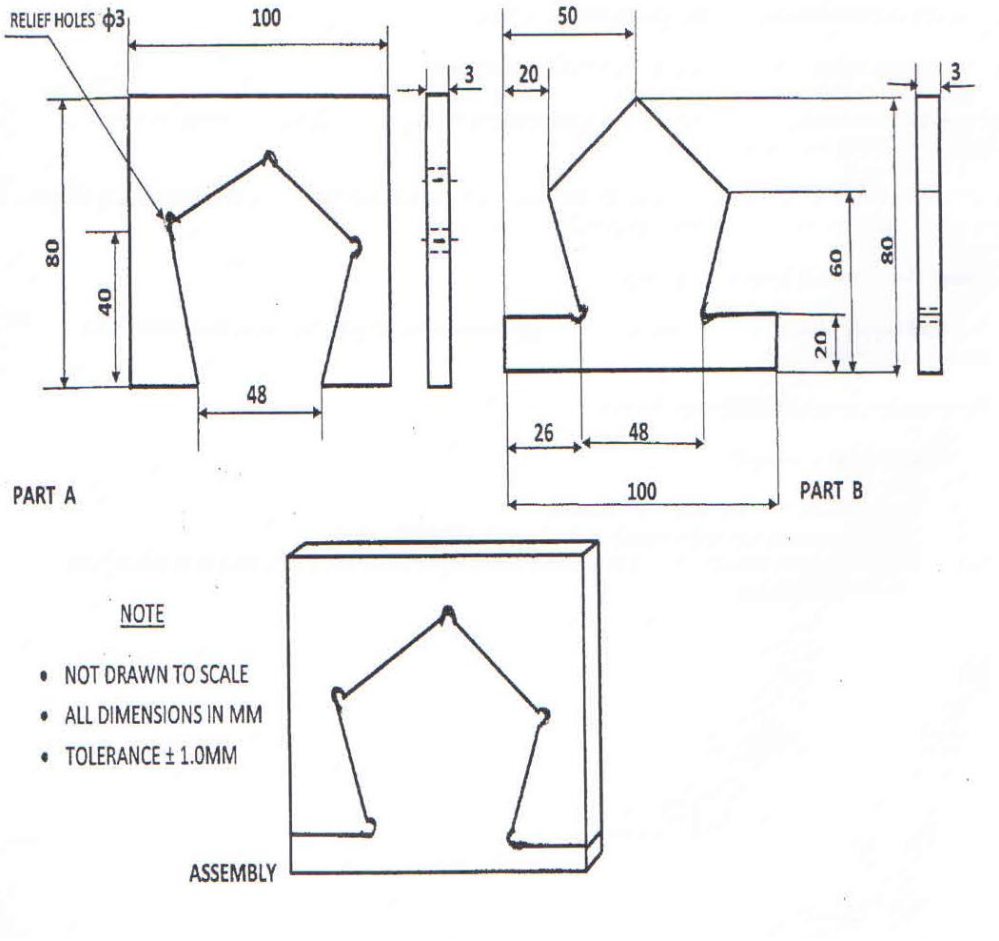
6. **DETAIL COMMENT ON INDIVIDUAL QUESTION**

Question 1 *The following materials are supplied:*

(a) flat mild steel plates, 105 mm x 85 mm *x 3 mm (2 off) for parts A and B;*
(b) one cotton bag, 150 mm x 120 mm to enclose the finished work;
(c) two tie-on labels.

The diagram below shows the assembly and detailed views of each part of a fitting exercise.

Using the materials supplied, prepare the parts and assemble the pieces.



PARTS A and B

These two parts carried different marks but the same tasks and challenges. The tools used are the same and required a lot of concentration for accuracy. The triangular parts of the tasks was also a challenge but candidates did extremely well in tackling the tasks. Some candidates did extremely well in that; half a job well done carries good and equal marks also. For those who understood the diagrams and the dimensioning, they did extremely well. Marking-out is the most important thing in any practical work as mentioned above. Once that is done properly, then

the rest, with a little bit of efforts would be easy. About 45% of the candidates did well with the marking-out. Almost 45% of the candidates did well in the production of parts A&B

One thing, which was always a challenge to candidates, is the alignment of holes in different pieces of metals. Teachers should give more attention to accuracy and good finish in the practical work. The triangular Parts A& B were also well done by over 35% of the candidates.

All the candidates demonstrated the proper use of files but the finishes were not very good at all. Considering the level of the candidates (pre-vocational), I can say that the candidates did well on average but more practical should be emphasised.

CONCLUSION

In conclusion, the candidates did extremely well in their use of the basic hand tools, machinery and equipment. Teachers should also be congratulated. Accuracy is so important that all teachers should pay more attention to it. Well done teachers. Congratulations.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
TECHNICAL DRAWING 2

1. GENERAL COMMENTS

The Technical Drawing 2(Essay) questions were set according to the prescribed WAEC syllabus and to the scope of the candidates.It wasa well balanced paper. There was a drop in the overall performance of the candidates compared to the past examination, which was based on various factors. Few candidates demonstrated a good understanding of the questions, while the majority appeared to be ill prepared for this paper.

2. CANDIDATES' STRENGTHS

In the construction, few demonstrated some knowledge in the various aspects:

- Skills in providing good qualityof lines
- Some skills in the use of instruments
- Ability to read and interpret orthographic drawing using the lowest point correctly
- Knowledge on the principles and theorem of area –conversion

3. CANDIDATES WEAKNESSES

- Many candidates could not copy the frame or required irregular pentagon and the triangular lamina using the right dimensions.
- Poor visualization with no awareness of what the lowest point is.
- Some candidates could not construct the inclined angle of the rectangular block.

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4. SUGGESTED REMEDIES

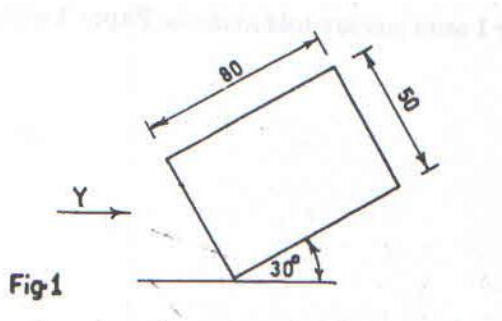
- More attention should be drawn on enlargement and reduction of figures (area conversion).
- Candidates must learn how to change orthographic drawing to isometric using required lowest point.
- The topic triangular lamina/ lines on space needs to be well taken care of by teachers in the classroom.
- Teachers should also try to cover a wide range of topics in the syllabus.

DETAILED COMMENTS ON INDIVIDUAL QUESTION

Question 1

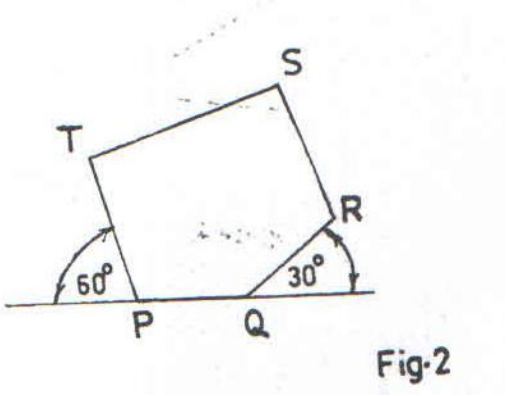
(a) ***Figure 1*** *shows an elevation of a rectangular block, resting on its breadth 80. Draw full size, in the first angle orthographic projection, the:*

(i) *Given view*
(ii) *Plan;*
(iii) *End view in the direction of arrow* ***Y.***



Fig·1

This question examined the knowledge of the candidates in visualizing and interpreting orthographic drawing, using the required principle. Out of the candidates who attempted this question, 40% of them performed well. While others demonstrated incorrect use of line and wrong dimensions.



