THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CANDIDATES' ITEM RESPONSE ANALYSIS REPORT FOR THE CERTIFICATE OF SECONDARY EDUCATION EXAMINATION (CSEE) 2018

071 BUILDING CONSTRUCTION

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

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071 BUILDING CONSTRUCTION

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FOREWORD

The Candidates' Items Response Analysis Report shows the performance of candidates in the Building Construction subject for the Certificate of Secondary Education Examination (CSEE) 2018. The report was prepared in order to provide a feedback to students, teachers, parents, policy makers and the public in general about the performance of the candidates and the challenges that they encountered in attempting examination questions.

The Certificate of Secondary Education Examination marks the end of four years of ordinary secondary education. It is a comprehensive evaluation which, among other things, shows the effectiveness of the education system in general and the education delivery system in particular. Essentially, the candidates' responses to the examination questions is a strong indicator of what the education system was able or unable to offer to the students in their four years of Ordinary Secondary Education.

The analysis presented in this report is intended to contribute towards understanding the possible reasons behind the candidates' responses in Building Construction subject. The report highlights the factors contributed to the failure of the candidates to score high marks in the questions. Such factors include failure to identify the task of the question, inability to follow instructions and lack of the knowledge on the concepts related to the subject. The feedback provided will enable the educational administrators, school managers, teachers, students and other stakeholders to assess their teaching and learning environment. It will also help to recognize proper measures to be taken in order to improve the candidates' performance in future examinations administered by the Council.

Finally, the Council would like to thank the Examinations Officers, Subject Teachers and others who participated in analyzing the data used in this report, typesetting of the document and in reviewing the report.

Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report analyses the performance of the candidates in Building Construction for the candidates who sat for the Certificate of Secondary Education Examination (CSEE) in 2018 on both school candidates and private candidates. The paper covered the Civil Engineering Syllabus for Secondary Education of 1994 and it was set in accordance with the Examination Format of 2008.

Building construction paper had fifteen (15) questions divided in sections A, B, and C. The candidates were required to answer all questions in sections A and B and two (02) questions from section C. Question 1 and 2 in section A carried 10 marks each, questions in section B carried 4 marks each while questions in section C carried 20 marks each.

A total number of 490 candidates sat for this subject out of 496 registered in this year 2018, while the number of candidates sat for this subject in 2017 was 559, reflecting a decrease of candidates by 12.3 percent in the year 2018.

Among these, 1 (0.2 %) candidate scored credit pass grade B and 66 (13.5 %) passed with grade C and 133 (27.2 %) passed with grade D, while the majority 289 (59.1 %) failed by obtaining grade F. The analysis shows that, the performance has decreased by 1.6 % comparing to the candidates perfomance of 2017. Generally, only 200 (40.9 %) candidates out of 489 passed and 289 (59.1 %) failed this examination. The distribution of scores and candidates' performance is shown in Table 1 and Figure 1 respectively.

Table 1: General Candidates' Performance in Building Construction CSEE

Scores	**General Candidates performance**			
	2017		**2018**	
	Number	Percentage	Number	Percentage
0-29	320	57.45	289	59.1
30-44	159	28.55	133	27.2
45-100	78	14.00	67	13.7
TOTAL	**557**	100	**489**	100

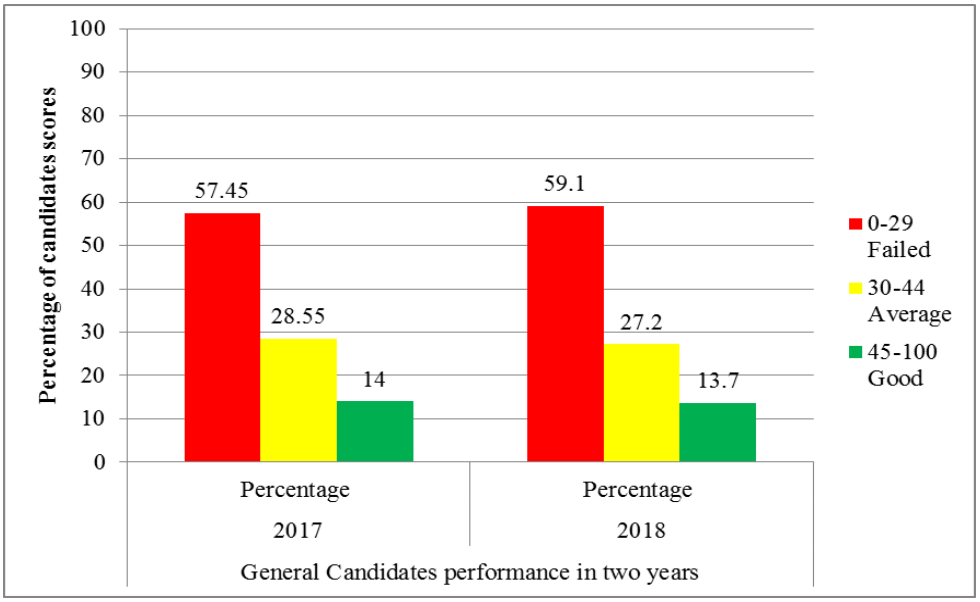


***Figure 1**: Distribution of candidates Performance in Percentage*

This report on the analysis of the candidate performance on each question shows the requirement of the question, strengths and weaknesses of the candidate responses. Extracts of the candidates responses are inserted to illustrate the cases presented.

This report aims to provide a feedback to the educational stakeholders such as prospective candidates, teachers, parents and educationists on the performance of the candidates. It is also expected that the report will enable teachers to improve the teaching and learning process of Building Construction subject.

2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION

2.1 SECTION A: Multiple Choice and Matching Items

This section consisted of two questions which had 10 marks each. The score ranges used for grading performance of candidates for this section is as indicated in Table 2.

Table 2: Score Range for Candidates' Performance in Questions 1 and 2

Scores range	General Performance	
	Remark	Grade
0-2	Weak	F
3-6	Average	C - D
7-10	Good	A - B

2.1.1 Question 1: Multiple Choice Items

The question consisted of ten (10) multiple choice items derived from various topics in the syllabus. The topics covered were site preparation, foundation, materials, scaffolding and shoring, column and beam, floor, roof, iron mongery and drainage. The candidates were required to choose the correct answer from the given five alternatives by writing its letter beside the item number.

This question was attempted by 490 (100%) candidates; whereby 44.1percent scored 0 to 2 marks, of which 2.2 percent of them scored a 0 mark. A total number of 211 (43%) candidates scored 3 to 4 marks and only 12.9 percent performed well in this question by scoring 5 to 8 marks out of 10 marks allocated for this question. No candidate attained above 8 marks.

The performance in this question was generally good as 55.9 percent of the candidates scored above pass mark of the allocated marks. The summary of candidate's scores in this question is presented in Figure 2.

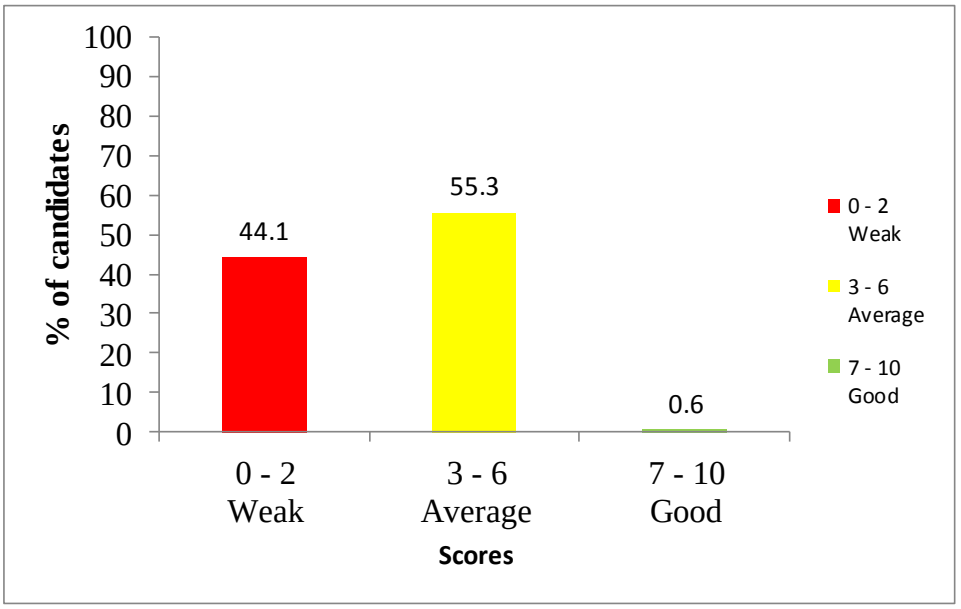


Figure 2: *Bar graph presenting the trend of performance in question 1*

Majority of the candidates failed to answer item (viii) correctly due to the fact that the responses A, B and C all are lower hanging parts of the roof but response B is the lowest hanging part of the roof. Item (ii) was answered correctly by majority of the candidate because the question comes from major concept of foundation types which are shallow and deep foundation.

2.1.2 Question 2: Matching Items

The question required the candidates to match the items (i – x) in List A with the responses in List B by writing the letter of the corresponding response beside the item number. Each item in this question carried 1 mark, making a total of 10 marks. The question was designed to test the candidates' knowledge about parts of a roof.

The responses given in List B were: A 'Batten', B 'Valley', C 'Barge board', D 'Ridge', E 'Truss', F 'Jack rafter', G 'Rafters', H 'Cleat', I 'Pitch', J 'Eaves', K 'Hip', L 'Ridge piece', M 'Purlin', N 'Gable', O 'Hip rafter'.

This question was attempted by 489 (99.8 %) candidates; whereby 53 .6 percent scored 0 to 2 marks, of which 14.3 percent of them scored a 0 mark. A total of 175 (35.8 %) candidates scored 3 to 6 marks and 52 (10.6

%) candidates did well by scoring 7 to 10 marks out of 10 marks allocated for this question.

The performance in this question was generally good as 46 percent of the candidates scored above pass mark of the allocated marks. The summary of candidate's scores in this question is presented in Figure 3.

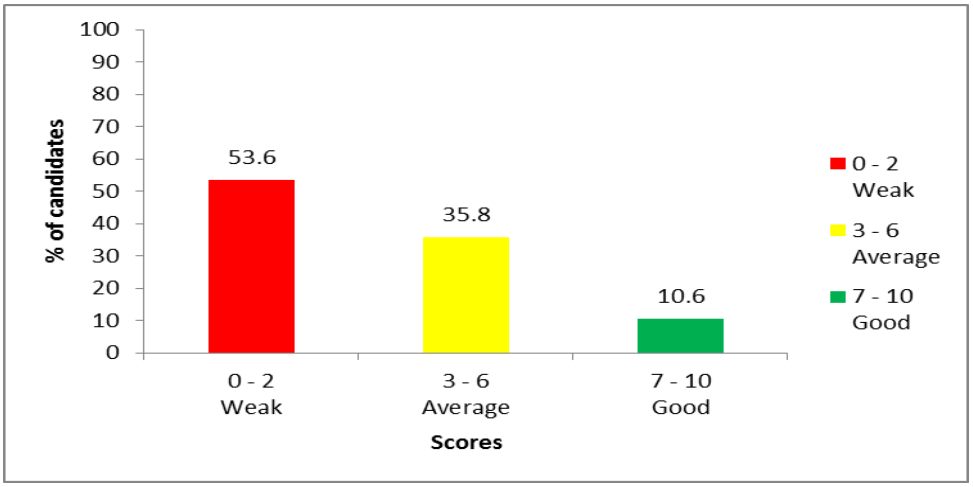


Figure 3: *Bar graph presenting the trend of performance in question 2*

Majority of the candidates provided poor responses for items (ix) and (x). In item (ix), the candidates were required to identify correct term for the area where the end of slopping roof finished in a vertical triangle. The correct response was N 'gable'. The candidates who chose the correct response 'gable' had good knowledge of the roof construction. The candidates who chose K 'hip' failed to understand that the term 'hip' describe the form of the roof.

In item (x), the candidates were required to match the term that defines the finished edge of slating or tiling over handing a gable. The correct answer was C 'barge board.' The candidates who chose response C 'barge board' had good knowledge on parts of the roof. The majority of the candidates matched this statement with N 'gable' where they relate the ward gable appeared in the statements with response N 'gable'. The candidates failed to understand that a gable is form the roof where its ends run between the eaves and ridge covered by timber board (barge board) to hold the common rafter forming verge.

