THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CHALLENGES FACED THE CANDIATES IN THE CERTIFICATE OF SECONDARY EDUCATION EXAMINATIONS 2018 TO 2021

BUILDING CONSTRUCTION

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071 BUILDING CONSTRUCTION

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1.0 INTRODUCTION

National Examinations Council of Tanzania (NECTA) is an agency of the Tanzanian government that proctor tests given nationally. It was established on 21 November 1973. Prior to that time the East African Examinations Council (EAEC) served Mainland Tanzania and Zanzibar. The latter withdrew from the EAEC in 1970, and the Ministry of Education (MoE) Curriculum and Examinations Section briefly took over examination proctoring for Mainland Tanzania when it withdrew from the EAEC in 1971. The Tanzanian government began hiring employees for NECTA in 1971, and Parliamentary Act No. 21 of 1973 established NECTA

National Examinations Council of Tanzania (NECTA), it manages the all National assessments and examinations including Certificate of Secondary Education Examination (CSEE).

1.1 Objectives of Conducting Form Four National Examination

The objectives of this examination are to assess students' skills and knowledge achieved in different subjects at secondary school. Also to weigh the extent to which the student can use the skills gained to meet the social, political, economic and technological challenges for the individual and the national development at large; to identify students with the capacity to continue learning to the advanced secondary school level and other learning institutions. The holder of the CSEE qualification is expected to be able to apply skills of knowledge, comprehension, application, analysis, synthesis and evaluation in a broad range of activities in general, but some of them qualified in technical aspects specifically such as Civil engineering, electrical engineering, electronic and telecommunication engineering and mechanical engineering. This handbook intends to analysis the challenges facing the candidates during assessment or National final examinations specifically in the field of Civil engineering subjects. This field consists of seven including Building Construction and Architectural Draughting as a compulsory subject.

1.2 The Objective of Examining Building Construction

General objectives of Bulding Construction subject are to provide the students with the basic construction principles that are important in enabling him to erect simple domestric building. Thus at the end of the course the

students shall be able to apply basic construction princeples in constructing a house using suitable types of materials. Therefore, CSEE examine in what extent holder of CSEE able to apply basic construction princeples to construct a single story house by using existing maerials.

1.3 Criteria of Candidates Performance

The analysis of topics is presented in three categories: good, average and weak performance which was based on the percentage of candidates who passed in the ranges of marks as given in table No.1.

Table No.1: Criteria for candidates' performance in CSEE

S/N	Percentage of Candidates' Performance	Remarks
1.	0 - 29	Weak
2.	30 - 64	Average
3.	65 - 100	Good

1.4 Candidates Performance Grades

The national examination results are based on the score interval having grades for candidates' performance as excellent, very good, good, satisfactory and fail as shown in table 2.

Table 2 : Performance Grades for CSEE

S/N	**Marks (%)**	**Grades**	**Description**
1.	75 – 100	A	Excellent
2.	65 – 74	B	Very good
3.	45 – 64	C	Good
4.	30 – 44	D	Satisfactory
5.	0 – 29	F	Fail

1.5 Performance of Candidates from 2018 To 2021

Performance on **Building Construction** subject in the Form Four (CSEE) Examination for four years; (2018 - 2021)

Table 3: Performance Grades for CSEE

YEAR	Percentage of Candidates who passed (30%+) and who failed (below 30%) in each year			
	PASSED		FAILED	
	Number	%	Number	%
2018	200	40.90	289	59.1
2019	233	59.59	158	40.41
2020	259	58.73	182	41.27
2021	259	68.34	120	31.66

The performance of candidates in CSEE from 2018 to 2021 is shown in Chart No. 1.