Fig·2

(b) *Figure 2 shows a polygon: sides* ***PQ=QR=40; PT=RS=60 AND ST=80.***

(i) *Draw the given polygon*
(ii) *Draw a triangle equal in area to the polygon*
(iii) *Measure and state all the sides of the triangle*

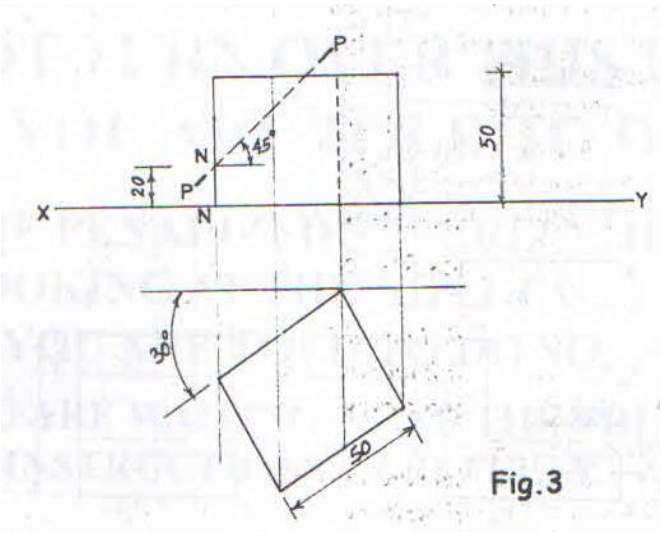


Fig.3

This question asked for the construction of a given polygon and converting it to a triangle equal in area to the polygon. About 35% of the candidates were able to construct it well. Majority of the candidates could not arrive at converting the polygon to a triangle.

Question 2

Figure 3 *shows the elevation and plan of a square prism made of sheet metal placed on a horizontal plane. It is opened at the top and cut by a plane* ***P-P****.*

Draw full size the:

(a) Given view;
(b) True shape of the section;
(c) Complete plan;
(d) Surface development, using ***N-N*** *as the seam .*

This question also examined the skills and knowledge of candidates in visualizing orthographic drawing and the basic concept of development using the required seam. About 20% out of the candidates who attempted this question did well. Candidates in their solutions demonstrated wrong dimensions, poor quality lines and wrong placement of views.

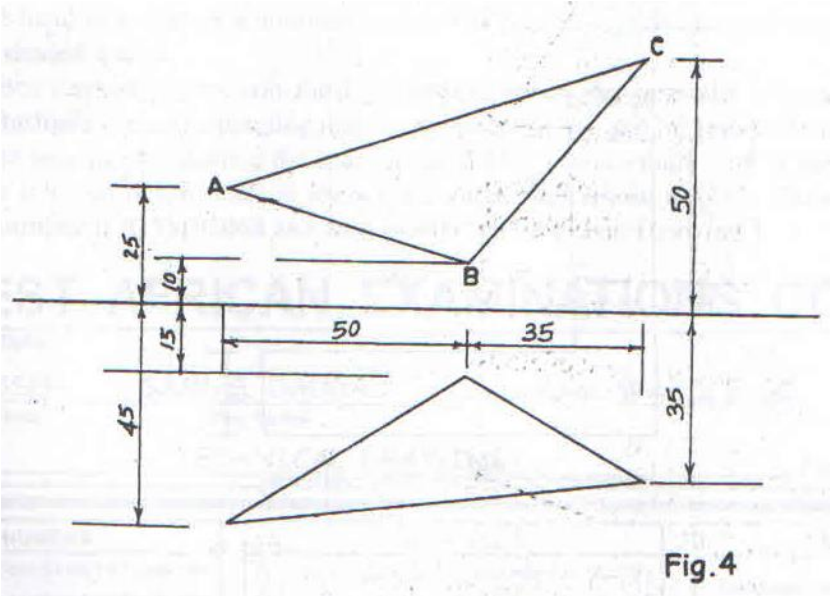


Fig.4

Question 3

Two *views of a triangular lamina are shown in* ***Figure 4****.*

(a) Copy the given views
(b) Construct the true shape of the triangle
(c) Measure and state:

(i) The lengths of the true shape of the triangle
(ii) The angle of inclination of the triangle to the horizontal plane.

In this question, skills and knowledge in triangular lamina was is required. About 10% of the candidates were able to draw the given views, while the majority could not get the solution correct.

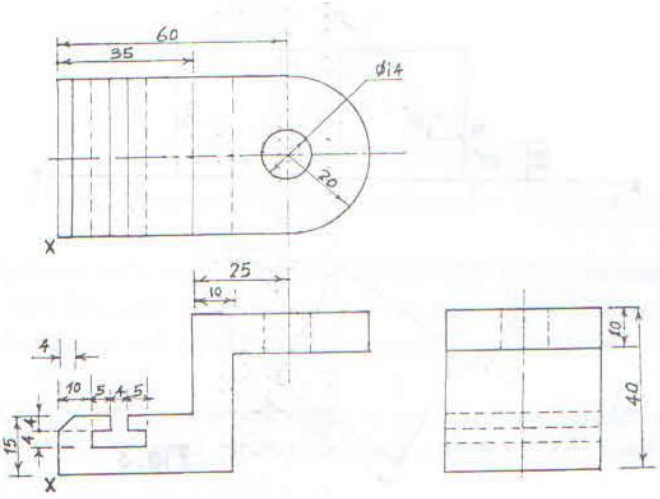


Fig.5

Question 4

Figure 5 *shows the orthographic view of a casting in third angle projection. Draw full size, the isometric view of the casting making* ***X*** *the lowest point.*

This question examined the knowledge and skills in visualizing and interpreting orthographic drawing to isometric drawing using the required lowest point. It was attempted by many and about 65% of the candidates performed well, while others used the lowest point and wrong dimensions.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
TECHNICAL DRAWING 3

1. GENERAL COMMENTS

Technical Drawing paper3 comprised of standard questions and are set to the scope of the candidates.
The overall performance of the candidates in both the section A and B was reasonably good. Candidates should be well equipped and to cover a wide range of topics before the examination.

2. CANDIDATES' STRENGTHS

Candidates demonstrated some skills in the various aspects:

- The use of correct scale and the required dimensions
- Ability to interpret orthographic and the use of the lowest point to draw the isometric block.
- The features needed in the freehand were well presented for each drawing given.

3. CANDIDATES' WEAKNESSES

The following weaknesses were noted in candidates solution:

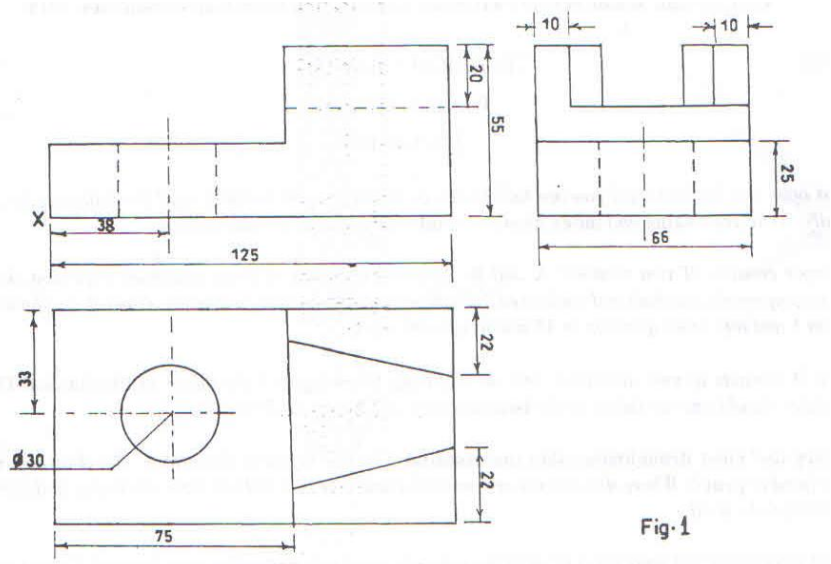
- Poor line work and wrong dimensioning.
- Wrong placement of views, poor sectioning and assembling of components(on the mechanical drawing)
- Many candidates were unable to complete the required views for both the mechanical and building drawing within the given time.
- Insufficient coverage of the syllabus.