2.2 SECTION B: Short Answer Questions

This section consisted of ten questions which carried 4 marks each. The score ranges used for grading the performance of candidates in this section is as indicated in Table 3.

Table 3: Score Ranges for Candidates' Performance in Question 3 - 12

Scores range	General Performance	
	Remark	Grade
0 - 1	Weak	F
1.5 - 2.5	Average	C - D
3 - 4	Good	A - B

2.2.1 Question 3: Construction Materials - Cement

The question required the candidate to list four properties of Portland cement.

This question was attempted by 436 (89 %) candidates; whereby 88.4 percent scored 0 to 1 mark and 83.1 percent of them scored a 0 mark. Two (0.5%) candidates scored 1.5 to 2.5 marks and only 0.2 percent of the candidates scored 3 to 4 marks. The performance in this question was generally weak as only 1.4 percent of the candidates scored above pass mark of the allocated marks. The summary of candidate's scores in this question is presented in Table 4.

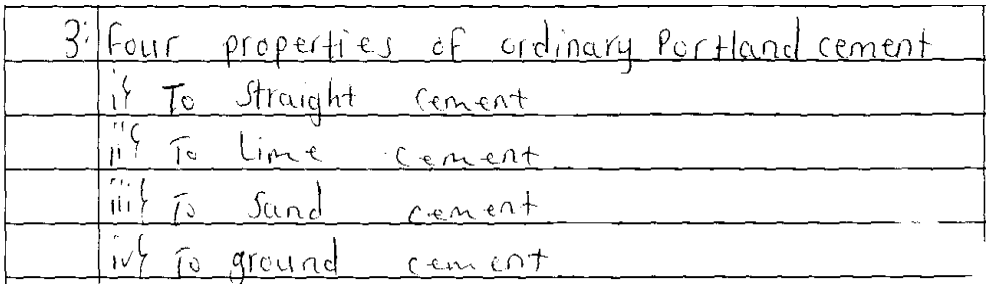
Table 4: Trend of candidates' performance in question number 3

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	54	11
0-1	Weak	433	88.4
1.5-2.5	Average	2	0.4
3-4	Good	1	0.2
TOTAL		490	100

The analysis shows that the candidates who scored a 0 mark failed to list down even a single property of Portland cement as presented in Extract 3.1 because most of them knew cement but they were confused by the term

Portland, thinking that it is new type of cement though all normal cement used are the ordinary Portland cement.

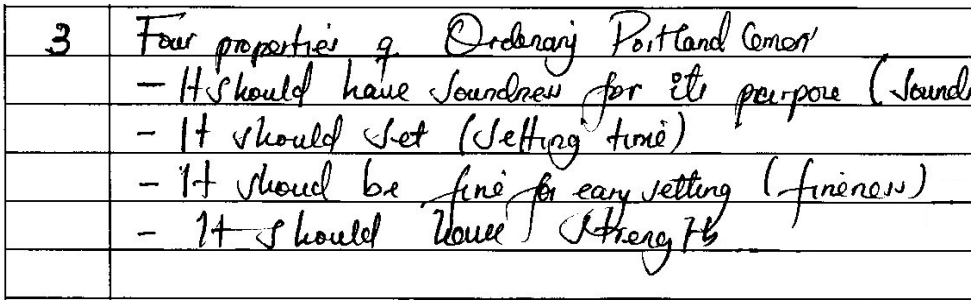
Extract 3.1



Extract 3.1 Shows a sample of response from a candidate who failed to list down four properties of Portland cement.

However, few candidates were able to list down all four properties as presented in Extract 3.2.

Extract 3.2



Extract 3.2 shows a sample of response from a candidate who was capable of listing down four properties of Portland cement.

2.2.2 Question 4: Construction Materials - Timber

The question had two parts (a) and (b). In part (a) candidates were required to define (i) timber conversion and (ii) timber seasoning. In part (b) candidates were required to state why softwood is more preferable for formwork than hardwood.

This question was attempted by 456 (93.1%) candidates; whereby 49.6 percent scored 0 to 1 mark, of which 31.8 percent of them scored a 0 mark. A total of 95 (20.8%) candidates scored 1.5 to 2.5 marks and only 27.6 percent of the candidates scored 3 to 4 marks. The performance in this question was generally average as 47 percent of the candidates scored pass

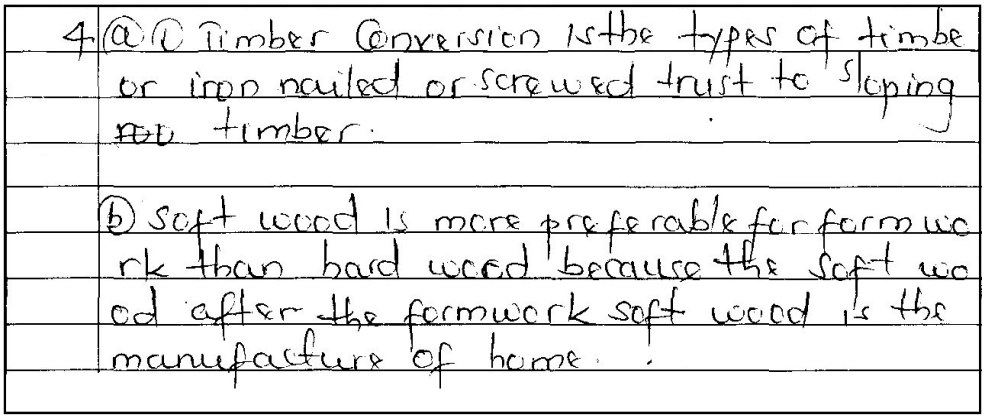
mark and above of the allocated marks. The summary of candidate's scores in this question is presented in Table 5.

Table 5: Trend of candidates' performance in question number 4

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	34	6.9
0 – 1	Weak	226	46.1
1.5 – 2.5	Average	95	19.4
3 - 4	Good	135	27.6
TOTAL		490	100

The analysis shows that the candidates who scored a 0 mark failed to define the given terms as well as giving reason for preference of softwood over hardwood for formwork purposes. Majority of the candidates had no enough knowledge in this type of construction material and failed to give the relevant responses as presented in Extract 4.1.

Extract 4.1

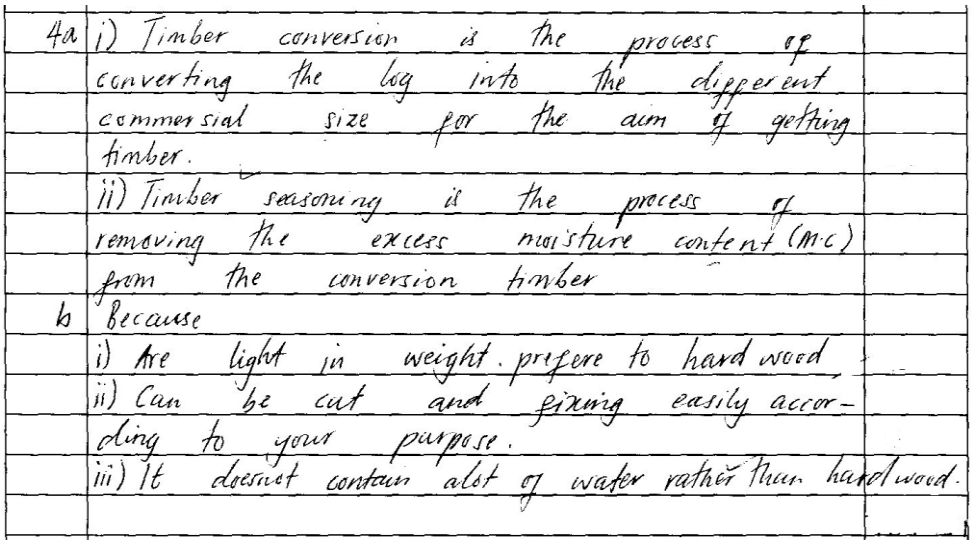

4 (a) (i) Timber Conversion is the types of timbe or iron nailed or screwed trust to sloping roo timber.

(b) Soft wood is more preferable for formwo rk than hard wood because the soft wo od after the formwork soft wood is the manufacture of home.

Extract 4.1 shows a sample of response from a candidate's script who produce irrelevant response.

The candidates who scored 4 marks correctly defined the given terms as well as giving the reason for using softwood for formwork instead of hardwood as per Extract 4.2.

Extract 4.2.


4a i) Timber conversion is the process of converting the log into the different commersial size for the aim of getting timber.
ii) Timber seasoning is the process of removing the excess moisture content (M.C) from the conversion timber
b Because
i) Are light in weight. prefere to hard wood
ii) Can be cut and fixing easily according to your purpose.
iii) It doesnot contain alot of water rather than hard wood.

Extract 4.2 shows a sample of response from a candidate is script who defined well the given terms and gave reasons for preference of softwood over hardwood for formwork purposes.

2.2.3 Question 5: Construction materials - Concrete

The question had two parts (a) and (b). Candidates were required to explain (a) pre-cast concrete and (b) cast in situ concrete as used in concrete technology.

This question was attempted by 399 (81.4 %) candidates; whereby 66.7 percent scored 0 to 1 mark, of which 98.9 percent of them scored a 0 mark. A total of 29 (7.3%) candidates scored 1.5 to 2.5 marks and 26.1 percent of the candidates scored 3 to 4 marks, of which 21.8 percent of the candidates scored full (4) marks. The performance in this question was generally average as only 33.3 percent of the candidates scored above pass mark of the allocated marks. The trend of candidates' performance in this question is summarized in Figure 4.

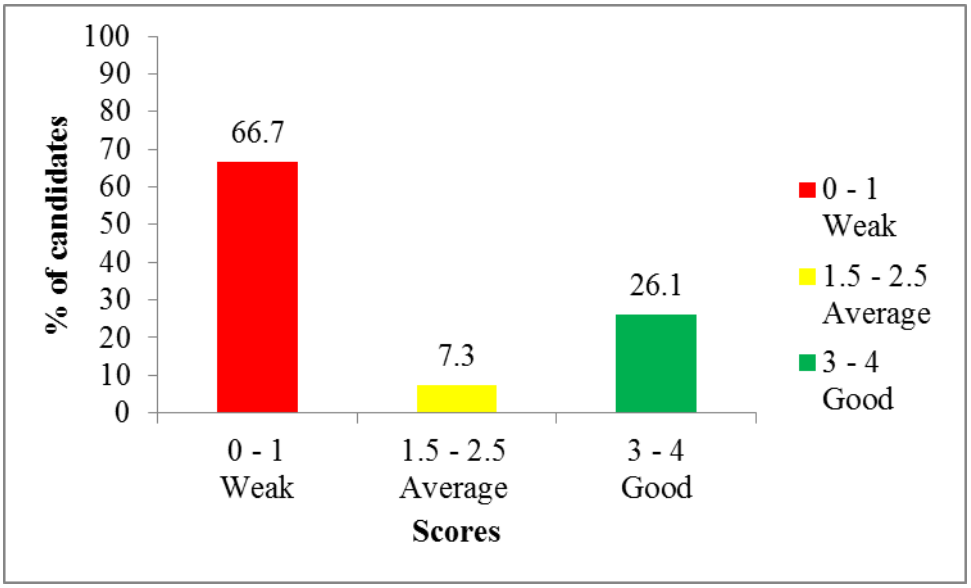
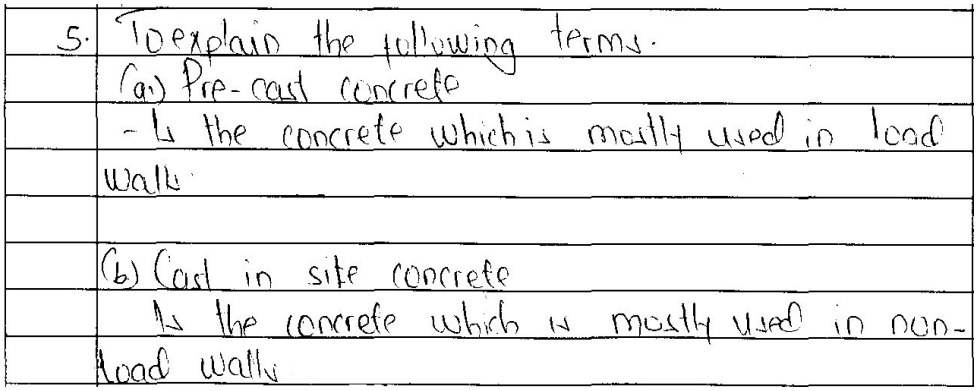


Figure 4*: Bar graph presenting the trend of performance in question 5*

The analysis shows that the candidates who scored a 0 mark failed to give the meaning of pre-cast concrete and cast in situ concrete as illustrated in Extract 5.1. This may be due to lack of broad knowledge on the classifications of concrete. They also failed to understand the meaning of concrete casting as a key word in both two questions.