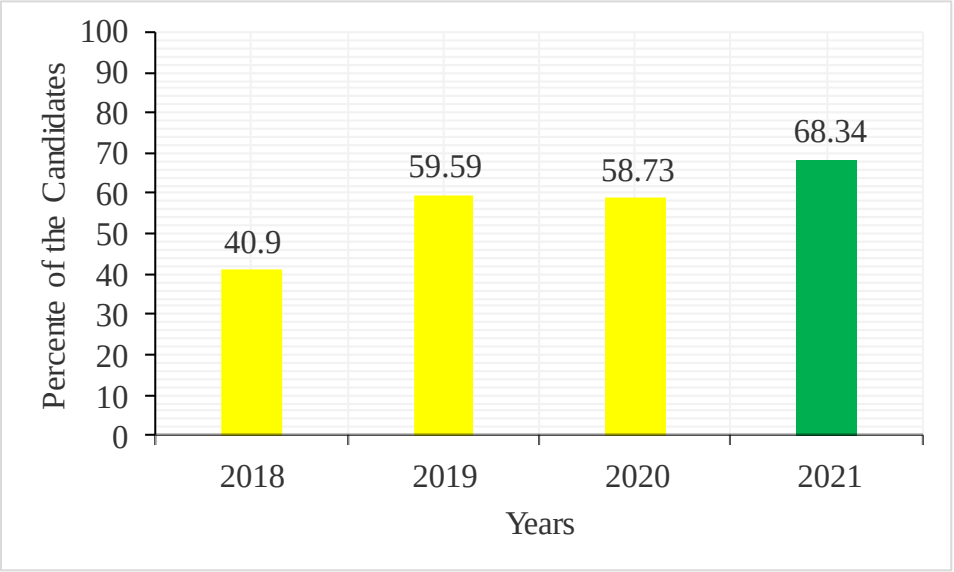


Chart No. 1: Candidates' performance from 2018 to 2021.

2.0 CHALLENGES THAT THE CANDIDATES FACED IN RESPONDING TO EXAMINATION ITEMS

2.1 Introduction

Building Construction Subject is compulsory for Technical Secondary School Students who opt Civil Engineering field. According to the syllabus of 1994 a total of 16 topics are taught and assessed at the Form Four level. The topics are *Introduction to building Construction, Construction materials, Site preparation, Foundation, Scaffolding and shoring, Walls, Columns and beams, Floors, Roofs, Doors, Windows, Iron mongery, Stairs, Fireplaces, flues and chimneys, Water supply,* and *Drainage*.

Building Construction examination papers from 2008 to 2018 was seting through examination format of 2008 and examination papers from 2019 to 2021 were set in accordance with the 2019 examination format. These formats had three sections, section A, B and C but they differ in examination rubbic. examination papers of 2008 format had section A consisted of two (02) questions, question one consist of ten (10) multiple choices items having ten (10) marks and question two consist of ten (10) matching items having ten (10) marks, mark total of twenty (20) marks. In Section B there were ten (10) questions, each question had four (04) marks, mark total of fourty (40) marks. In Section C there were three (03) questions each question had twenty (20) marks, mark total of fourty (40) marks.

The 2019 and 2020 examination paper followed the 2019 format. In this format, the test paper had sections A, B and C. Section A consisted of two (02) questions, question one consist of ten (10) multiple choices items having ten (10) marks and question two consists of five (05) matching items having five (05) marks, mark total of fifteen (15) marks. In Section B there were eight (8) questions having five (05) marks, mark total of fourty (40) marks. In Section C there were four (4) questions each question had fifteen (15) marks and the candidates required to attempt only three questions, mark total of fourty five (45) marks.

2.2 Analysis of performance data in Building Construction subject

The analysis of four years (2018 - 2021) averagely shows that poor performance of the candidates was on the topic of *Floors,* performed below 30%. But this book aimed to hightlight challenges facing or missing of

certain skills to candidates during teaching and learning period and seggest proper means to be taken to overcome these challenges for the topics scored below 50% of total marks of each topic. Table 4 shows Percentage scores of Candidates below 50% and above 50% examine in 2018 to 2021 as shown in Table 4.

Table 4: shows Percentage scores of Candidates below 50% and above 50% examine in 2018 to 2021.

Topics	Percentage of Candidates scores in each year				Average Percentage of Candidates who passed (50%+)
	2018	**2019**	**2020**	**2021**	
Introduction to Building Construction				62.53	62.53
Construction Materials	25.5	60.36	26.4	56.20	42.115
Site Preparation	15.5	61.4	27.17	34.83	34.725
Foundation	56.3	54.55	79.9	24.84	53.89
Scaffolding, Shoring and Formwork	58.1	71.4		50.42	59.97
Walls	14	36.13	88.2		46.11
Columns and Beams	58.1	12.9		49.81	40.27
Floors	7.6	36.6	25.53	4.75	18.62
Roofs	41.1	60.36	85.6	75.46	65.63
Doors	37.8	56.34	66.67		53.60
Windows	37.8	56.34	66.67		53.60
Iron Mongery				40.37	40.37
Stairs		26.2	34.14	62.53	40.95
Fireplaces, Flues and Chimneys		60.36	88.2		74.28
Water Supply	15.2	60.36		26.65	34.07
Drainage	56.3	50.26	88.2	49.81	61.14

3.0 ANALYSIS OF CANDIDATES' PERFORMANCE IN VARIOUS TOPICS

Analysis of topics with good performance, average and poor performance was based on the normal percentage of candidates scores shown in Table No. 5.