4. SUGGESTED REMEDIES

- Candidates must use BS conventions with regards to line work and scale.
- The use of correct dimensions must be emphasized .
- More practice is required on mechanical and building tools, and candidates must demonstrate the awareness of resemblance and proportionality in their freehand sketching.
- The coverage of all topics in the syllabus is of great importance.

SECTION A

Answer two questions from this section: question 1 and any other question.
Use the A2 (594 mm x 420 mm) drawing paper provided.
(Candidates will be penalized for using any drawing aid other than pencil)



Fig·1

*Question **1***

***Figure 1** shows a block in orthographic projection. Make a freehand pictorial sketch of the block making **X** the lowest point.*
This question examined the skills and knowledge in drawing an isometric block when given orthographic view, with the use of a specific position (i.e the right lowest point X). Well, over 95% of the candidates attempted this question with the majority obtaining the pass marks. The major problems of the candidates were drawing of all the features of the block in their relative position and in good proportion

Question 2

Make a freehand pictorial sketch of a bolster.
Majority of the candidates produced poor quality lines, lack of good proportion and resemblance. The drawing of the bolster shows a clear indication of the wrong prediction of question by both candidates and teachers well before the examination.

*Question **3***

Make a freehand pictorial sketch of a straight snip.
Majority of the candidates did not present their drawing in pictorial drawing. Lack of resemblance and proportionality is also demonstrated by candidates solution in this question.

SECTION B –Building Drawing

Question 4

***Figure 2** shows the sketch plan of a three bedroom bungalow. Study the given specifications and answer the questions that follow.*

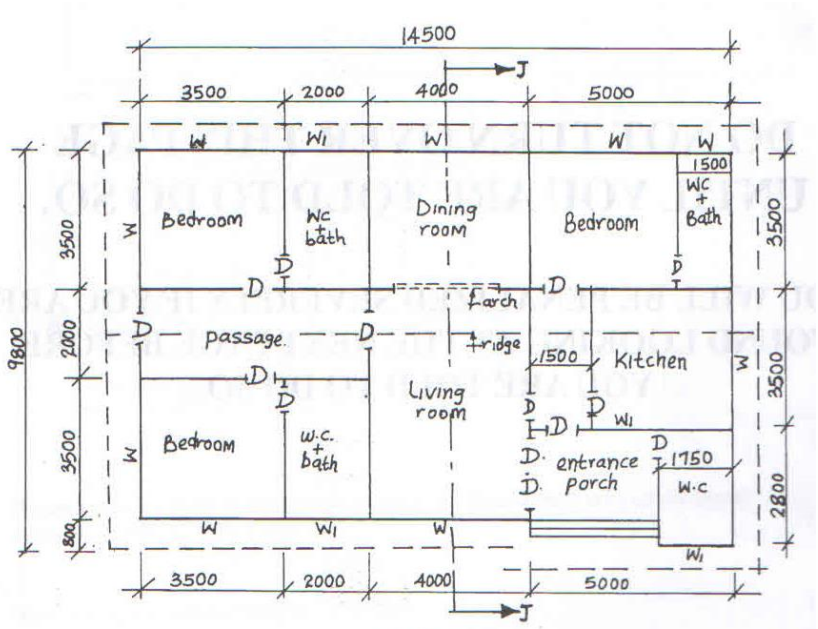


Fig. 2

Foundation: *675 x 225 concrete strip foundation on 15 blinding at 100 below ground level.*
Floor: *200 hardcore, 150 concrete slab, 225 terazzo floor finish;*
Floor level is 450 higher than ground level;
Height of floor to ceiling 3100.
Steps: *riser 150, tread 220.*
Walls: *all walls 225 with 12 ceramic tiles wall finish.*
D. *- 2100 x 900 x 38*
D.D *- 2100 x 1800 x 38*
Windows: *W* *- 2000 x 1200 sliding glazed in aluminium frame.*
W_1 *- 900 x 600 top hung casement window, glazed in aluminium frame.*
Lintel: *225 x 225 reinforced concrete at 2100 above floor level.*
Beam: *2 Nos. 225 x 225 reinforced concrete at 2, 350 above floor level.*
Roof: *35^o double pitch;*
100 x 50 rafters;
100 x 50 purlins;
100 x 50 struts;
100 x 75 wall plate;
50 x 50 ceiling noggins at 600 centre to centre;
30 x 185 ridge cap;
28 fascia board;
18 soffit board;
900 eaves projection.

(a) *Draw to a scale of 1 : 100, the:*
(i) *floor plan;*
(ii) *front elevation.*
(b) *draw to a scale of 1:50, the sectional view of **J** – **J**.*

Floor Plan

The plan reveals tested skills and knowledge in drawing the required plan to the given specifications. Candidates strength include:

- The use of correct scale
- The presentation and reproduction of good drawing of the floor plan with windows, doors and apartments
- Drawing the cutting plane.

Some candidates weaknesses include:

- Omission of floor plan, beam and cutting plane
- Omission of apartments, doors and wrong dimensions.
- Omission of ridge and eave projection

Front Elevation

The front elevation also reveals tested knowledge and skills in drawing the required elevation of the given specifications, and the following were manifested :

- Knowledge and skills in reading orthographic drawings
- The presentation of good drawing of the elevation with beam, windows, door and roof.
- The use of correct scale.

Weaknesses of some candidates include:

- No cave projection
- Omission of front elevation and floor level.

SECTION J-J

The sectional view of the building according to the given specification also examined the candidates' knowledge and skills in sectioning. Majority of the candidates who attempted this question did not perform well. However, a few were able to present the features as demanded.

Candidates strength include the recognition in drawing the foundation, earth filling, hard core, concrete slap, walls , doors and roof members.

Weaknesses of candidates in their solution include:

- The use of wrong scale
- Omission of wall plates
- Wrong conventional symbols in drawing doors and walls

SECTION B Mechanical Drawing

Question 5

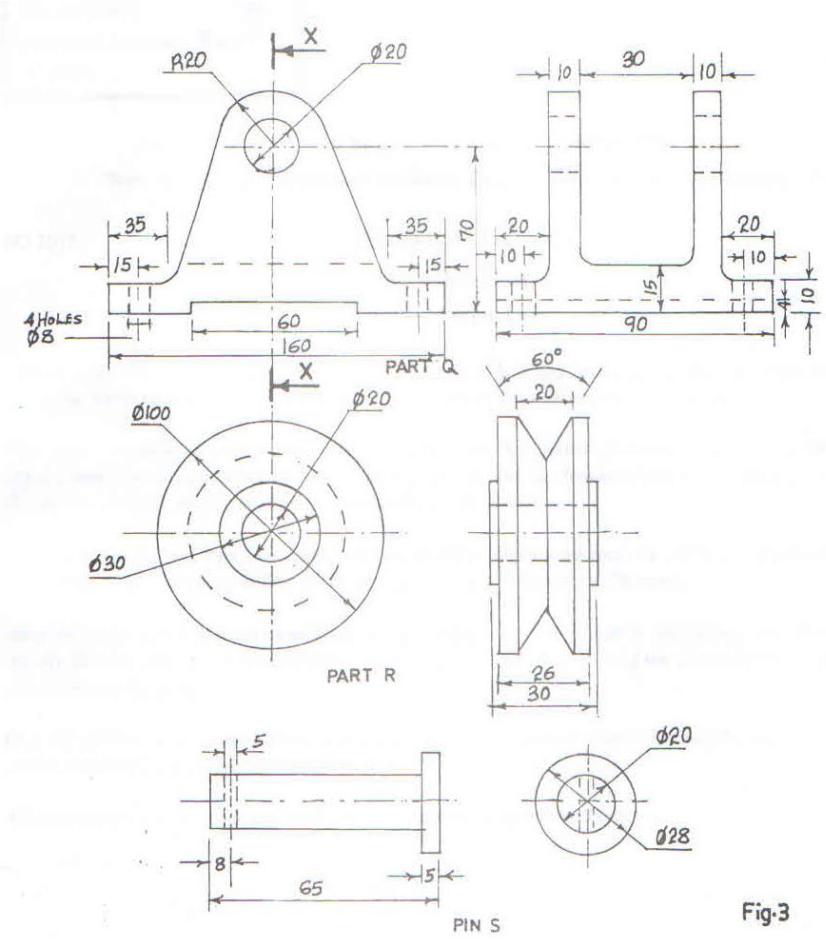


Figure 3 *shows the details of a pulley bracket assembly. Part* ***R*** *is held between the arms of the bracket by the pin* ***S*** *with the point of entry from right to the left.*
Draw full size, in first angle projection, the following views of the assembled pulley bracket:

a) end view;

b) sectional view in the direction of ***X-X*** *show all hidden details on the front elevation only.*

Show ***all*** *hidden details on the front elevation* ***only****.*

The question examined the skills, knowledge, visualization assembly and sectional view of a pulley bracket. Majority of the candidates who attempted this question performed unsatisfactory.