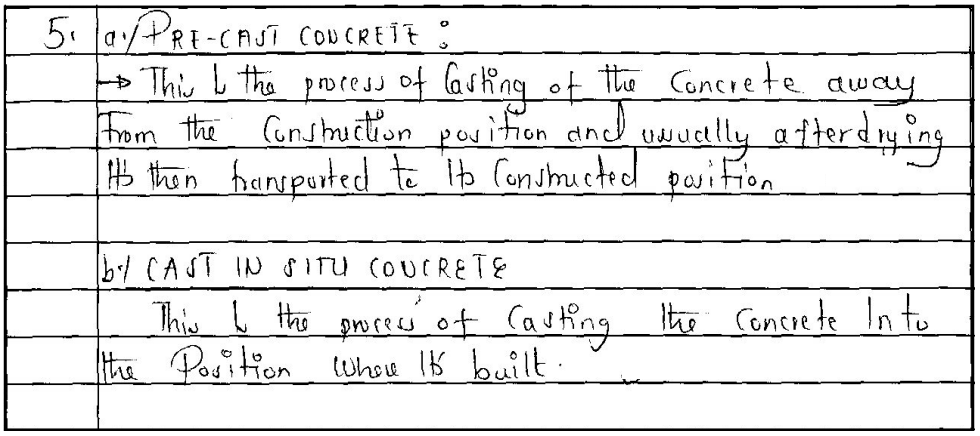
Extract 5.1



Extract 5.1 shows a sample of response from a candidate who failed to differentiate between pre-casts and cast in situ concrete.

Despite poor responses from majority of the candidates, there were candidates who answered it correctly as per Extract 5.2.

Extract 5.2



Extract 5.2 shows a sample of response from one candidate who was capable to differentiate between pre-casts and cast in situ concrete.

2.2.4 Question 6: Site preparations

The question had two parts (a) and (b). In part (a) candidates were required to state four methods of site exploration and in part (b) candidates were required to name four methods applicable in boring.

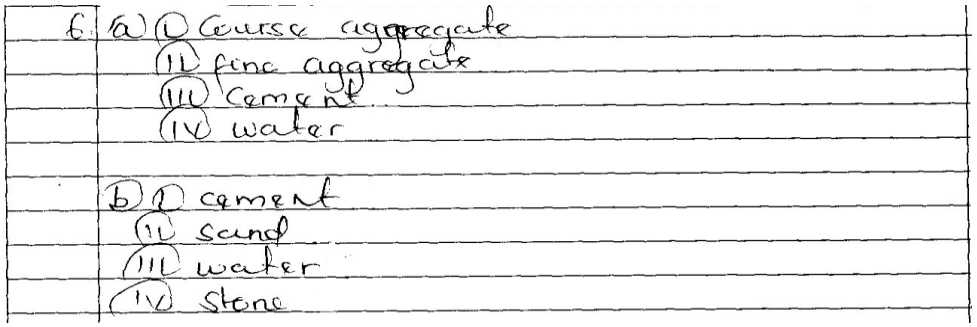
This question was attempted by 405 (82.7 %) candidates; whereby 85.2 % of them scored 0 to 1 mark, of which 70.1 % of the candidates scored a 0 mark. A total of 59 (12.04%) scored 1.5 to 2.5 marks and only 0.2 % of the candidates scored all 4 marks. The performance in this question was generally weak as only 12.24 % of the candidates scored above pass mark of the allocated marks. The trend of candidates' performance in this question is summarized in Table 6.

Table 6: Trend of candidates' performance in question number 6

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	85	17.35
0-1	Weak	345	70.4
1.5-2.5	Average	59	12.04
3-4	Good	1	0.2
TOTAL		490	100

The analysis shows that candidates who scored a 0 mark lacked basic knowledge of site preparation. Thus, they failed to state four methods of site exploration as well as naming four methods which applicable in boring method during site exploration. Some of the candidates instead of naming the methods of site exploration and four applicable methods for boring method, they listed four ingredients of a concrete as illustrated in Extract 6.1.

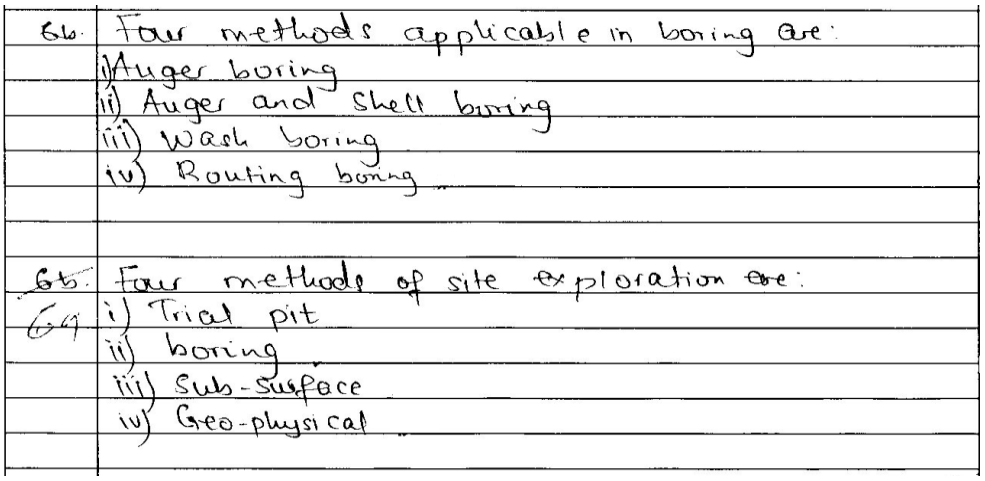
Extract 6.1



Extract 6.1 shows a sample of a candidate's response who failed to state four methods of site exploration as well as naming four methods applicable in boring.

However, few candidates scored 4 marks. Such candidates were capable of stating four methods of site exploration as well as naming four methods applicable in boring as revealed in Extract 6.2

Extract 6.2



Extract 6.2 shows a response from one candidate who was able to state four methods of site exploration as well as naming four methods applicable in boring.

2.2.5 Question 7: Scaffolding and shoring

The question had two parts (a) and (b). Part (a) required candidates to describe shoring as applied in construction works and part (b) required candidates to explain the function of underpinning.

This question was attempted by 445 (90.8%) candidates who sat for the examination. Of those candidates who attempted the question, 40.7 % scored 0 to 1 mark, of which 35 percent scored 0 mark out of 4 marks. The percentage of candidates who scored between 1.5 and 2.5 marks was 31.84 % and only 24.3 % scored between 3 to 4 marks. The performance in this question was generally average as 53.86% of the candidates scored above pass mark. The trend of candidates' performance in this question is summarized in Figure 5.

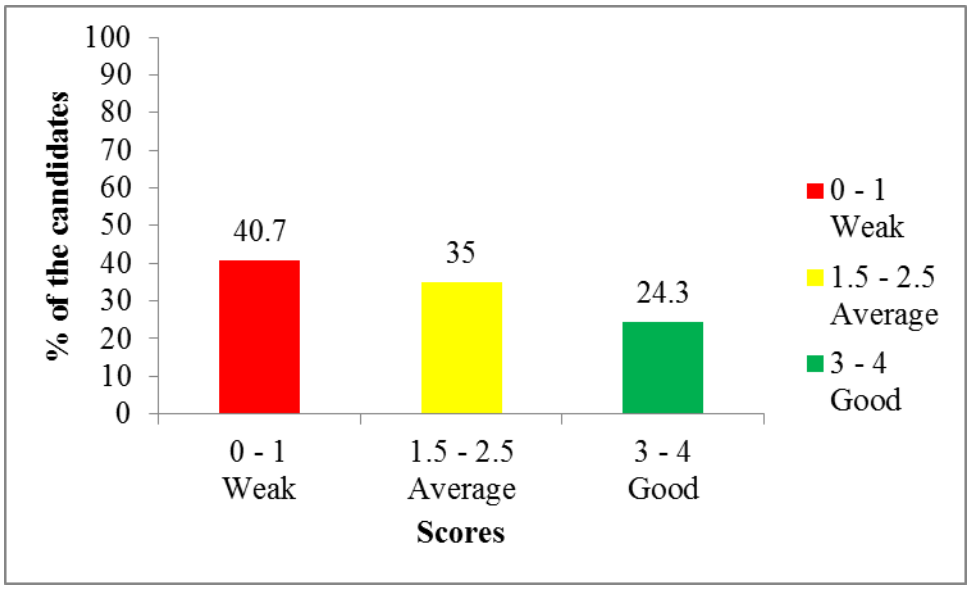
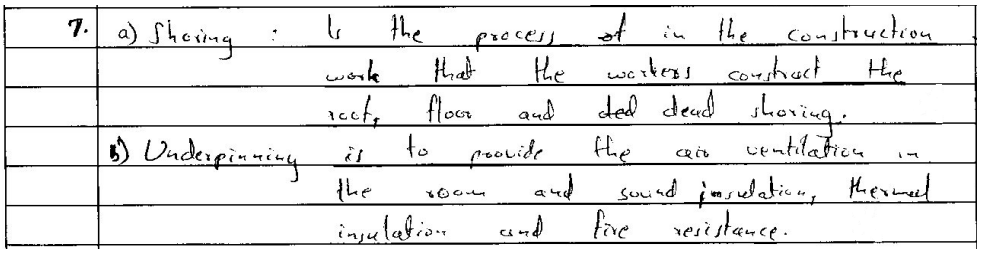


Figure 5*: Bar graph presenting the trend of performance in question 7*

The analysis shows that some of the candidates who scored 0 mark did not understand the demand of the question as revealed in Extract 7.1

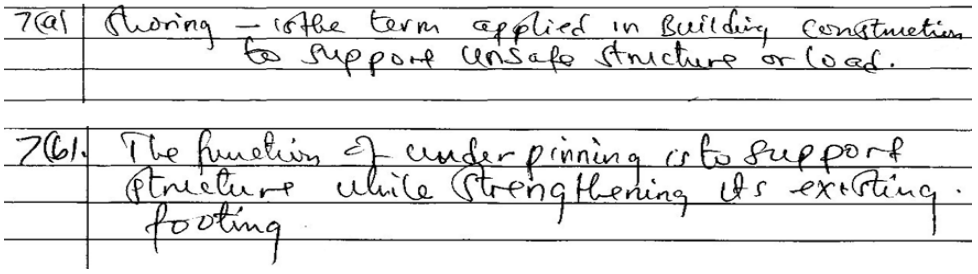
Extract 7.1



Extract 7.1 shows a sample of response from one candidate who failed to describe shoring as applied in construction works and also failed to explain the function of underpinning.

However, few candidates were capable of giving correct description for the term shoring and clarification on the function of underpinning as presented in Extract 7.2.

Extract 7.2



Extract 7.2 shows a sample of response from one candidate who was capable giving correct description for the term shoring and clarification on the function of underpinning.

2.2.6 Question 8: Walls and Columns & Beams

The question had two parts (a) and (b). Part (a) required candidates to state four purposes of wall and part (b) required candidates to name four different types of materials used for construction of columns and beams.

This question was attempted by 482 (98.4%) of the candidates sat for the examination. Out of these candidates, 26.3 percent scored 0 to 1 mark of which 11.8 percent scored 0 mark out of 4 marks. The percentage of candidates who scored 1.5 to 2.5 marks was 40.9 percent and 32.8 percent scored in between 3 to 4 marks, of which only 27.8 percent scored full mark.

Generally the performance was good as 73.7 percent of the candidates attempted this question scored above pass mark for the allocated marks. The trend of candidates' performance in this question is summarized in Figure 6.