Table No. 5: Categories of performance based on Percentage of candidates who passed

S/N	Percentage of candidates who passed	Remarks
1	65 - 100	Good
2	30 - 64	Average
3	0 - 29	Weak

The data analysis revealed that, out of 16 topics which have been assessed at CSEE level, from 2018 to 2021, a total of 8 topics had average scores of below 50% performance and 1 topic (floors) scores below 50% for four years consecutively as shown in Table No. 4.

Generally, the candidates' performance in the topics which were assessed in CSEE from **2018** to **2021** was weak due to various challenges. Those topics are: Floors (18.62), Water Supply (34.07%), Site Preparation (34.73%), Columns and Beams (40.27%), Iron Mongery (40.37%), Stairs (40.95%), Construction Materials (42.12 %), Walls (46.11%), Doors and Windows (53.60%), Foundation (53.89%), Scaffolding, Shoring and Formwork (59.97%), Drainnage (61.14%), Introduction to Building Construction (62.53%), Roofs (65.63%) and Fireplaces, Flues and Chimneys (74.28%)

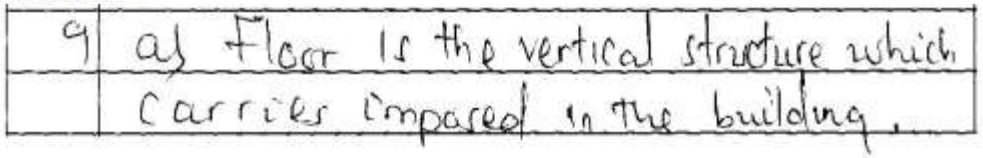
3.1 Floors

This topic of floor candidates failed scored good marks in all four years, in 2018 scores 7.6%. The failure of candidates in this topic is due lacked adequate knowledge and skills in the floor and flooring, the candidates failed even to identify the parts (elements) floors specifically timber floor. Most of the candidates concentrate on concrete floor or normal screed floor finisning.

A floor is the lower horizontal surface of any space in a building, including finishes that are laid as part of the permanent construction. A floor typically

provides structural support for the contents of the room, its occupants, and the weight of the floor itself, resistance to the passage of moisture, heat and sound. a surface finish which may contribute to the look, feel and acoustics of a space. Broadly, floor construction tends to be solid floors, built up from the ground, or suspended floors, supported by wall structures. There are a very wide range of variations around these basic types. Numbers of floors types and floors covering materials or types tends a lot of misconception to the many students and then failed to give relevant responses during writing exams. Forexample, in 2018, topic of floor appears in question one as a single item in objectives question and question 9 in short answer item. In question 9 required candidates to define the term floor in part (a) and in part (b) required describing two components of a floor. Figure 1 is the sample Extract from 2018 report shows a sample candidate response.

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.

In 2019, this topic 36.6 percent of a candidates scores pass marks but above 50% of candidates failed in this topic. In this year the topic appeared in question 7 of short answer question and in question 12 structured question. In question 7 which requires the candidates to justfy the use of hard core during construction of solid concrete and to recommend two materials used as hard core, most of the candiates scores good marks it seemed the the candidates are more familiar in common screed floor. But candidates failed when asked another type of floor specifically suspended timber floor. The canddates required to mentioned four factors that would used in selection of joist size to be used and by using sketch required to identify the given type of members used in construction of a timber upper floor. Most of candidates failed in this question, this type of floor is not common in Tanzania. the way of learning this type of floor it is better to prepare a model of joist it easly the students to understand and remain on their memory the long time.

The candidates in this question required to sketch and identify the following types of timber members in a construction of a timber upper floor, these include;

(i) Common joist
(ii) Trimmer joist
(iii) Trimming joist
(iv) Trimmed joist

The candidates required to sketch the frame that joist alredy fixed on the frame and then identify each other as shown on the Figure 2.