End View

Strong points in the solution of the candidates included:

- Ability to copy the given bracket assembled correctly
- Good line work, neatness and correct projection of lines and dimensioning
- Knowledge and skills in positioning and drawing the features required in the elevation accurately.

Some of the candidates weakness included:

- Hidden lines omitted

- Failure to draw correct centre lines symbols and wrong positioning of the pulley and pin.
- Wrong dimensions (not using the correct scale)

Section X-X

Strength in the solutions of candidates included:

- Ability to read assemble orthographic and sectioning.
- Good line work, correct scale and neatness.
- Writing section X-X

Weaknesses in candidates solutions

- Poor line work
- Wrong dimensions
- Poor sectioning and wrong positioning of pin.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
VISUAL ART 2

1. GENERAL COMMENTS

The standard of the paper was of equivalent standard of those of content recent years. The paper was generally of good quality in terms of syllabus coverage and clarity of rubics. About 20% of candidates were able to obtained up to 50% of the total marks of the paper. It was observed that 3 candidates started their answers by writing Bismillahi Rahman Rahim [In the name of AllAH the gracious the merciful].

2. CANDIDATES` STREGHTS

- The following strengths were indentified:
- The comprehension about the instructions which has enable candidates to do what was required about them and scored good marks.
- Most candidates used of technical terms of subject.
- The presentation of their facts were sequential according to the question.

3. CANDIDATES` WEAKNESSES

Besides, the above strengths, some of the weaknesses were as follows,
Spelling of the technical words.
Lack of knowledge of the subject matter.
Poor numbering of the questions. Some candidates hence responded to the question without reading the instructions.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) What is the importance of the principles of art?
*(b) Write notes on any **four** of the following principles of art date:*
(i) proportion;
(ii) variety;
(iii) emphasis;
(iv) movement;
(v) unity.

Few candidates wrote good answers, some with illustrations to buttress their points. This question was a test of candidates` knowledge of art terms. Many candidates answered this question not because they knew the answers but because they could not answer the alternative choice,question 2. Many wrote the meaning of these words.

Question 2

State the steps involved in painting an imaginative composition in poster colour.

This was not a popular choice. About 20% of the candidates attempted this question. None of them hadscored 50% of themarks. These steps look new to most of them. Some

confused painting in imaginative composition as wall painting. Thus, explained the process of wall painting instead. Even though some had guessed their answers, there were able to have some correct answers and had few marks.

Part B

*Answer **two** questions only from this part.*

Figure 1

Question 3

*Write on the masks in **figure 1** under the following headings;*
(a) origin;
(b) medium;
*(c)**four** characteristics;*
*(d) **one** function.*

A reasonable number attempted question 3, Figure 1 which is Dea mask and can be found in Liberia, Guinea and Cote d`Ivoire.

Many candidates who answered these questions were familiar with the figure. They had little or no problems in answering these questions. They wrote good answers and got good marks from this question.

As question was popular among candidates, about 80% of candidates attempted it. Many could not spell Liberia and Cote d`Ivoire correctly. Some could not describe these features properly, which resulted in the lost of marks.

Question 4 *Highlight **five** functions of Visual Art in West Africa.*

Figure 2

It was a popular question. About 60% of candidates answered this question. Some were familiar topics. It rendered many candidates the opportunity to gain marks. Hence many wrote good points with explanations. However, some candidates repeated the same points in different ways. This affected their marks.

Question 5

*Write on Dogon ancestral figure in **figure 2** with particular reference to:*
(a) location;
(b) medium;
*(c)**six** characteristics.*

Figure 2 is Dogon ancestral figure. It can be found among the Dogon community in Mali. It was also a familiar figure. About 80% of candidates answered this question. There were a little spelling errors, some spelt Mali as Mail, Mally etc. Some candidates mistaken location as Nigeria, Ghana etc. About 30% of those who answered this question wrote wood, bronze and stone as medium.
Most of them scored about 50% of the total marks. Most of them were able to list six characteristics correctly.

Question 6

*Highlight **six** similarities and **one** difference between Esie and Kissi sculptures.*
Less than 20% of candidates answered this question. Nearly 90% of them did not know the origin of these sculptures. Many of the candidates wrote bronze, terracotta, wood as the medium of production
A few candidates were able to write some good points.

Question7

Write notes on ancient Egyptian art focusing on;
(a) belief;
(b) function;
*(c)**five** characteristics.*

Candidates were to write notes on ancient Egyptian art. Some mixed Egyptian art with Greek art. Instead of writing the characteristics of Egyptian art, they wrote the characteristics of Greek art.
Reasonable number of candidates attempted this question; A few had good knowledge of Egyptian art. They were able to write the belief, function and some characteristics correctly.

Question 8

Write on Michelangelo Buonarroti with particular referenceto:
(a) nationality;
(b) training;
(c) period;
(d) area of specialization;
*(e)**three** contributions to the development of art;*
*(f)**one** notable work.*

The question was not a popular choicer. Some candidates answered some parts of the question correctly. Some wrote the notable works of Leonardo da Vinci instead of what the question asked.
A few candidates who answered this question did guessed works . They did not know their facts. Some wrote France, Nigeria, Ghana as his nationality. Most of them wrote

mare words which are out of context in their answers. Some explained the meaning of Nationality, training and period.

RECOMMENDATIONS

1. It is highly recommended that all schools candidates for the Visual Art papers should read the Chief Examiners` Reports.
2. Candidates are advised to cultivate the habit of reading and to read from a lot of textbooks.
3. Candidates have to be acquainted with reading of instructions.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
ART 3A (DRAWING)

1. GENERAL COMMENTS

This paper aims at testing the candidates' ability and skill at Visual expressing themselves in the areas of drawing from 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.They should demonstrate good shading techniques to show three dimensionality of the objects they draw, the use of colours to show harmony and contrasts, source of light, foreground and background among others.
The performance of candidates in visual art 3A 2018 like previous exams remains a lot to be desired and shows a continued decline in standard.

2. CANDIDATES' STRENGTHS

Some candidates were able to produced good works and they have obeyed instructions and answered the questions properly. The use of tones, light and shaded were properly applied. Also their hand writings were legible.

3. CANDIDATES' WEAKNESSES

Many of the weaknesses and concerns observed during the marking exercise this year were as follows,
Poor drawing ability and composition,
Poor ability to observation objects; and to follow instructions on the question paper.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTION

ALTERNATIVE A
DRAWING FROM OBJECTS.

Question 1

Place an empty bucket on a low table close to a good source of light.Place an old lantern beside the bucket.
Draw objects as arranged.

About 60% of candidates answered this question and majority of them scored below average of 50marks. Some of the candidates used ruler to draw the bucket were as rulers and compasses are not allowed and some did not draw the table at all and the lantern was also not drawn properly. Their drawing ability and ability to observe was poor. Their drawings were suspended in the air with no baseline at all. Colouring and shading was also poor.

Some candidates produced good works and they were rewarded accordingly. Their drawing ability was very good and they follow instructions on the question paper.

ALTERNATIVE B
DRAWING FROM NATURE

Question 2

Make a detailed drawing of three tubers of yam and four eggs arranged in a good composition on a low table.

Few of them did well by producing good drawings and their drawing ability and observation was good as well. The use colour and shedding techniques was applied properly.

This question about 35% of the candidates attempted this question. Majority of them did not do well, simply because they did not draw the yam properly and the eggs they drew were not correct. Their drawing ability and ability to observe were poor. Also they manifested poor colouring and shading techniques.