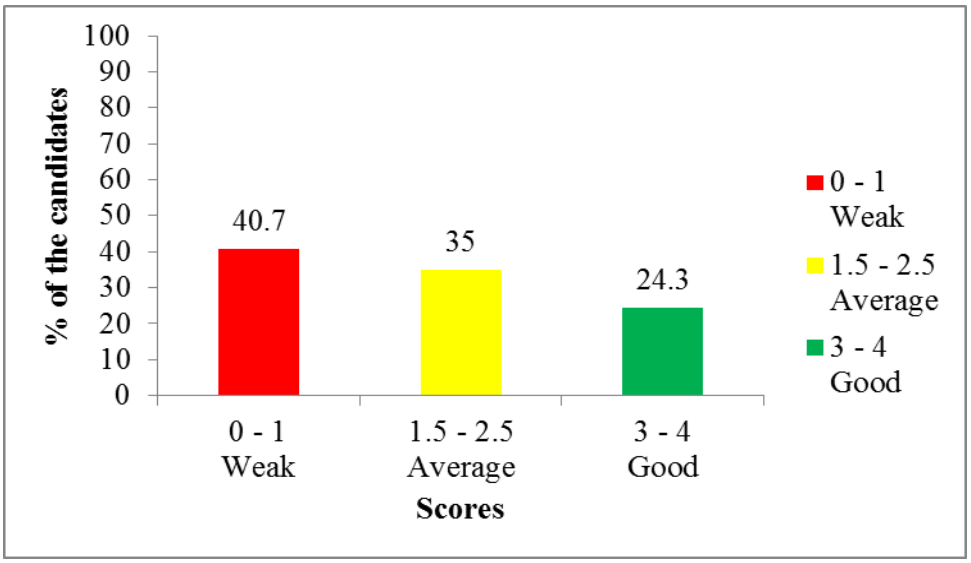
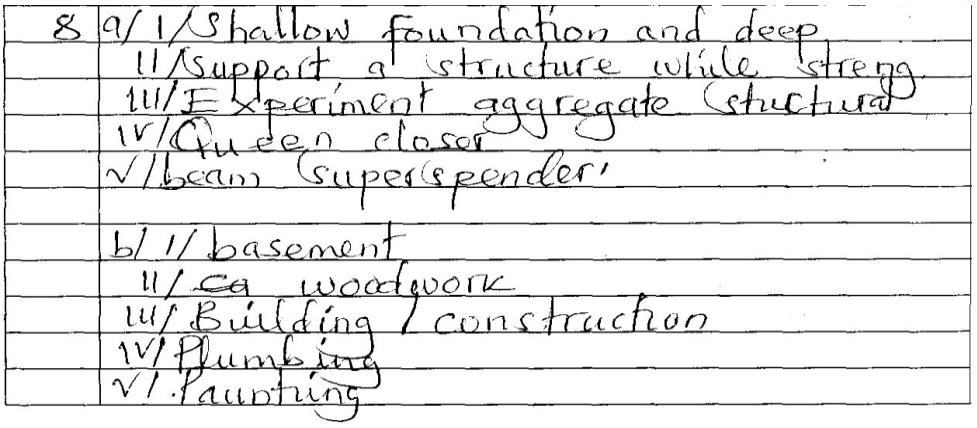


Figure 6*: Bar graph presenting the trend of performance in question 8*

The analysis shows that some of the candidates who scored a 0 mark did not understand the question, thus giving irrelevant responses as presented in Extract 8.1.

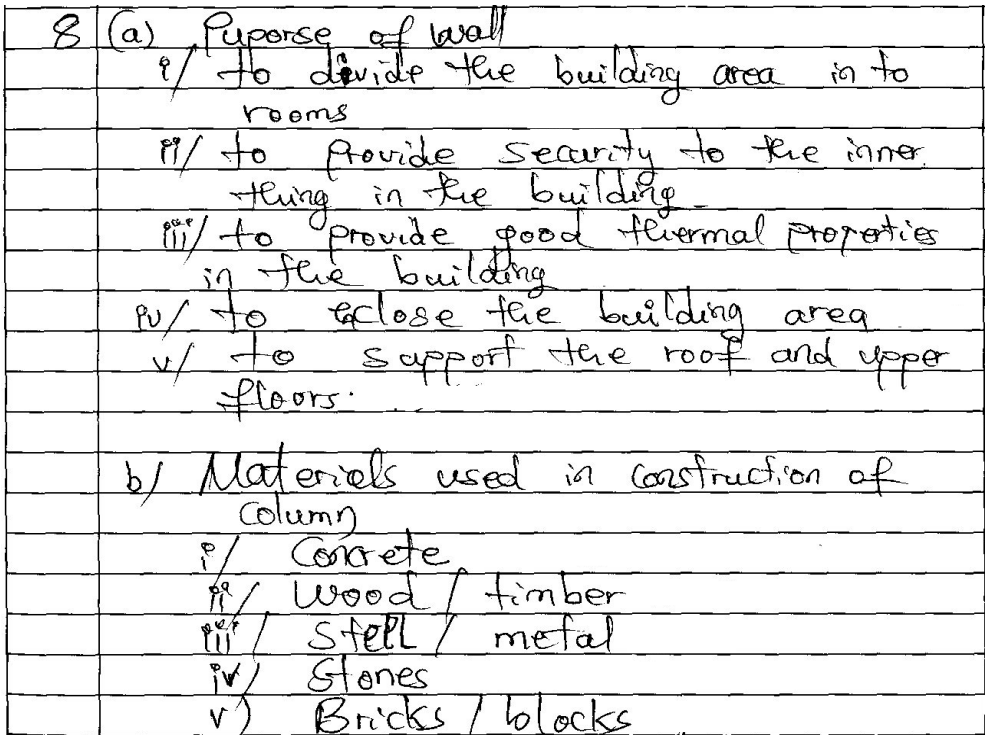
Extract 8.1



Extract 8.1 shows a sample of response from one candidate who failed to state four purposes of walls and to name four different types of materials used for construction of columns and beams.

However, some candidates were capable of giving relevant response as per Extract 8.2.

Extract 8.2.


8 (a) Purpose of wall
i/ to divide the building area in to rooms
ii/ to provide security to the inner thing in the building
iii/ to provide good thermal properties in the building
iv/ to close the building area
v/ to support the roof and upper floors.

b/ Materials used in construction of column
i/ Concrete
ii/ Wood / timber
iii/ Stell / metal
iv/ Stones
v) Bricks / blocks

Extract 8.2 shows a sample of response from a candidate who was able to state four purposes of walls and to name four different types of materials used for construction of columns and beams.

2.2.7 Question 9: Floors

The question had two parts (a) and (b). Part (a) candidates were required to define floor and part (b) candidates were required to describe two components of a floor.

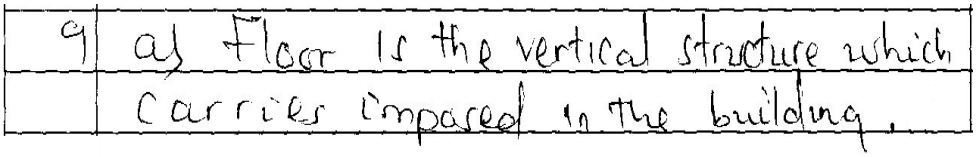
This question was attempted by 482 (98.4%) candidates; whereby 90.5 percent scored 0 to 1 mark, of which only 47.5 percent scored a 0 mark. A total of 32 (6.6%) candidates scored 1.5 to 2.5 marks and only 2.9 percent of the candidates scored 3 to 4 marks of which only 2.7 percent scored full mark. The performance in this question generally weak as only 5.4 percent of the candidates scored above pass mark of the allocated marks. The summary of candidate's scores in this question is presented in Table 7.

Table 7: Trend of candidates' performance in question number 9

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	8	1.6
0-1	Weak	436	89
1.5-2.5	Average	32	6.5
3-4	Good	14	2.9
TOTAL		490	100

The analysis shows that, some of the candidates who scored a 0 mark did not understand English terminologies as they failed to differentiate the word horizontal and vertical, though they have a technical idea of the main function of a floor as shown in Extract 9.1.

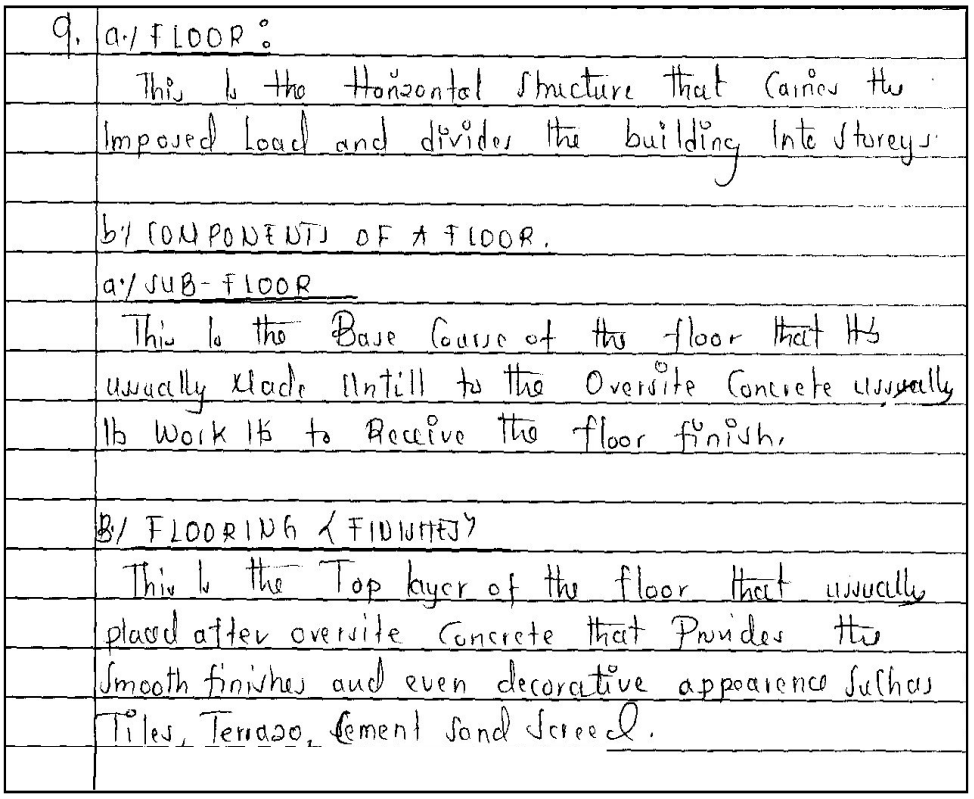
Extract 9.1



Extract 9.1 shows a sample of the response from one candidate who failed to define floor and to describe two components of a floor.

However, few candidates were relatively able to define floor and to describe two components of a floor as per Extract 9.2.

Extract 9.2.


9. a./ FLOOR:
This is the Horizontal Structure that Carries the Imposed Load and divides the building into Storeys.

b./ COMPONENTS OF A FLOOR.

a./ SUB-FLOOR
This is the Base Course of the floor that is usually made untill to the Oversite Concrete usually its work is to Receive the floor finish.

B./ FLOORING (FINISHES)
This is the Top layer of the floor that usually placed after oversite Concrete that Provides the Smooth finishes and even decorative appearence Suchas Tiles, Terrazo, Cement Sand Screed.

Extract 9.2 shows a sample of response from one candidate who defined well the floor and described well two components of a floor.

2.2.8 Question 10: Doors and Windows

The question had two parts (a) and (b). Part (a) required candidates to state situation necessary for provision of sliding door and part (b) required candidates to give reason for preference of metal windows over wooden windows for apartments and high raise buildings.

This question was attempted by 431 (88%) candidates; whereby 61.3 percent scored 0 to 1 mark, of which 41.8 percent of them scored 0 mark. A total of 161 (37.3%) candidates scored 1.5 to 2.5 marks and 1.4 percent of the candidates scored 3 to 4 mark of which 0.5 percent scored all 4 marks allocated. The performance in this question was generally average as only 34.08 percent of the candidates scored above pass mark. The summary of candidate's scores in this question is presented in Figure 7.

