CST– Construction Technology and R.C.C

T013

Friday, 11/11/2016

08:30 – 11:30

WORKFORCE DEVELOPMENT AUTHORITY

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ADVANCED LEVEL NATIONAL EXAMINATIONS, 2016, TECHNICAL AND PROFESSIONAL STUDIES

EXAM TITLE: **Construction Technology and R.C.C**

OPTION: **Construction (CST)**

DURATION: **3 hours**

INSTRUCTIONS:

The paper is composed of **three (3) main Sections** as follows:

Section I: Fourteen (14) compulsory questions.	**55 marks**
Section II: Attempt **any three (3)** out of five questions.	**30 marks**
Section III: Attempt **any one (1)** out of three questions.	**15 marks**

The use of calculator is allowed

Note:

Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.

Section I. Fourteen (14) Compulsory questions **55marks**

01. Distinguish coarse aggregates from fine aggregates. **2marks**

02. Give out four roles of using admixtures in concrete works. **4marks**

03. List down five requirements of a good roof. **5marks**

04. When a building is constructed, two main physical resources are involved. Name them. **2marks**

05. There are a number of purposes of carrying out sub-soil investigation before constructing a building. State:

a) Three purposes for new structures **3marks**

b) Two purposes for existing structures **2marks**

06. Give five reasons of providing a deep foundation. **5marks**

07. According to their compressive strengths, differentiate Hot rolled mild steel to High yield steel. **2marks**

08. Give eight types of reinforcement diameters available on the Rwandan market. **4marks**

09. Point out three common types of reinforced concrete beam section. **3marks**

10. With definitions, give the difference between dead load and live load. **4marks**

11. State five factors influencing durability of concrete. **5marks**

12. Mention and define two types of strip foundation. **4marks**

13. Give six types of floor finishes. **3marks**

14. Provide six advantages of using clay bricks as a masonry material. **3marks**

15. Give eight performance requirements for good stairs. **4marks**

16. Give two main tools necessary in setting out process. **2marks**

Section II. Choose and answer any three (3) questions. **30marks**

17. If a stair has to be erected between two floors separated by 2.7m of a public building and being inclined by 30° from the horizontal plane. By using the relation 2R + G = 60cm, calculate:

a) The rise

b) The number of steps

c) The going

d) The run

10marks

18. (1) Describe five requirements of a good fire place.

(2) Discuss five characteristics of a good scaffold. **10marks**

19. Below is a list of terms used as parts of scaffold, describe each of them.

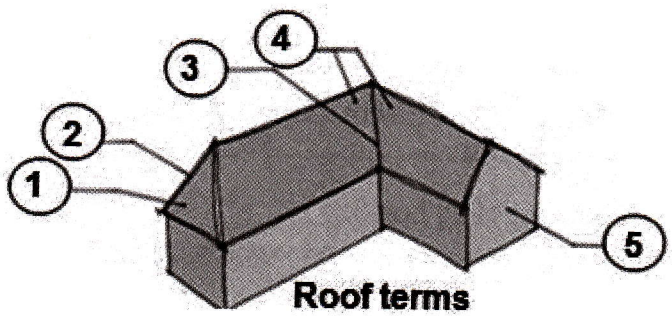
1) Standards
2) Ledgers
3) Put logs
4) Braces
5) Sale plate
6) Base plate
7) Boarding
8) Guardrail
9) Toe board
10) Couple

10marks

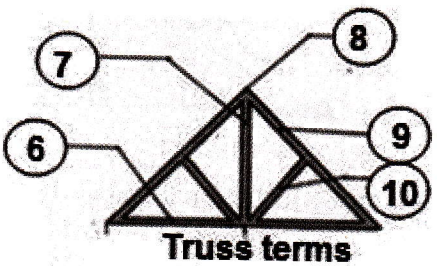
20. With full explanation, describe two types of soil samples. **10marks**

21. Propose the appropriate names used as roof and truss terminologies respectively.

10marks



Roof terms



Truss terms

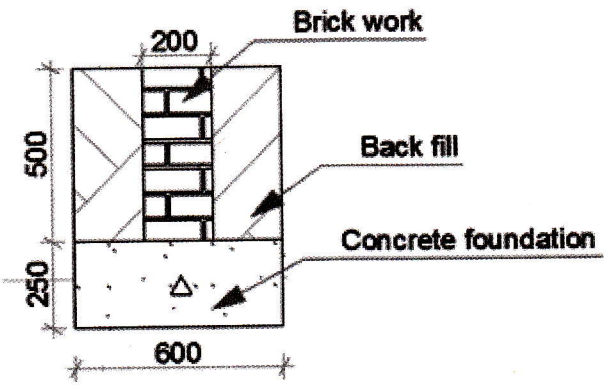
Section III. Choose and answer any one (1) question. **15marks**

22. Calculate the cost per running meter of items stated below for the strip foundation as shown on the drawing.

a) Concrete work if it costs 400,000 FRW/m^3

b) Brick work if it costs 70,000 FRW/m^3

c) Trench soil back fill work if it costs 4000 FRW/m^3



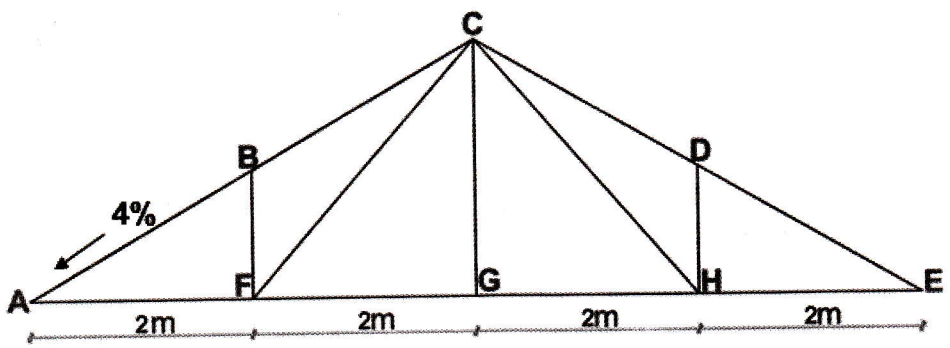
23. Given the following truss sloped at 30%,

a) Compute the lengths AB, BC, FB, FC and GC.

b) Determine the total length of all members;

c) Evaluate the number of required steel tubes if 6m tubes are used;

d) Estimate the cost of tubes if one tube costs 15,000 FRW;



24. With net sketches illustrate these following brick bonds:

a) Stretcher bond

b) English bond

c) Flemish bond