ALTERNATIVE C
DRAWING FROM LIFE

Question 3

A male model wearing a pair of shorts and bathroom slippers, holds an empty bucket in his right hand. A small towel is hung on his left shoulder and he is standing in a relaxed position.
Draw model as posed.

Three candidates were able to answer this question properly, their figures were drawn properly and their shading was also good, therefore they were rewarded and they score good marks.

Only 5% of candidates attempted this question. The proportion of their figures was not correct and they did not answer the question properly, therefore theyscored below average.

RECOMMENDATIONS

1. The schools should their candidates scrutinize their candidates before allowing them to register for Visual Art.
2. That workshops be held for Art teachers to refresh and upgraded their knowledge, skills and methodology.
3. Finally, schools should provide materials for art teachers in order to make their work effectively and easy.

WASSCE(SC) 2018
CHIEF EXAMINER'S REPORT
VISUAL ARTS 3B

1. GENERAL COMMENTS

Visual Art 3Bbeing an alternative paper to 3C, only few candidates opted for it. The performance in this paper was generally low. Most of the works presented are below average despite the fact that the questions are of standard and within the syllabus.

2. CANDIDATES' STRENGTHS

A few of the works presented were commendable due to proper use of colour and well excited composition. The use of paper space was accurate encouraging for about 90% of the works.

3. CANDIDATES' WEAKNESSES

Lettering skills were poorly executed in almost all the works presented. There were few works with no colour.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTION

Question 1

A book titled SHORT LIFE and authored by Adeojo Roman on the need to live a healthy life is to be published. Design a cover for the book.

Length: *20 cm.*
Breadth: *16 cm.*
Spine: *1 cm.*
Colours: ***not more than two***.

Generally, this question was poorly answered, over 90% of the candidates drawing a book rather then designing a cover for the book as required by the question. The question is up to standard with clear instructions. However, less than 1% of the candidates used mechanical instruments correctly, there by producing good lettering.

Question 2

The government of your country is launching an awareness campaign on ways of preventing Lassa fever. Design a pictorial poster for the campaign with the slogan: STOP THE KILLER.

Colours: ***Not more than three***.
40 cm by 30 cm.

Majority of the candidates attempted this question with only a few producing what looks like a pictorial poster. Some candidates designed bill boards or sign boards rather than a poster. A few works, had outstanding lettering but with no illustrations. Those who used colour actually observed the rules on number and type of colours used.

Question 3

Using mirror repeat pattern, make a design for a fabric to be used curtain in a music hall.

Colours: ***Not more than*** *three.*
Size: *25 cm by 18 cm.*

This was a popular question and was poorly answered by most of the candidates. The candidates presented full drop and half drop repeat patterns instead of mirror repeat as the question demanded. Proper motifs were used and no proper coloring. However, a few candidates shaded the letters not colour effect.

Question 4

Using simple repeat pattern, make a design for a fabric to be used for the celebration of the Golden Jubilee of your school.

Colours: ***Not more than*** *three.*
Size: *25 cm by 18 cm.*

This was the only popular question well answered by almost all the candidates. Correct motif was used but use of colour not encouraging. Over 50% of the candidates failed to observe size specification as required by the question.

Section C

Make an imaginative painting composition of any of the following themes.

5. At the picnic.
6. The rush hour.

No submission was made on either of the questions.

WASSCE(SC) 2018
CHIEF EXAMINER'S REPORT
VISUAL ART 3C

1. GENERAL COMMENTS

The overall performance in this paper is relatively good. Most of the works presented are above average. Works were executed with high quality, although there were few works below standard either due to misinterpretation of the question or not observing the correct principles in producing the work. The questions are up to standard and within the syllabus.

2. CANDIDATES' STRENGHTS

Over 60% of the works presented have good finishing, notably the calabash decoration and the product design. Correct colour was used in most instances where necessary and size specifications observed.

3. CANDIDATES' WEAKNESSES

The main weakness was observed for the sculpture work where over 65% of the works presented were below average. The modeling was not properly done and there was evidence of poor firing.

4. DETAILED COMMENTS ON INDIVIDUAL QUESTION

SECTION A
CERAMICS

Question 1

Using pineapple fruit as a motif, design and produce a wall planter
Diameter: 30 cm
Height: 20 cm

Works presented are standard with good modeling and firing skills. About 90% of the candidates performed above average. The pineapple motif is clearly observed in each work presented. The few candidates who performed poorly is due to improper modeling and poor firing.

SECTIN B
SCULPTURE

Question 2

On a wooden platform, make a relief sculpture of a cyclist
Medium: found objects or plastic.
Size: 45 cm by 30 cm.

This question was not popular and the few who attempted it, only 20% presented quality work with correct interpretation of the question, proper modeling and firing skills executed. About 80% of the works have poor finishing.

SECTION C
PRODUCT DESIGN/MODELLING

Question 3

Babson International is launching a new brand of toothpaste. Design and construct a package for the new product.

Brand name:	*ORAL BRIT.*
Slogan:	*strong white teeth.*
Length:	*25 cm.*
Height:	*6 cm*
Breadth:	*6 cm*
Colours:	***three** colours.*

This was a popular question and over 90% of the works are above average. Good lettering skills was shown by the majority and with good colour combination. The brand name, slogan and size were strictly adhered to by all candidates which resulted into earning them high marks.

SECTION D
CRAFTS

Question 4

Using any two suitable techniques, make a decorated calabash to be used as a bowl.
Almost all works presented are of high quality with proper finishing. The carving and burning or engraving techniques were properly executed. However, few candidates, about 5% had problem in the technique used to decorate the calabash.

RECOMMENDATIONS

Below are the following recommendations:

1. Candidates should be guided in interpreting the questions correctly.
2. Also, candidates should be more creative in executing their works rather than copying the same works.
3. Proper packaging of the works for delivery to WAEC Office must be given great attention especially the ceramics and sculpture works, as many works are damaged before assessment.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
APPLIED ELECTRICITY 2

1. GENERAL COMMENT

A total of One hundred and five (105) candidates representing 100% sat to the examination on Applied Electricity in May / June 2018.These questions were drawn from six sections from the WASSCE syllabus namely.

1. Faradays law, factor, devices for electromagnetic induction
2. Sinusoidal wave form, transformer and power generating stations
3. Sub final circuit in domestic, cable, conductor and factors to be choice cable
4. Rectifiers and power supply unit,
5. Transmission and distribution
6. Wiring and circuit diagram,
7. Fuse,earthing and earth leakage circuit breaker

Based on percentage responses to individual questions, about 100% of candidates responded poorly on these five questions attempted.

This report was prepared following the WASSCE on applied electricity in May June 2018. 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 strengths, weaknesses of candidates.

Section C gives recommendation for grading of (WASSCE) and text books to further the delivery of the subject.

2. CANDIDATES' STRENGTH

Candidates understood the questions on observation e.g. Question 1, 2, 5 and 6 very well and responded strongly.

3. CANDIDATES' WEAKNESSES

Candidates in their responses indicates that these questions were not properly treated or at the teaching period, the topics were not properly dealt with.

4. SUGGESTED REMEDIES

Principals should make sure that these practical equipment and materials are in place. More practical lessons must be emphasized

Section: b detailed comments

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	Faradays law , factor, devices for electromagnetic induction	70	30
2	Sinusoidal wave form , transformer and power generating stations	89	11
3	Sub final circuit in domestic , cable , conductor and factors to be choice cable	56	44
4	Rectifiers and power supply unit,	29	71
5	Transmission and distribution	53	47
6	Wiring and circuit diagram,	74	26
7	Fuse ,earthing and earth leakage circuit breaker	47	63

Analysis of table B with regards to the percentage of marks scored indicates the following:

Question 1

(a) State faraday's law of electromagnetic induction.

*(b) State **four** factors that affect mutual inductance.*

*(c) State **four** devices that uses the principle of electromagnetic induction.*

Seventy three (73) candidates representing 70% of the total responded strongly in this question. Forty two (42) candidates representing 58% responded fairly strong and got the average mark. Twenty three (23) candidates representing 32% responded poorly. Fourteen (14) candidates responded and score zero and four (32) candidates did not attempted at all.