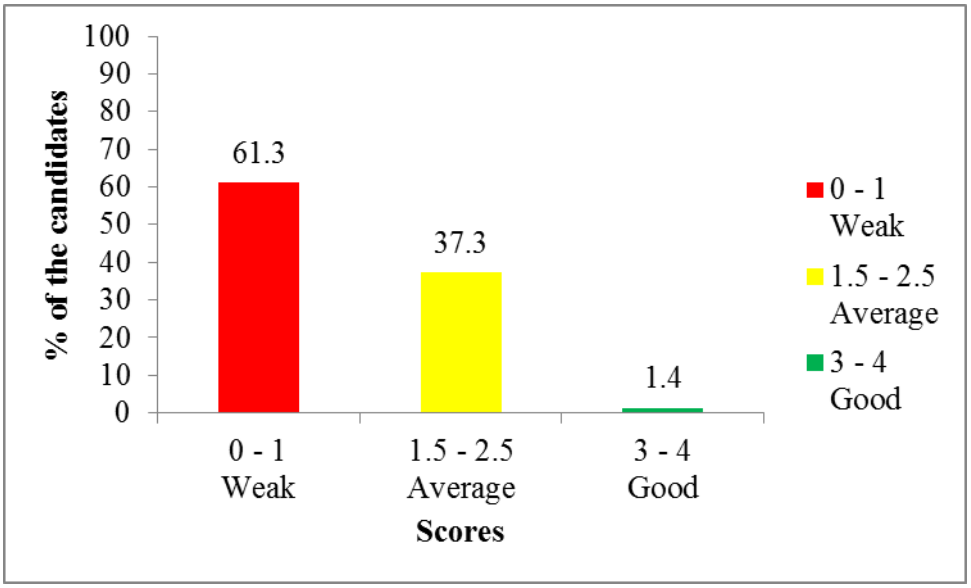
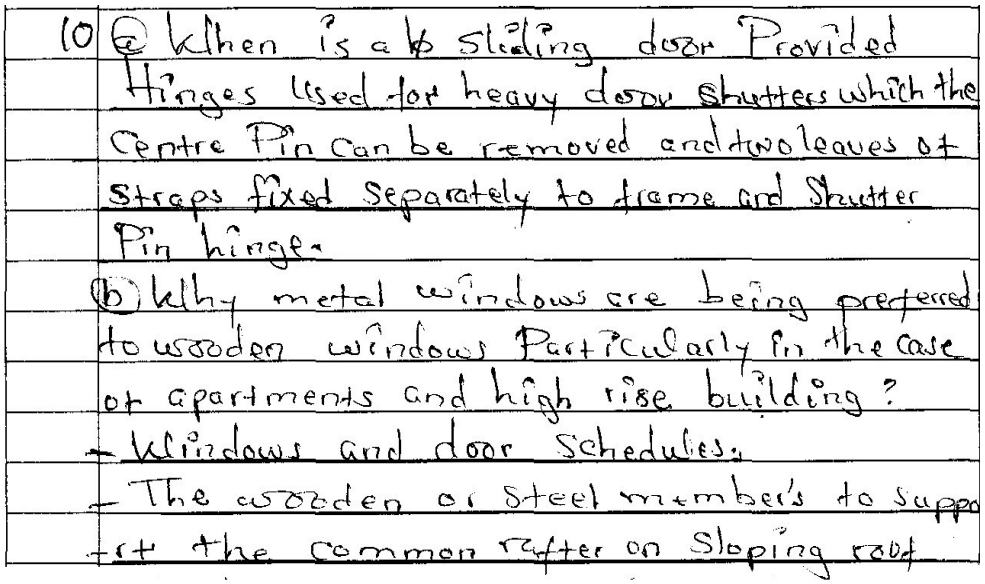


Figure 7*: Bar graph presenting the trend of performance in question 10*

In part (a) most of the candidates failed to explain when a sliding door can be provided. Instead they explained how one can dismantle the shutter easily from the normal door frame. In part (b), most of the candidates failed to provide the reasons of preference the metal windows rather than wooden windows particularly in the apartments and high raise building. Most candidates wrote irrelevant materials. Metal windows, like aluminium is better finishing appearance, strength and durability. Also it is light in weight, thus reducing the total weight of the building. Extract 10.1 illustrate a sample of irrelevant responses produced by a candidate when attempt this question.

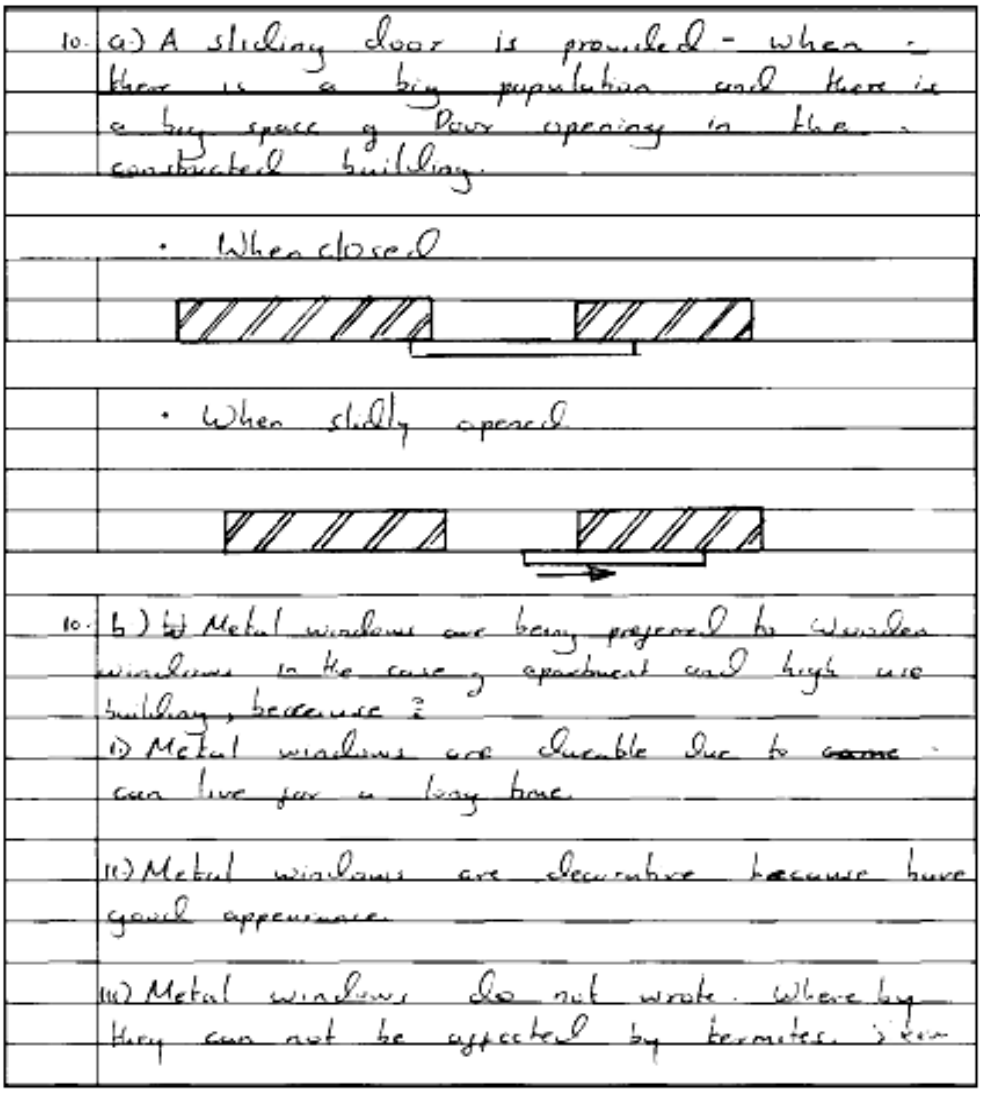
Extract 10.1.


10 (a) When is a sliding door Provided
Hinges used for heavy door Shutters which the
Centre Pin can be removed and two leaves of
straps fixed separately to frame and Shutter
Pin hinges
(b) Why metal windows are being preferred
to wooden windows Particularly in the case
of apartments and high rise building ?
- Windows and door Schedules.
- The wooden or steel members to suppo
rt the common rafter on Sloping roof

Extract 10.1 shows a sample of response of a candidate who wrote irrelevant responses and scored a 0 mark in this question.

Some candidates managed to score high marks in this question because they successfully showed when the sliding window is provided. They were able to provide the reasons of preference the metal windows rather than wooden windows particularly in the apartments and high raise buildings. Extract 10.2 illustrates the sampled script of a response of a student who was able to give the correct responses in all parts of the question.

Extract 10.2.



Extract 10.2 shows a sampled candidate's response who was able to give the correct responses in all parts of the question.

2.2.9 Question 11: Construction materials - Timber

This question required candidates to explain properties of timber under two headings, in (a) grain and (b) colour and odour.

This question was attempted by 368 (70%) candidates; whereby 97.4 percent scored 0 to 1 mark, of which 96.4 percent of them scored 0 mark. Only 9 (2.6%) candidates scored 1.5 to 2.5 marks. There was no single candidate who scored 3 to 4 marks. The performance in this question was

generally weak as only 2.6 percent of the candidates scored above pass mark. The summary of candidate's scores in this question is presented in Table 8.

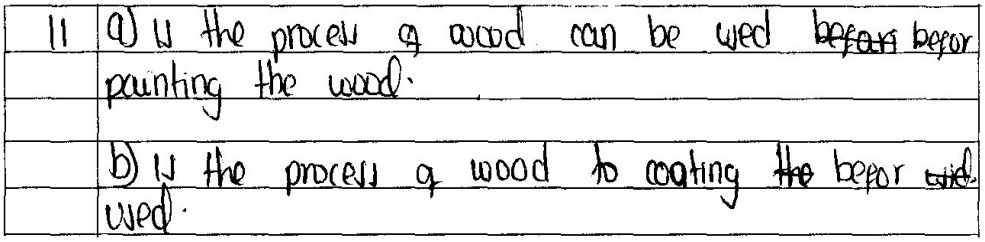
Table 8: Trend of candidates' performance in question number 11

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	147	30
0-1	Weak	334	68.2
1.5-2.5	Average	9	1.8
3-4	Good	0	0
TOTAL		490	100

The analysis shows that, this is the most poorly scored question in section B. The majority of the candidates who scored a 0 mark were not capable to explain some of the properties of wood because they didn't have wide knowledge on the inner properties of wood such as grains though they have ability to explain some of the outer and physical properties of wood such as colour development of tree on different stages from tree until it converted to wood.

Extract 11.1 represent candidates who completely lacked knowledge on properties of timber related to grain, colour and odour.

Extract 11.1.



Extract 11.1 shows a sample of response from a candidate who completely lacked knowledge on properties of timber related to grain, colour and odour.

Few candidates who scored at least 2 marks were able to answer only part (b) of the question because colour and odour are the outer properties of the tree and it can be observed very easily by a candidate as illustrated by Extract 11.2.

Extract 11.2.

	(b.) Colour and odour
	– Wood is brown or dark when result in hardwood
	and is whitish when result in softwood
	– Wood is odour depending on the type log/tree found.

Extract 11.2 shows a sample of response from a candidate who succefully tried to explain timber properties related to colour and odour.

2.2.10 Question 12: Construction materials - Stones

The question required the candidates to state four classifications of stones according to the building purposes. This question was attempted by 427 (87.1%) of the candidates sat for the examination. Between these candidates 56.9 percent scored 0 to 1 mark of which 48.5 percent of them scored 0 mark out of 4 marks. The percentage of candidates who scored 1.5 to 2.5 marks was 10.9 percent and 32 percent scored in between 3 to 4 marks of which 30.4 percent scored full mark. Generally the performance was average as 42.2 percent of the candidates attempted this question scored above pass mark for the allocated marks.The trend of candidates' performance in this question is summarized in Figure 8.