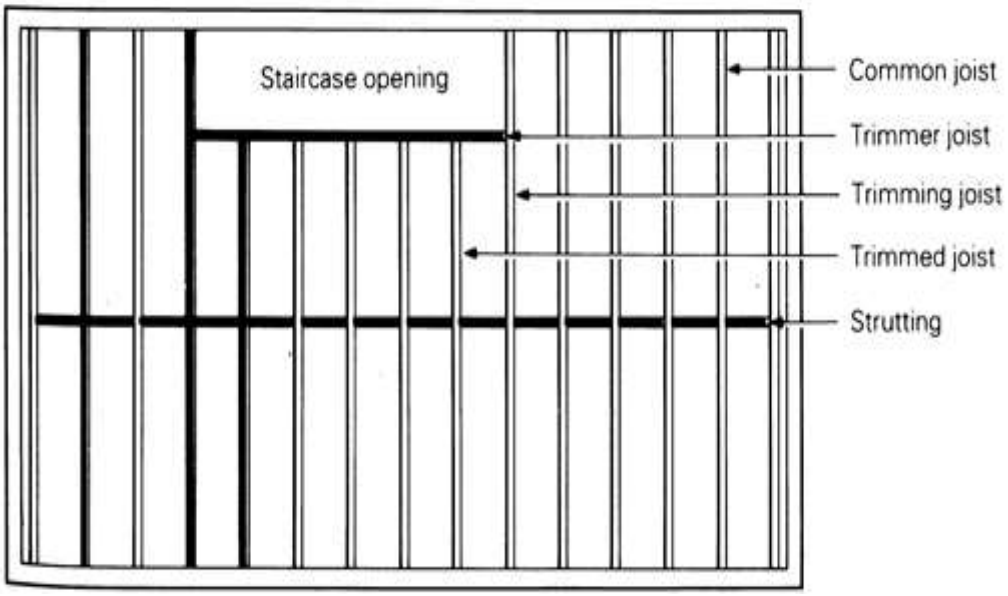


Figure 2: shows the frame of upper floor structure and show the given joist as asked in the exam.

Figure 3 shows sample of extract from 2019 report as the poor responses given by the one of the candidate attempted this question.

12 Timber upper floor is the process substance in which the construction in building trying to used in measuring in the building and measuring site planning of construction in the finding the first upper floor the using the size and [illegible] of [illegible] [illegible] in the building

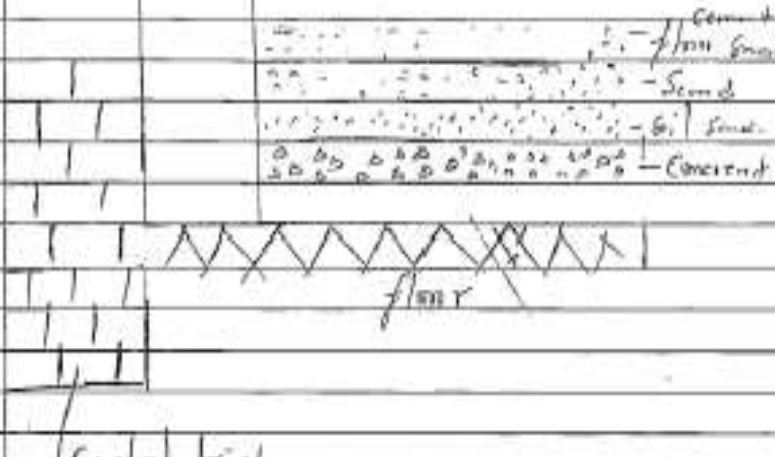
[illegible] used in the measuring in the building and site planning [illegible] in use in the [illegible] to support in the [illegible] in [illegible] for the building [illegible] to support in the [illegible] [illegible] building from the [illegible] building in the [illegible] [illegible] house to [illegible] in the construction [illegible] selection [illegible] [illegible] size the to shape of building house. [illegible] to [illegible] in the good appearance in the house building to [illegible] in the floor [illegible] [illegible] [illegible] house in the [illegible] to floor building

b) (i) Support floor
i, is used in the [illegible] building
ii, is used in the shape and size
iii, is used in the see [illegible] house,

c) Control brick
i) is used in the building house
ii, is support in the [illegible] construction
iii, is support in the line [illegible] [illegible],