Question 2

(a) Draw a sinusoidal waveform and indicate the following:

(i) maximum value;
(ii) peak-to-peak value;
(iii) a cycle.

(b) A 415 V/240V single-phase transformer has a rated primary current of 200 A. if the efficiency of the transformer is 95%, calculate its secondary current.

*(c) State **two** types of power generating stations.*

Ninety- three (93) candidates represent 89% responded on this question,

Thirty four (34) candidates represent 37% responded strongly and got the pass mark.

Forty nine (49) which is equal to 53% score below the pass mark,

Ten (10) candidates which is 11% did not responded at all. This was one of the question that almost all of them answered and score very good marks during observation.

Observation: Questions,1, 2, 5 and 6 was were the candidates understood very well and they responded strongly.

Question 3

(a) (i) Define final sub-circuit.
(ii) List three final sub-circuits associated with domestic wiring.

(b) State:

(i) the difference between a cable and a conductor;
*(ii) **one** factor that must be considered in the choice of cable sizes for wiring.*

This question Fifty nine (59) representing 56% responded on this question, Three (3) candidates represent 5% responded strongly and score the average pass marks. Forty seven candidates (47) which is 80 % responded poorly and score below the pass marks, and forty six (46) candidates representing 44% of the total did not responded at all.

Question 4

*(a) State **two** types of rectifiers.*
(b) Draw and label the block diagram f a stabilized power supply unit.

Thirty (30) candidates representing 29% of the total responded on this question , One(1) candidate represent 3.3% responded strongly and score the pass mark,. Seven (7) candidates which is 24% responded and score below the pass mark, and Seventy five (75) candidates representing 71% did not responded at all.

Question 5

*(a) State **three** advantages for electrical transmission at high voltages.*
(b) State the voltage values of:

*(i) **single**-phase distribution;*
*(ii) **three**-phase distribution.*

Fifty six (56) candidates represent 53% of the total responded on this question, Sixteen (16) candidates which is 29% responded strongly and score the average pass marks. Thirty three (33) candidates which is 59 % responded poorly and Forty nine(49) candidate representing 47% did not responded at all.

Question 6

*(a) State **four** methods of wiring.*
*(b) Draw a circuit diagram of **two** lamps connected in parallel and controlled by two **2**-way switches.*

Seventy eight (78) candidates representing 74% of the total responded on this question, Twenty one (21) candidate represent 27% responded strongly and score the pass marks. Forty eight (48) candidates which is 62 % out of thetotal scored below the pass mark and Twenty seven (27) candidates which is 26% did not respond.

Question7

(a) Define the term fuse.

(b) State two methods of earthing an electrical installation.

(c) State the reason for the use of Earth Leakage Circuit Breaker (E.L.C.B.) in an installation.

Forty nine (49) candidates represent 47% of the total responded on this question, Seven (7) candidate represent 14% responded strongly and score the pass mark. Thirty seven (37) candidates which is 76% responded poorly and Sixty six (66) candidate representing 63% did not respond at all.

RECOMMENDATIONS

To further the teaching of Applied Electricity as an applied science, proper teaching aids must be provided and these include text books, practical training materials. In this regard the following text books are recommended. In addition this year's results, is one of the most unsatisfactory results comparing to years back.
I therefore, encourage the principals and all staff dealing with these technical subjects, to redouble their efforts, maintains the standard once again, 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.

APPLIED ELECTRICITY

PRACTICALS PAPER 3

This report has been prepared following the practical examination on Applied Electricity held in May 2018. 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 strengths.

SECTION B: Detailed comments on the practical questions set, strength and weaknesses and.

SECTION C: Shows recommendation for grading of WASSCE.

1. GENERAL COMMENTS

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 ninety nine (99) candidate representing 100% of candidates responded to all questions. However, all of them responded to all questions. 99% of the candidates where 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. Four (4) candidates representing 4% responded and achieved below the pass marks.

4. SUGGESTED REMEDIES

Heads of schools are required to provide adequate tools and materials during practical lessons so that student would be able to familiarize themselves with that tools to avoid such difficulties during exams.

SECTION B: DETAILED COMMENTS.

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	power voltage supply, (0-8V), Ammeter ,Variable resistors connected in circuit , to verify voltage , current and graph	100%	0%
2	powersupply, , voltmeter, Ammeter ,resistors connected in circuit , to verify current power reactive and reactive voltage and graph	100%	0%

Question 1

AIM: *To determine the resistance of a resistor using voltage-current relationship.*

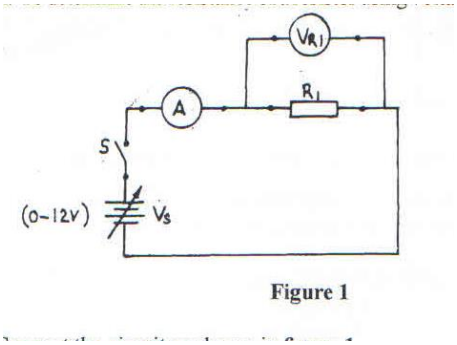


Figure 1

*(a) Connect the circuit as shown in **figure 1**.*
(b) Ask the supervisor to check the circuit connection.
*(c) You are provided with **Table1**.*

Table 1

Voltage (V_S)	*0.0*	*1.0*	*2.0*	*3.0*	*4.0*	*5.0*	*6.0*	*8.0*
Current (mA)								
Voltage (VR_1)								

*(d) Switch **on** the power supply unit.*
(e) Set the power supply unit to 0 V and close the switch(s).
*(f) Read and record the corresponding ammeter and voltmeter readings in **Table 1**.*
*(g) Repeat steps (e) and (f) for the other values in **Table 1**.*
*(h) Open switch(s) and switch **off** the power supply unit.*
(i) Plot a graph of current (1) on the vertical axis against voltage (V_{R1}) on the horizontal axis.
(j) Calculate the slop of the graph.
(k) Determine the resistance of the resistor.

Ninety nine (99) candidates representing 100% responded.
Eighty four (98) candidates represent 99% responded strongly and achieved the pass marks.One (1) candidate representing 1% responded and achieved below the pass marks.

Question 2

AIM: *To determine the resistance of a resistor using power-current relationship.*

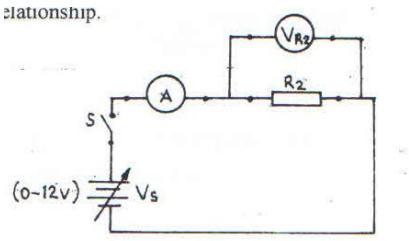


Figure 20

*(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**.*

Table 2

Voltage (V)	*0.0*	*1.0*	*2.0*	*3.0*	*4.0*	*5.0*	*6.0*	*7.0*	*8.0*
Current (mA)									
Voltage (VR_2)									
Power W(IV_{R2})									
I^2									

*(d) Switch **on** the power supply unit.*
*(e) Set the power supply unit to 0 V and close the switch(**s**).*
(f) Read and record the corresponding ammeter and voltmeter readings.
*(g) Repeat steps (e) and (f) for the other values in **Table 2**.*
*(h) Open switch (**s**) and switch **off** the power supply unit.*
*(i) Complete **Table 2**.*
(j) Plot a graph of power (W) on the vertical axis against I^2 on the horizontal axis.
(k) Calculate the slope of the graph.
(l) Determine the resistance of the resistor.

Ninety nine (99) candidates representing 100% responded.
Sixty nine (69) candidates which is 70% responded strongly. Thirty (30) candidates represent 30% responded poorly and achieved below average marks.

RECOMMENDATIONS

To further the teaching of electrical practicals, 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. It is therefore, ideal for principals and all staff dealing with these practical subjects, to redouble their efforts, maintain the standard once again, and to continue training good creative and productive young men and women for the development of this nation.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
AUTO – MECHANIC 2

1. GENERAL COMMENTS

The WASSCE(SC) 2018 provides short answer question in testing candidates' knowledge and understanding in both theory and practical lesson. It also tests syllabus coverage and how well topics were treated.