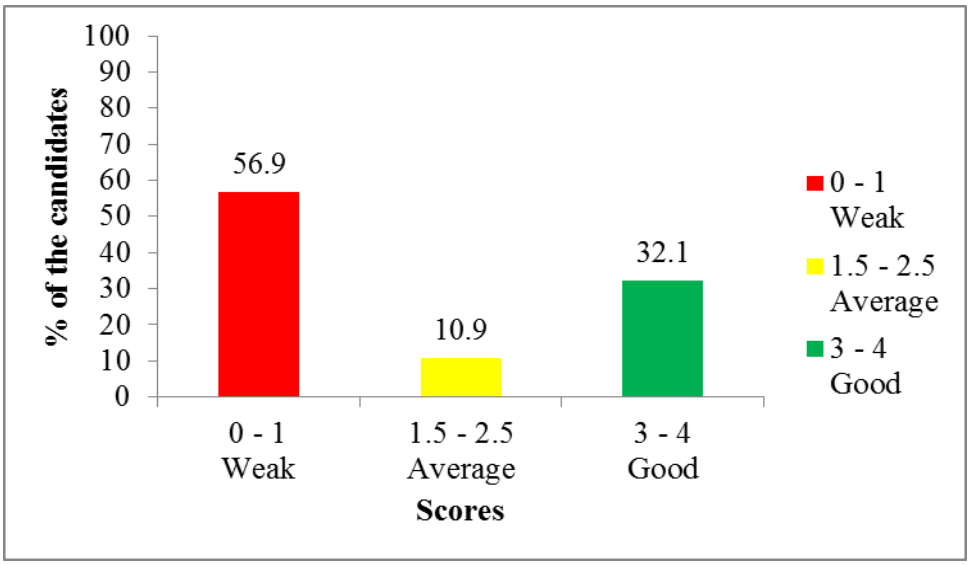
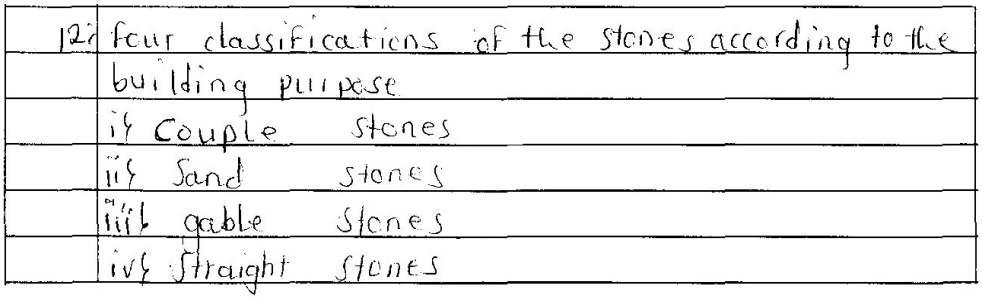


Figure 8*: Bar graph presenting the trend of performance in question 12*

The analysis shows that candidates who scored a 0 mark gave irrelevant responses that did not match to the question. This implies that candidates were confused by the term stone which is used as a replace of the word aggregate. That is why the candidates gave irrelevant answers as shown in Extract 12.1.

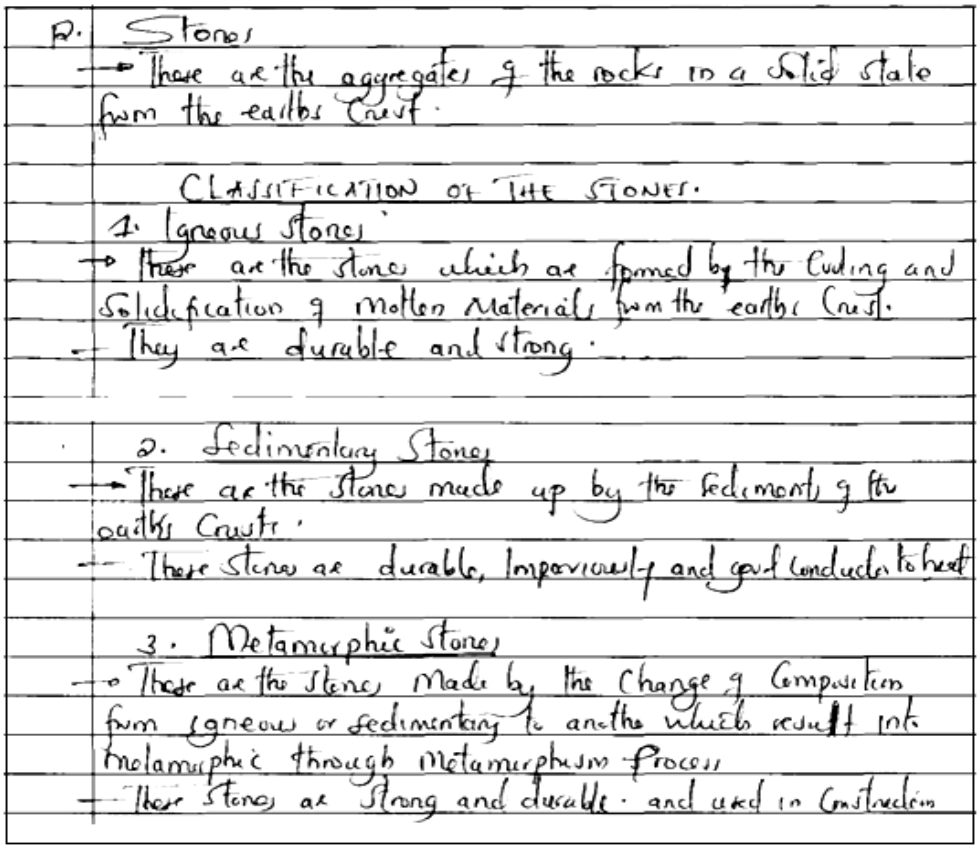
Extract 12.1



Extract 12.1 shows a the sample of response from a candidate who failed to classify stones according to the building purposes.

Some few candidates were able to give four appropriate classifications of stones according to the building purposes and scoring all marks as per Extract 12.2.

Extract 12.2.



Q. Stones

→ These are the aggregates of the rocks in a solid state from the earths Crust.

CLASSIFICATION OF THE STONES.

1. Igneous Stones

→ These are the stones which are formed by the Cooling and Solidification of molten Materials from the earths Crust.

→ They are durable and strong.

2. Sedimentary Stones

→ These are the Stones made up by the sediments of the earths Crust.

→ These Stones are durable, Imperviously and good Conductor to heat

3. Metamorphic Stones

→ These are the Stones made by the Change of Composition from Igneous or sedimentary to another which result into Metamorphic through Metamorphism Process

→ These Stones are strong and durable. and used in Construction

Extract 12.2 shows a sample of response from a candidate who was able to classify stones according to the building purposes.

2.3 SECTION C: Structured Questions

This section consisted of three questions and the candidates were required to attempt only two questions. Each question carried 20 marks. The score ranges used for grading performance of candidates for the questions in this section is indicated in Table 9.

Table 9: Score Range for Candidates' Performance in Question 13 - 15.

Scores range	General Performance	
	Remark	Grade
0 - 5.5	Weak	F
6 - 12.5	Average	C - D
13 - 20	Good	A - B

2.3.1 Question 13: Roof

The question had two parts, (a) and (b). In part (a), the candidates were required to describe the reinforced concrete roof, and give its construction details. In part (b) candidates were required to describe with neat sketches four types of pitched roofs (i) lean to roof (ii) couple roof (iii) couple closed roof and (iv) collar beam roof.

This question was attempted by 456 (93.1 %) of the candidates who sat for the examination. Out of these candidates, 65.69 percent scored 0 to 5.5 marks of which 20.6 percent of them scored 0 mark out of 20 marks. The percentage of candidates scored 6 to 12.5 marks was 28.9 percent and only 5.5 percent scored 13 to 20 marks. There was only one candidate scored full (20) marks.

Generally the performance was average as 34.4 percent of the candidates attempted this question scored above pass mark for the allocated marks. The trend of candidates' performance in this question is summarized in Figure 9.

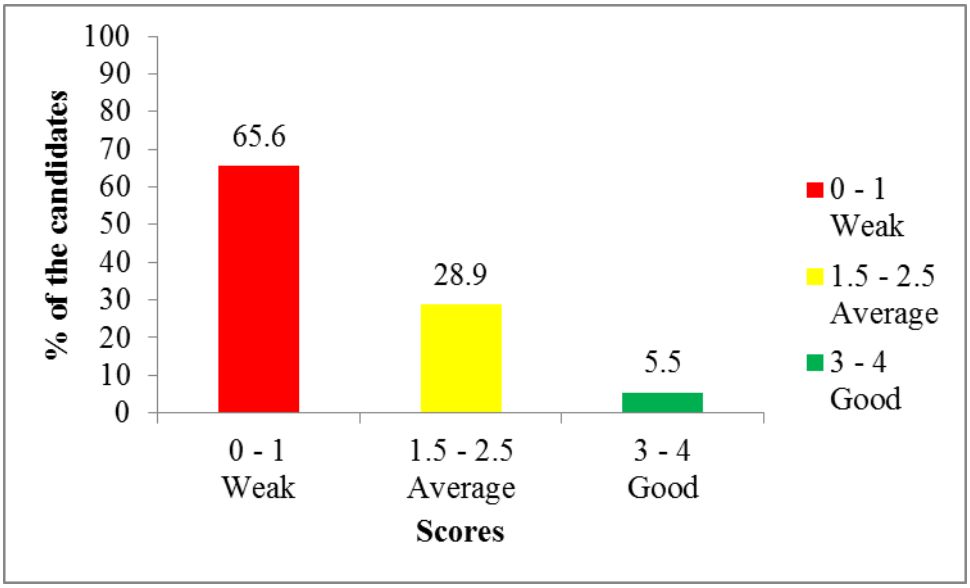
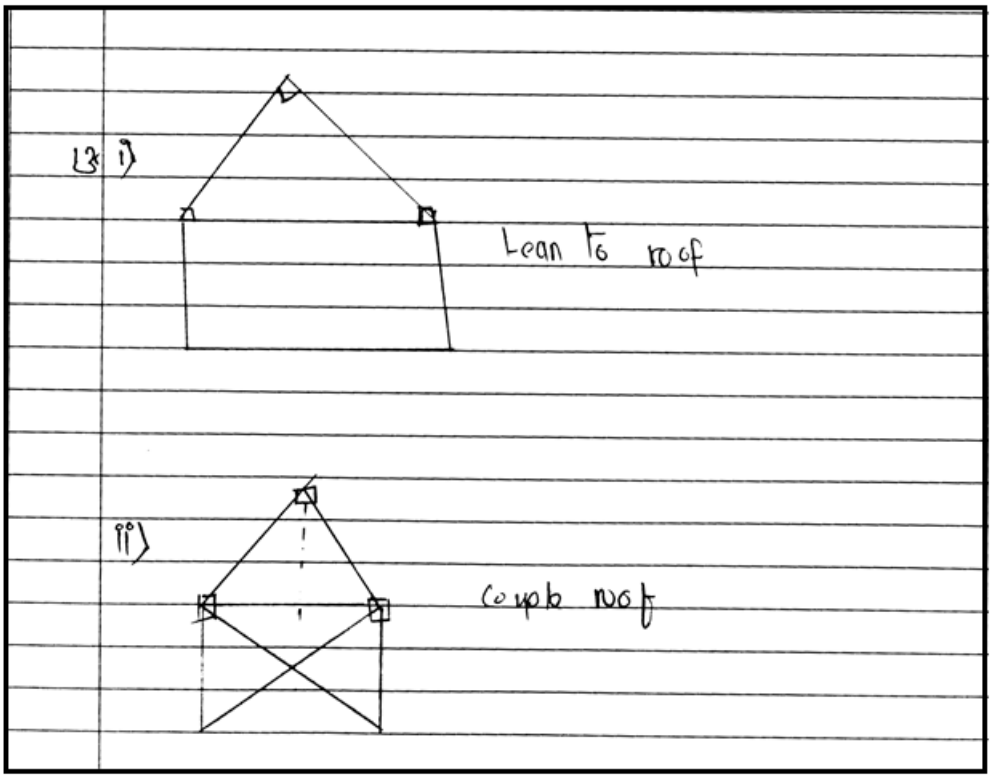