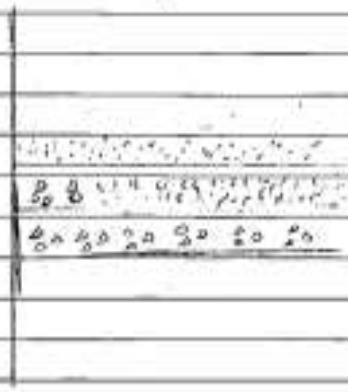
12

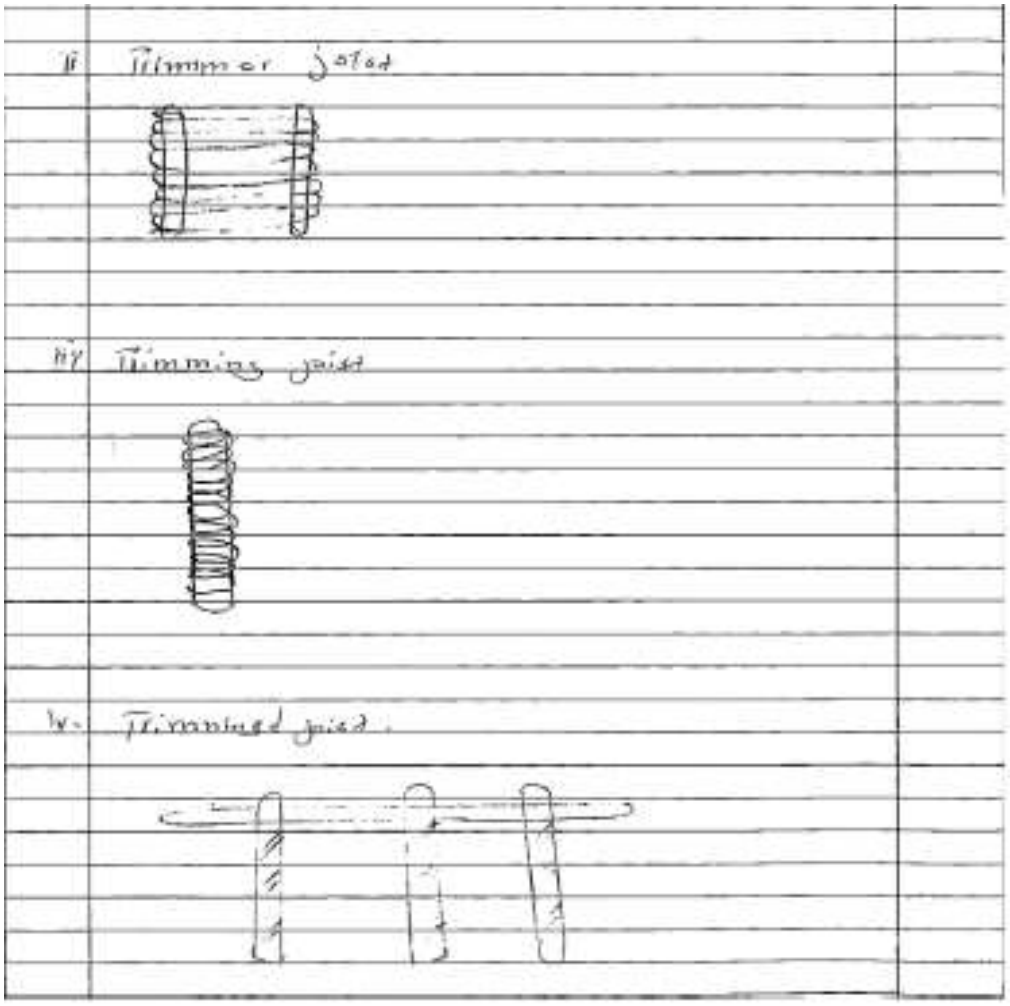
B



C.