2. CANDIDATES STRENGTHS

Candidate's ability to interpret the sketch in question 3 and identifying the type of filtration shown. Candidates were also able to name another type of filtration system.

3. CANDIDATES WEAKNESSES

Candidates' lack of knowledge in all electrical question such as question 4 the coil ignition system and question 5 the earth return starting circuit. As in today's era vehicles are electrical/electronic operated. Then it is essential that these topics are treated well in the classroom.

4. SUGGESTION REMEDIES

This year's marks did not indicate any improvement to candidates' performance when compared to 2017 results. Only 12% of candidates manage to pass this paper and the remaining 88% still remain a big concern. One of the difficulties candidates faced was the miss interpretation of automotive terms. It is therefore advisable teacher should encourage students to be using the right terms during practical and in classroom. It is important for students to know the difference between valve Timing and setting the Vale clearance or Tappet clearance. Teacher should discourage student using local garages terms such as Top cylinder which should be CYLINDER HEAD, Engine Timing which should be VALVE TIMING, Vale Timing which should be SETTING TAPPET CLEARANCE. These were some of the difficulties candidates had during this paper. Finally, for good coverage of the syllabus, students should have textbooks and access to the syllabus.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) With the aid of a sketch, explain the leading and trailing brake shoe arrangement.
*(b) State **one** reason why the leading and trailing brake shoe arrangement is often used on rear wheels.*
*(c) State **two** causes of a spongy brake pedal.*

Only 53% of the candidates attempted this question and 47% abstained. A well-constructed question but candidates fail to make effort in securing good marks in all the questions. Candidates manage to have only 13% of the total questions in No.1 correct, 20% was registered as half marks and the rest of the 67% were registered as wrong answers. Having the lowest number of candidate which attempted this question with a very poor performance, indicatedthat this topic was not well covered.

Question 2

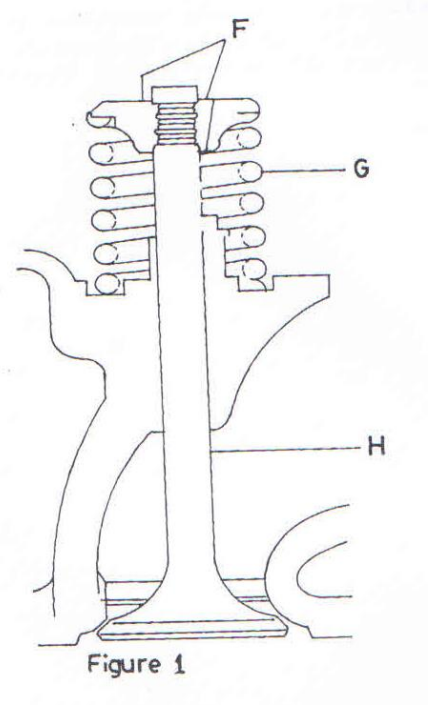


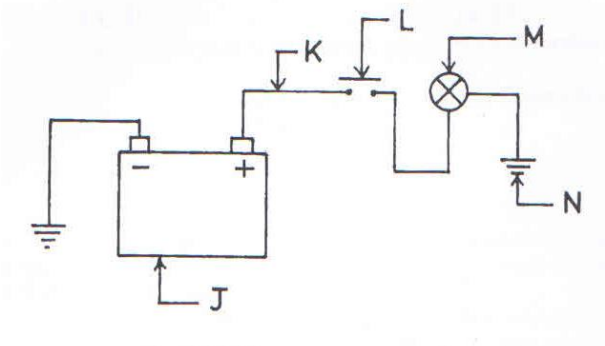
Figure 1

(a) *(i)* *Identify the parts of the sketch labeled **F**, **G** and **H***
(ii) *State one function each of the parts labeled **F, G** and **H.***
(b) *State three maintenance practices given to the part labeled **H** in **Figure1** during decarburizing.*

80% of the candidates attempted this question and 20% abstained. A well-constructed question were very important for candidates who intend to pursue mechanics as a career. Candidates were unable to secure a pass mark. The marks registered for this question are as follows; 9% as correct answers, 10% for answers allocated with half mark and the remaining 81% were registered as wrong answers. Again this indicated that this topic was not well covered.

Question 3

The sketch below shows a type of oil filtration system.



(a) *(i)* *Identify the types of wiring shown in the sketch in **Figure 2**.*
(ii) *Name the parts of the sketch labelled **J,K, L, M**, and **N**.*
(b) *State the purpose of the parts of the sketch labelled **K, L** and **M** in **Figure 2**.*
(c) *State what the symbols (-) and (+) represent in the sketch in **Figure 2**.*

87% of the candidates attempted this question and 13% abstained. This question registered the highest percentage of correct answers which is 34% answers allocated with half marks was 24% and for wrong answer 42%. This seems better when compared with their performance in other question.

Question 4

*(a) State **five** water cooling system faults that can cause engine overheating.*
*(b) State **two** merits of air-cooled engine.*
*(c) State **one** function **each** of the following cooling system parts.*
(i) impeller;
(ii) fan;
(iii) fins.

92% of the candidates attempted this question and only 8% abstained indicating that this topic was well covered at classroom level. What was difficult to understand was, candidates manage to have only 13% as correct answers,24% of the answers are allocated with half marks and the rest 63% are the wrong answers given. It is therefore necessary that the methods of evaluation used by lectures to be tested again or their method of teaching.

Question 5

(a) Define the term chassis frame.
(b) Sketch the transmission layout of a conventional motor vehicle and label the following parts:
(i) gearbox;
(ii) propeller shaft;
(iii) rear axle;
(iv) clutch.

(c) Explain why the classis frame is narrowed at the front and upswept at the rear.

(d) State one advantage of a rear-engine rear wheel drive vehicle.

78% of the candidates attempted this question and 22% abstained. Here candidates were having problem with question 5, (a), (b), and (c) where they can manage only 2% as correct answers. As for question 5 (d) candidates did well as they score 50% out of the total mark. As mentioned above,teachers should be putting more emphasis on electrical and electronic topics in both theory and practical lessons.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
AUTO – MECHANIC 3

1. GENERAL COMMENTS

A well-structured practical test that provides good chances for candidates to proof their ability in demonstrating practical skills.

2. CANDIDATES STRENGTHS

Their ability in selecting the correct tools for the job in hand.

3. CANDIDATES WEAKNESSES

Inability to provide the proper safety gears for the precaution needed in the workshop.

4. SUGGESTED REMEDIES

Practical assessment should always be conducted with the proper safety gears. Enough practical machines provided for candidate during the assessment period. Due to the number of candidates being registered at St. Peter's at least threeexaminers would be needed to reduce the waiting time of the candidates. Another possibility is to divide candidates into two groups. Group one will begin from the starting time of the assessment to 12:00 noon and group two starts from 12:00 onwards. This can also help in the waiting time since the second group should not be at the school before 12:00 noon.

5. DETAILED COMMENTS ON INDIVIDUAL QUESTION

Question 1

From the cylinder block assembly provided:

(a)remove the oil sump. Report to the examiner;
(b)remove the piston assembly. Report to the examiner;
(c)examine the cylinder bore for wear. Report to the examiner;
(d)remove a compression ring from the piston. Report to the examiner;

(e) check the working gap. Report to the examiner;
(f) refit the compression ring. Report to the examiner;
(g) refit piston into the bore. Report to the examiner;
(h) refit the oil sump. Report to the examiner.

A well-constructed question which provide the candidates the ability to remove and replace an injector. It also provides the candidates the ability to dismantle, clean, reassemble, test and adjust the injector to a specified pressure. 60% of the candidates were able to perform the task without difficulty. This indicates that there is still room for improvement for practical classes.

Question 2

From the clutch master cylinder assembly provided:

(a) dismantle the cylinder. Report to the examiner;
(b) identify three parts indicated by the examiner;
(c) examine the conditions of the identified parts. Report to the examiner;
(d) answer two relevant questions from the examiner;
(e) reassemble the clutch master cylinder. Report to the examiner;.
(f) test the master cylinder for functionality. Report to the examiner.