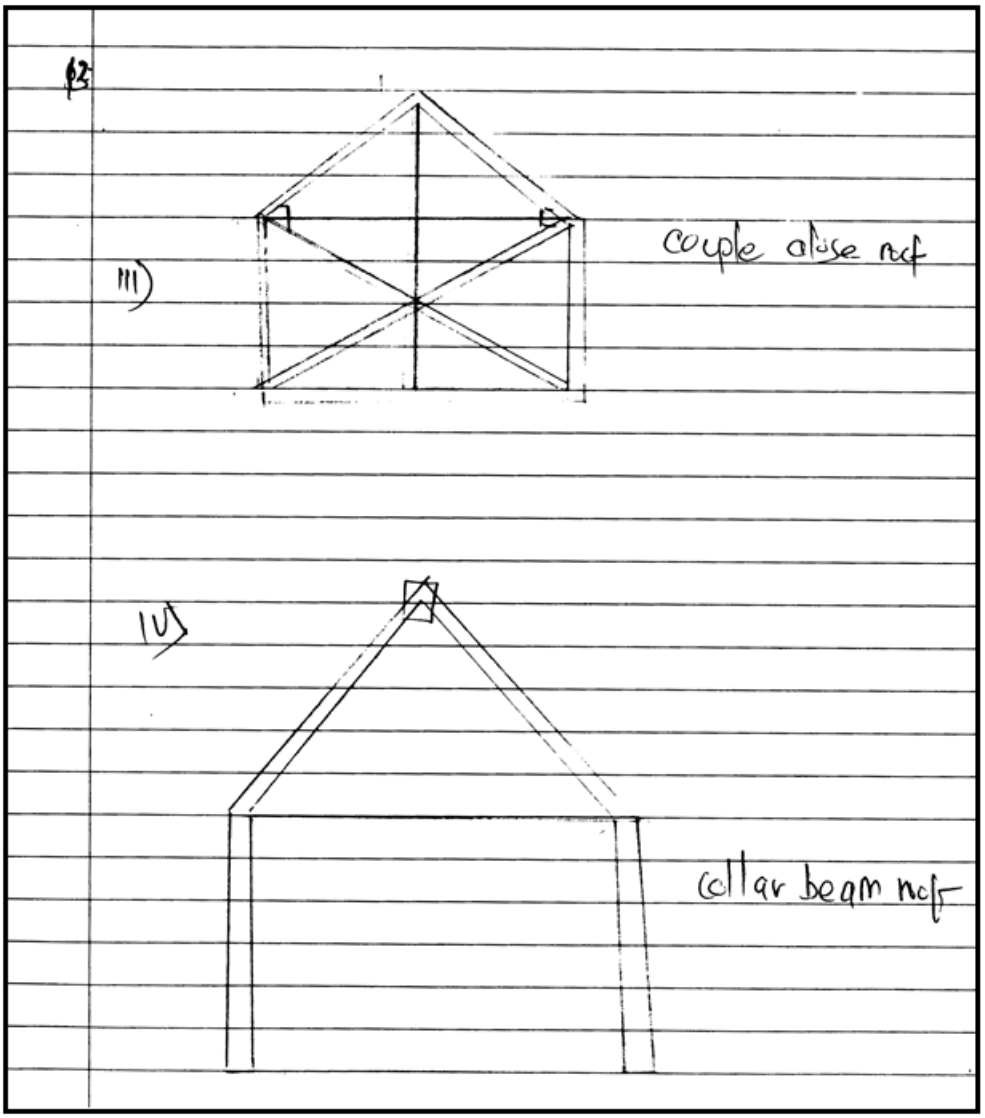
Figure 9: *Bar graph presenting the trend of performance in question 13*

Of all the questions, this was the most opted question in this section. However, very few got the question showing that the few candidates had satisfactory basic knowledge about the roof. Majority performed poorly due

to lack of knowledge on this topic. The candidates who scored a 0 mark could neither describe nor give the construction details of reinforced concrete roof. Worse still, they could not describe the four given types of the pitched roof. A sample of a poor response from candidate who could not provide relevant response to this question is presented in Extract 13.1.

Extract 13.1





Extract 13.1 shows a sample of response from one candidate who failed to describe and give construction details of reinforced concrete roof, and four types of pitched roofs.

Few candidates were able to answer correctly part (a) and part (b) of the question as presented in Extract 13.2.

Extract 13.2

13. (a) Reinforced concrete roof

Is the type of the flat roof constructed on the top of the external walls.

- The reinforced concrete roof is made up of the reinforced concrete that is to say the concrete contain the pieces of steel bar for increasing the ability of the roof to overcome tension

The way of construction

During the construction of ~~concrete~~ reinforced concrete roof the following stages are considered

(i) Assembling the formwork.

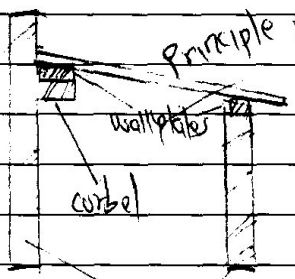
(ii) Setting the reinforcement in the place of roof base

(iii) Preparing/~~mixing~~ mixing raw concrete and pouring it in place

(iv) Curing of the reinforced concrete ~~floor~~ roof.

13 (b) (i) Lean to roof.

Is the type of pitched roof in which the ~~pricipal~~ principle rafters are supported by the projecting part called corbel at one end and at a wall plated short than first wall

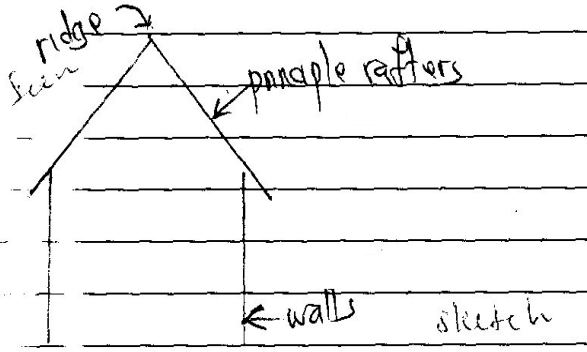


Sketch

external walls.

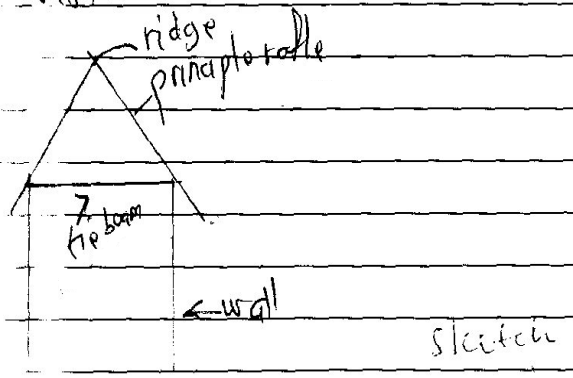
(i) Lean to roof.

(ii) Couple roof - is the roof made of two pinnaple rafters without the tie beam



Couple roof.

(iii) Couple close roof.
Is the kind of pitched couple roof with the tie beam supporting the rafters.



(iv) Collar roof
Is the type of couple roof with the tie beam at the 2/3 portion of the roof, it is located 1/3 from the ridge of whole area of the triangle space,

Extract 13.2 shows a sample of response from one candidate who described well the construction details of reinforced concrete roof and four types of pitched roofs.

2.3.2 Question 14: Walls

The question, supported by Figure 1 (floor plan) and Table 1 (windows and doors schedules) had three parts, (a), (b), and (c). In part (a) the candidates were required to calculate perimeter of the walls neglecting door and window opening. In part (b) the candidates were required to calculate area of the wall (in square meter) when height of the wall = 3.2m. In part (c) the candidates were required to calculate cost of constructing the wall, if $1m^2$ of the wall = Tshs. 55,000/=.

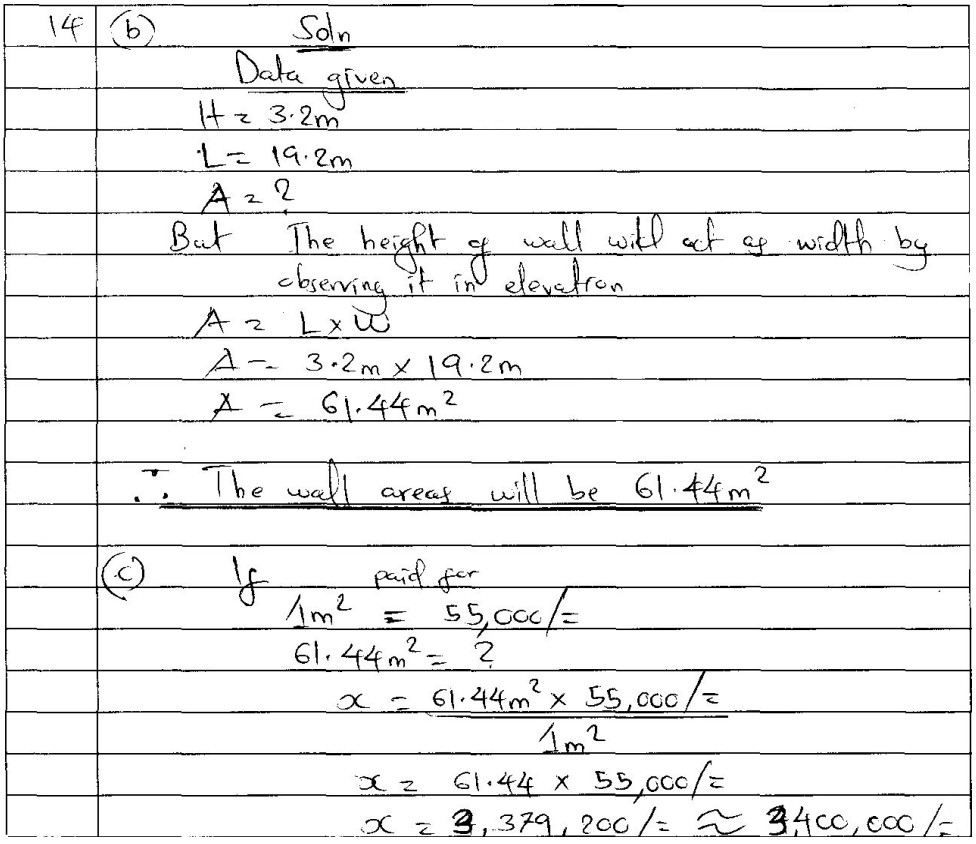
This question was attempted by 279 (56.9%) candidates who sat for the examination. Out of these candidates, 99.3 percent scored from 0 to 5.5 marks of which 92.5 percent of them scored a 0 mark out of 20 marks. The percentage of candidates scored 6 marks was only 0.7 percent. There was no candidate who scored above 6 marks. Generally the performance was weak as only 1 percent of the candidates who attempted this question scored above pass mark for the allocated marks.The trend of candidates' performance in this question is summarized in Table 10.

Table 10: Trend of candidates' performance in question number 14

Scores	**Remark**	**Candidates**	
		Number	Percentage (%)
-	Not attempted	211	43.1
0-5.5	Weak	277	56.5
6-12.5	Average	2	0.4
13-20	Good	0	0
TOTAL		490	100

The analysis shows that this was the most omitted and poorly performed question among the questions in section C. Majority of the candidates did not master the topic and they did not follow properly the instructions of the question. For example, most of the candidates forgot to omit area of the openings during the calculation leading to the wrong answers. Also most of the candidates failed to interpret clearly the drawing elements such as windows and doors as it can be seen in Extract 14.1.

Extract 14.1


14 (b) Soln

Data given

H = 3.2m

L = 19.2m

A = ?

But The height of wall will act as width by observing it in elevation

A = L x W

A = 3.2m x 19.2m

A = 61.44m²

∴ The wall areas will be 61.44m²

(c) If paid for

1m² = 55,000/=

61.44m² = ?

x = 61.44m² x 55,000/= / 1m²

x = 61.44 x 55,000/=

x = 3,379,200/= ≈ 3,400,000/=

Extract 14.1 shows a sample of response from one candidate who failed to calculate perimeter of the walls, wall area and cost for wall construction.

2.3.3 Question 15: Water supply

The question required the candidates to sketch, label and explain five components of domestic water supply service connection, (a) ferrule, (b) goose neck, (c) stop cock, (d) main service pipe and (e) water meter.