1.5 Common joist

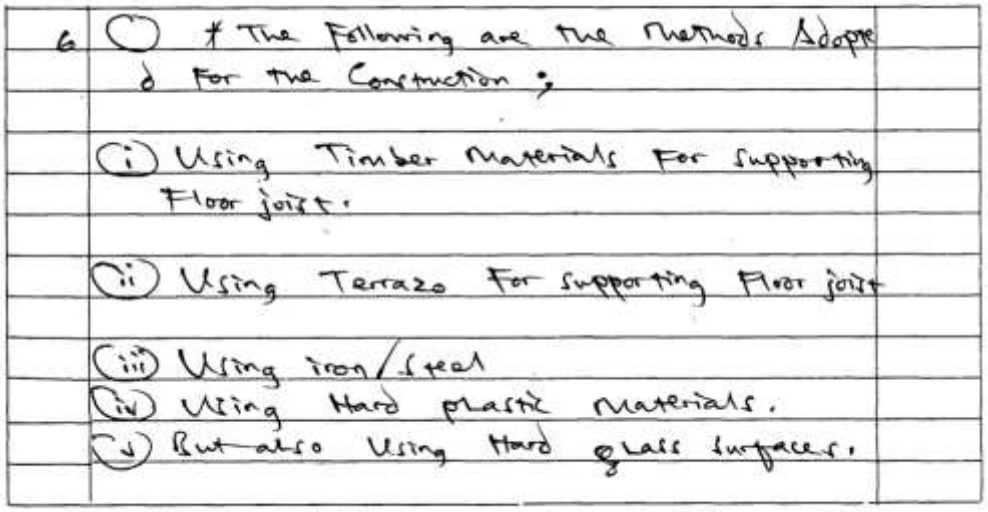




Extract 12.1: A sample of one of the candidate's poor responses on question 12

In 2020, this topic performed poorly as 25.53% of candidates only scored above pass marks of 29% graded marks but also under 50% of analytical marks, the topic in this year appeared in question 6, 7 and 10. In question 6 and 7 majorities of candidates failed to score pass marks, as previous year the floor tested on the timber upper floor and candidate show poor performance as well in this year only 5.66% of a candidates scores pass marks. The failure of candidates tends to lack knowledge on the type of floor specifically upper timber floor or suspended timber floor. Forexample question 6 required the candidates to mention five methods adopted as an end support for floor joists

in a construction of suspended timber ground floor. Most of the candidates produce irrelevant responses, some of the candidates try to meantion floor covering materials instead to mention methods of end support for floor joists in a construction of suspended timber in ground floor. Figure 4 is the sample extract from 2020 report.



Extract 4.1: A sample of poor responses to question 6 from a candidate

In question 7 and 10 was about solid floor, usually this type of floor is common type of floor mainly used in our home and other building. the candidate had a knowledge which make easier for the candidates to recall the facts when asking a questions on that area. Although only 22.1% and 49.4% scores the pass marks in question 7 and 10 respectively, but this area in floor is more familiar to the candidates. The only area in this topic which need special effort during teaching and learning period is suspended floor type which normally constructed by timber materials. The students' required real demonstration to enable them to understanding the concepts and make them easy remembering because some of the members look like the same so it confused the candidates during writing their exams.

3.2 Water Supply

This topic assessed in 2018 with performance of 15.2%, 2019 with performace of 60.36% and 2021 by 26.65% performance with average performance of 34.07%. Based on criteria of candidates' performance, average performance of 34.07% shows that the topic was passing averagely

but more than 50% of the candidates scored below pass marks specifically in 2018 and 2021, more than 60% of candidates scores pass marks and above in 2019 and the topic not assessed in 2020.

In 2018, the candidtes assessed on the five components of domestic water supply service connection such as ferrule, goose neck, stop cock, main service pipe and water meter. The question required the candidates to sketch, label and explain each of the given components. Most of the topics in the Building Construction can be taught practically and make the students more understanding and kept in long term memory, each components of water supply connection had specific function if the students do the practice during his/her learning he/she able to write their exams successful. The failure of the candidates in this topic this year shows had lacked knowledge in water supply system, they failed even to draw the components of water supply service connection from the main pipe (municipal water service line) to the house through private water service line. Figure 5 show the sample extract of 2018 report for the candidates failed in this topic.

Extract 15.1

15 DIAGRAM OF THE FOLLOWING DOMESTIC COMPONENTS.

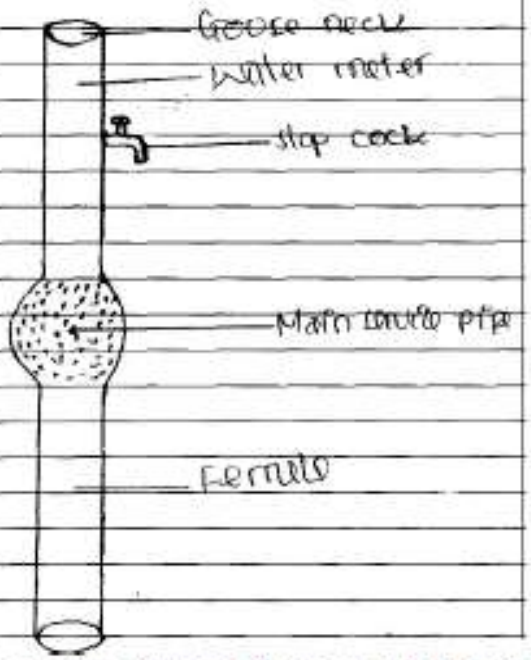
a) Ferrule

b) Goose neck

c) stop cock

d) Main service pipe

e) water meter



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.