This question was well structured. It provided the candidates with the ability to remove and refit the whole rocker assembly. It also provides the candidates the ability in removing a rocker arm, inspect and refit the rocker arm. Thecandidates' performances were good since 75% were able to perform the task correctly. This indicates a good coverage in the workshop.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINER'S REPORT
WOOD WORK 2

1. GENERAL COMMENTS

The question set for 2018 examination were suitable and within the scope of the syllabus of senior secondary school.
The question demanded a simple knowledge of the candidates. However, it was quite obvious that 30% of the candidate were able to respond to the question as expected. Most of the candidates misunderstood the questions.

2. CANDIDATES' STRENGTHS

There were a good number of the candidates who were able to score a fair mark on question No.3 of the structured question.

3. CANDIDATES WEAKNESSES

It was clear that poor command of English was the major factor responsible of the woeful performance of the candidates.
It was importance to note that serious efforts must be made to enlighten students on the importance of the examination rubrics.
It was a very essential step towards passing the examination. During marking it was observed that 60% of the candidates failed to attempt the required number of questions

This has been manifested in the DESIGN AND DRAWING paper.

4. SUGGESTED REMEDIES

- Candidates must read and understand examination questions
- Sketches should be properly labeled.
- Sketches must be done with pencil and soft eraser used.
- Review pass examination questions papers.
- Adequate coverage of the syllabus.
- Practice free hand sketching

5. DETAILED COMMENTS ON INDIVIDUAL QUESTIONS

Question 1

(a) *Name **two** methods of carving wood*
(b) *List **four** types of wood turning operation.*
(c) *List **four** factor to consider when planning the construction of the a designed project*

This was a popular question about 80% of the candidates attempted this question. The (a) part was asking of the methods of carving the expected respond are as follows: incised, relief else only 5% of the candidates answer the question. Generally marks were poor. Parts (b) types of turning on the lathe machine was misunderstood as a result during answers were given.

The factors to be considered when planning the construction of a designed project. About 95% of the candidates misunderstood the planning and explained planning operation e.gstating face side, face edge

Question 3

*(a) State **two** safety precautions to be observed when using a grinding stone*
*(b) List **two** types of each of the following :*

(i) Machine saws;
(ii) Portable power saw.

*(c) List **two** tools that are used to remove nails from a work piece.*

This was the most popular question.100% of the candidates attempted this question. It was the main question where candidates scored a good mark. Machined saws were listed and Portable saws.
The (C) part, was properly attempted e.g claw hammer and claw bar were properly answers

Question 4

*(a) List **two** types of paint that are used in finishing a cabinet.*
(b) State one characteristic of a seasoned timber.
(c) Make an exploded pictorial sketch of a dovetaed tee having joint.

The most unpopular question, about 10-15% of the candidates
attempted this question and marks were very low
Very few were able to named two types of paint
A simple question for anyone who has a practical experience
Most of the candidates sketch an Assemble tee-halving.

SECTION B
DESIGN AND DRAWING

A coffee tableis to be designed to the following specification.

Length 750mm;
Width 450mm;
Height 400mm.

(All dimensions are in millimeters)

The coffee table has a shelf half way down the top. The top and the shelf are each to be from made of 12mm plywood. The under frame is to be constructed from 30mm hardwood.

Question 1

*Make **two** preliminary free hand pictorial sketches each for a different design of the coffee table.*

Question 2

Select one of the sketches in question 1 and indicate the sketch selected with a tick ( ). To a scale of 1:5, draw in the Third Angle Orthographic Projection the following views of the selected sketch:

(a) the front elevations;
(b) the plan with top removed.

Generally this part of the paper has been poorly attempted by 85% of the candidates. The instruction were not fully understood especially question 1.
About 75% of the candidates were supplied with one drawing paper instead of two drawing papers. Candidates are to answer all the question but answered only part of the questions, as a result loosing marks. About 80% of the candidates draw only one table as a result loosed half mark.

WASSCE FOR SCHOOL CANDIDATES, 2018
CHIEF EXAMINERS' REPORTS
WOOD WORK 3
(PRACTICAL)

1. **GENERAL COMMENTS**

Very impressive performance compared to the structured questions design and drawing. The practical work was marked out 100% but 75% of the candidates scored over 65% out of 100%.

2. **CANDIDATES' STRENGTHS**

About 90% of the candidates assemble their practical work on time and scored good marks.

3. **CANDIDATES' WEAKNESSES**

- The two parts of the projects were poorly attempted by the candidates.
- None of the candidates scaled their drawing.
- Poor draughsmanship was demonstrated by the candidates.
- Border lines were not drawn by 80% the candidates, title block the layout was also poor.

4. **SUGGESTED REMEDIES**

– School principals should provide enough tools and materials for practical demonstration.

– Principal should organized training or workshop for technical teachers.

Question 1

Make the test piece shown on page 2, using the timber which has been planed to the following sizes (all dimensions are in millimeters):

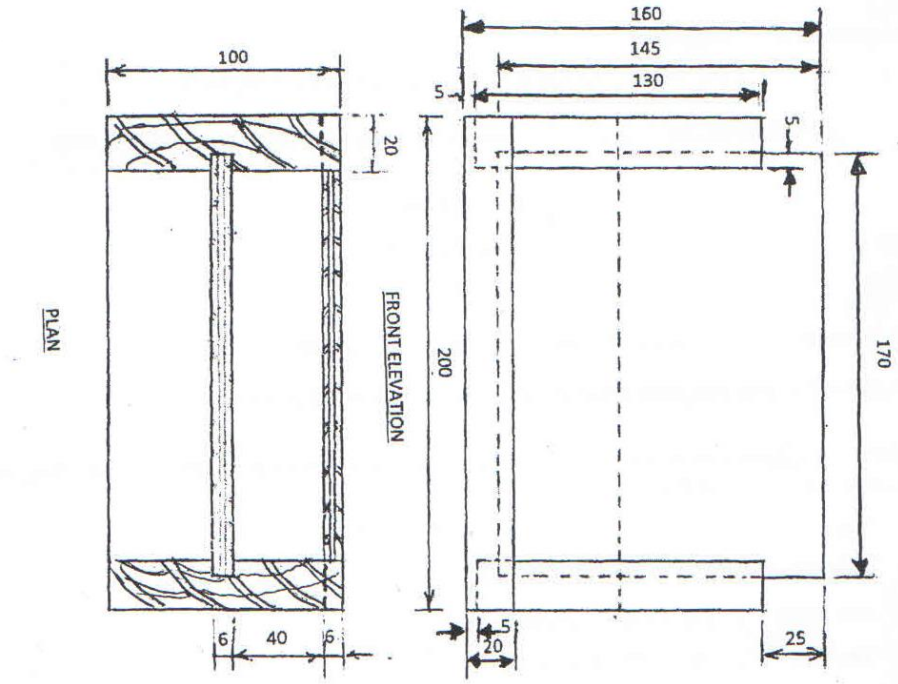
***One** piece – 210 × 100×20 hardwood;*
***One** pieces – 140 × 100 × 20 hardwood;*
***One** pieces – 175 × 150×6 plywood;*
***One** piece – 205 × 6 plywood;*
***Two** 6×12 countersunk screws.*

A. 2 lapped dovetail joints: most of the candidates were able to mark out and construct the dovetail joints and scored over 20 marks out of 35 possible marks.

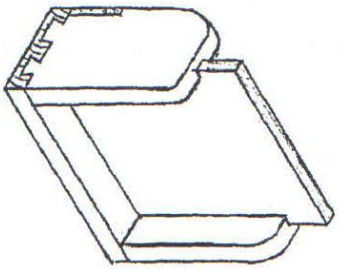
B. Partitioning: it was marked over 25 marks. About 80%of the candidates scored 18 and above.

C. Fixing the plywood and rounding: were also properly attempted and 60% of the candidate round the two side of the project.

D. Finishing : most of the candidates assemble and finished the project on time.



A MODEL OF A PHOTO STAND
NOT DRAWN TO SCALE
ALL DIMENSIONS IN MM



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