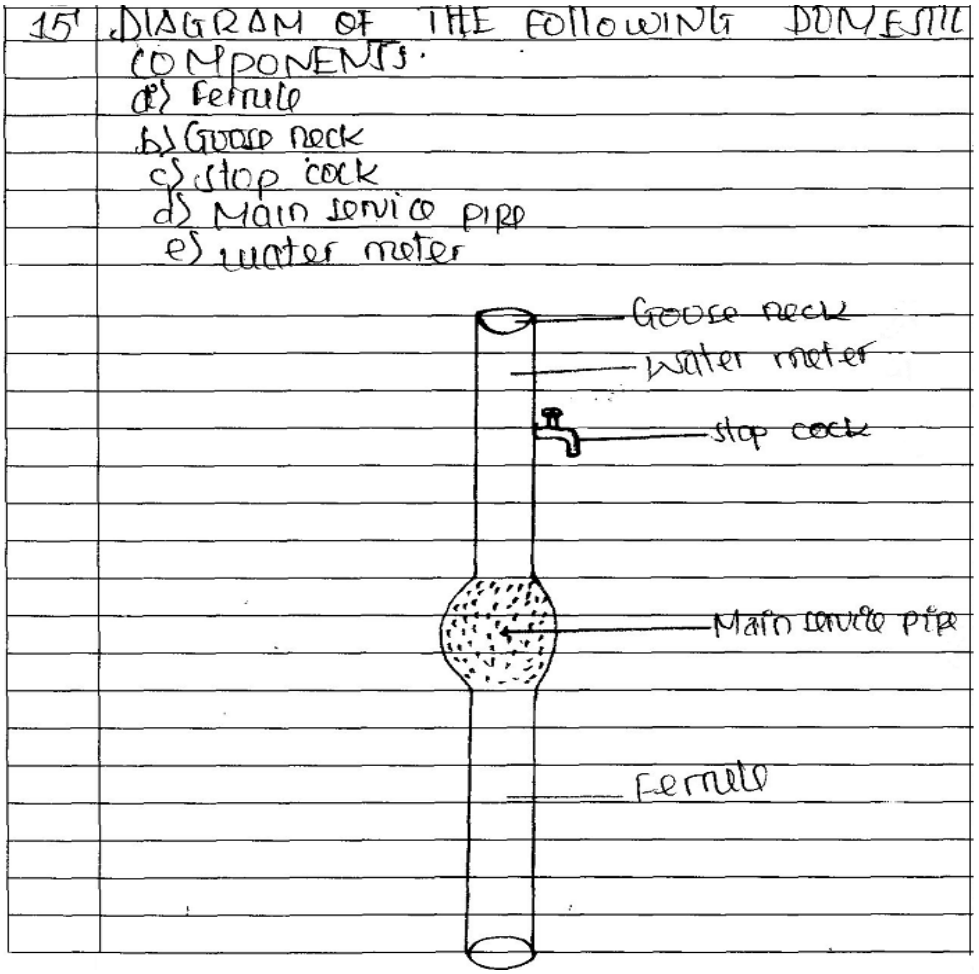
This question was attempted by 147 (30%) of the candidates who sat for the examination. Out of these candidates, 81.5 percent scored from 0 to 5.5 marks of which 36.7 percent of them scored a 0 mark out of 20 marks. The percentage of candidates scored 6 to 8.5 marks is 18.5 percent and only 3.5 percent scored in between 9 to 13 marks. Generally the performance was weak as only 5.5 percent of the candidates attempted this question scored above pass mark for the allocated marks.The trend of candidates' performance in this question is summarized in Table 11.

Table 11: Trend of candidates' performance in question number 15

Scores	Remark	Candidates	
		Number	Percentage (%)
-	Not attempted	343	70
0-5.5	Weak	120	24.5
6-12.5	Average	26	5.3
13-20	Good	1	0.2
TOTAL		490	100

The analysis shows that most of the candidates did not opt this question. For those attempted this question failed to draw the proper domestic water connection, although had knowledge on the components of domestic water system. This implies that the candidates lacked knowledge and practical skills to perform task which include construction and servicing of domestic water system. Extract 15.1 shows a candidate who tried to respond on the question but he failed to sketch domestic service connection.

Extract 15.1

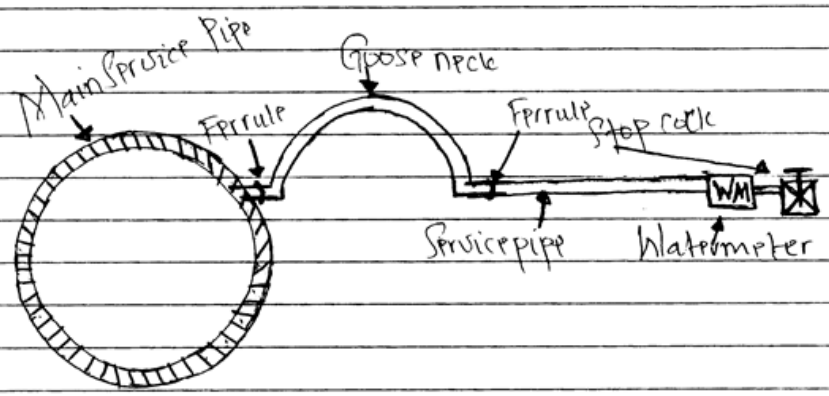


Extract 15.1 shows a sample of response from one candidate who was unable to sketch, label and explain five components of domestic water supply service connection.

Few candidates managed to score high marks in this question because they were are able to draw the proper domestic water system connection with clear arrangement of the components. Extract 15.2 illustrates the sampled script of a response of candidates who was able to score high marks in this question.

Extract 15.2

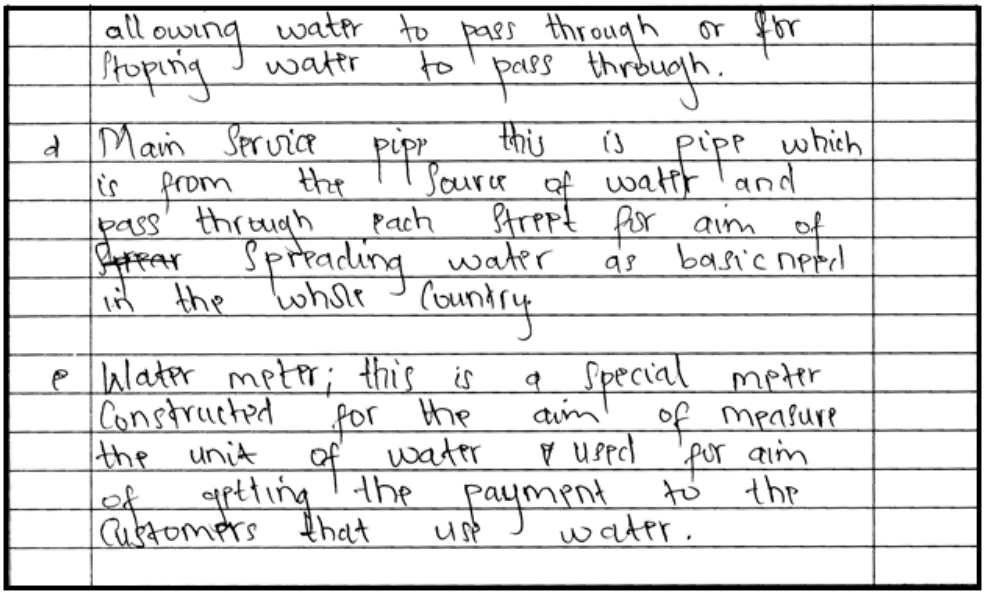
15



a Ferrule this is a circular component which is used to tightening the Goose neck and the main Service pipe and also for

b Goose neck. this is the pipe which have Semi Circular Shape, this pipe is located after main Service pipe and before Service pipe for reducing the water pressure.

c Stop Cock this is a cock which is placed ~~before water meter~~ after water meter for the aim of


allowing water to pass through or for stoping water to pass through.

d Main Service pipe this is pipe which is from the Source of water and pass through each street for aim of ~~Spread~~ Spreading water as basic need in the whole Country

e Water meter; this is a special meter Constructed for the aim of measure the unit of water & used for aim of getting the payment to the Customers that use water.

Extract 15.2 illustrates a response from one candidate who responded correctly in this question.

3.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER TOPIC

The topics covered in Building Construction for CSEE 2018 includes: *Site Preparation, Construction Materials (cement, concrete, bricks, stones and timber), Foundation, Walls, Scaffolding and Shoring, Column and Beam, floors, Roof, Doors and windows, Water supply, Finishes, Iron Mongery and Drainage.*

On the topics of *foundation, scaffolding and shoring, column and beam, construction Materials, floor, roof, iron mongery and drainage* (multiple choice items), there was one item from each topic with exception of column and beam which had two items. The performance in these topics was good as generally the percentage of candidates who scored the pass mark and above was 55.9 percent of all valid candidates. The question covered wide area which might be a reason for good performance.

On the topic of *scaffolding and shoring,* the performance was generally good as 53.86 percent of the candidates attempted this question scored above pass mark for the allocated marks. On the topic of *Construction Materials,* such as; *cement, concrete, stones and timber*, the general performance was weak as only 22.82 percent of the candidate scored pass mark and above. On the topic of *column and beams,* the performance in this topic was generally good as 74 percent of the candidates attempted this question scored above pass mark for the allocated marks. This suggests that, candidates have adequate understanding on this topic.

On the topic of *Doors and windows,* the performance in this topic was generally average as only 34.08 percent of the candidates scored pass mark and above. On the topic of *water supply,* the performance was generally was weak as only 5.5 percent of the candidates scored pass mark and above the pass mark. The result suggests that the candidates lacked relevant knowledge of the topic of water supply. On the topic of *Site preparation,* the performance in this topic was weak as only 12.24 percent of the candidates scored pass mark and above. The result might be caused by lack of practical experience of building construction in general.

On the topic of *floor,* the performance in this topic was generally weak as only 9.4 percent scored pass mark and above. The area of topic is very general in the subject; this performance might be due improper preparation. On the topic of *Roof,* the performance in this topic was generally average as

32.04 percent of the candidates scored the pass mark and above. On the topic of *walls*, the performance in this topic was generally weak as only 1percent of the candidates scored the pass mark and above. The candidates' performance question wise and topic wise is summarized in Appendix A and Appendix B.

4.0 CONCLUSION

The distribution of scores and candidates' performance has been summarized as shown in Table 1 and Figure 1 respectively. The candidates' performance was grouped as follows; 'Weak' from 0 to 29 marks, 'Average' from 30 to 44 marks and 'Good' from 45 to 100. The candidates were considered to pass, if they scored above 29 marks. The general performance in Building Construction subject was generally average as only 200 (40.9%) candidates were able to score pass mark and above.

The candidates' performance in five questions 1, 4, 7 and 8 was 'Good' while the performance in questions 2, 5, 10, 12 and 13 was Average. The poorly performed questions were question 3 and 11 from the topic of *Materials*, question 6 (*Site preparation*), question 9 (*Floor*), question14 (*walls*) and question 15 (*water supply*).

Poor performance of the candidates may be due to the failure to understand the demands of the question, partial attempt of the question, insufficient knowledge about the topics tested as well as lack of skills and practical experience. Most candidates omitted many questions, except question 1 and 2. This may either be due to improper preparation by the candidates or topic area being unfamiliar. Practical studies are strongly encouraged to improve candidate performance as it will help them to have easy understanding of the subject matter.

5.0 RECOMMENDATIONS

5.1 Recommendations for Students

Based on the performance observed in this analysis, the following recommendations are worth making for students.

(a) Since some candidates failed to adhere to the demands of the questions, it is recommended that future students be encouraged to read carefully the instructions before they answer the questions.

(b) It is advised that the future students be encouraged to search, practice and read relevant books/media in order to widen their knowledge.

5.2 Recommendations for Teachers

(a) To improve performance, teachers are encouraged to set enough exercises and tests for their students before they sit for the national examinations.

(b) It is recommended that practical skills be provided to students so that they can relate theories and practical and hence acquire the expected competences.

Appendix A

Analysis of the Candidates' Performance Questionwise

S/N	Topic	Question Number	Percentage of Students who Scored 30% or More	Remarks
1	Columns and beams	8	74	Good
2	Scaffolding and Shoring	7	58.1	Good
3	Site preparation, foundation, bricks, shoring and underpinning, columns and beams, floors, roofs, iron mongery and drainage.	1	56.3	Good
4	Construction materials - timber	4	49.7	Good
5	Roofs	2	41.1	Average
6	Construction materials - stones	12	38.6	Average
7	Doors and windows	10	37.8	Average
8	Roofs (Optional)	13	36.2	Average
9	Construction materials - concrete	5	34.6	Average
10	Site exploration	6	15.6	Weak
11	Water supply (Optional)	15	15.2	Weak
12	Floors	9	7.6	Weak
13	Construction materials - timber	11	2.2	Weak
14	Construction materials - cement	3	1.4	Weak
15	Walls (Optional)	14	1.0	Weak

Appendix B

The Candidates' Performance Topicwise

S/N	Topic	Number of Questions	Percentage of Candidates who Scored 30% or More	Remarks
1	Scaffolding and shoring	7	58.1	Good
2	Columns and beams	8	58.1	Good
3	Site preparation, foundation, bricks, shoring and underpinning, column and beam, floor, roof, iron mongery and drainage.	1	56.3	Good
4	Roofs	2	41.1	Average
5	Roofs	13	41.1	Average
6	Doors & Windows	10	37.8	Average
7	Construction materials	3,4,5,11&12	25.5	Weak
8	Site exploration	6	15.5	Weak
9	Water supply	15	15.2	Weak
10	Floors	9	7.6	Weak
11	Walls	14	1	Weak