THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

071 **BUILDING CONSTRUCTION**

(For Both School and Private Candidates)

Time: 3 Hours **Thursday, 02nd November 2017 p.m.**

Instructions

1. This paper consists of sections A, B and C with a total of **fifteen (15)** questions.
2. Answer **all** questions in sections A and B, and **two (2)** questions from section C.
3. Calculators, communication devices and any unauthorized materials are **not** allowed in the examination room.
4. Write your **Examination Number** on every page of your answer booklet(s).

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SECTION A (20 Marks)

Answer **all** questions in this section.

1. For each of the items (i) – (x), choose the correct answer from among the given alternatives and write its letter beside the item number in the answer booklet provided.

(i) The tube fixed diagonally in a scaffold to prevent any movement is called
A brace. B transom. C bridle.
D tie. E standard.

(ii) Fine aggregate is that which passes a
A 3mm sieve. B 5mm sieve. C 7mm sieve.
D 10mm sieve. E 15mm sieve.

(iii) Which of the following is used to cut blocks by hand?
A Claw hammer B Brick trowel C Sledge hammer
D Piece of round bar E Mallet and chisel

(iv) The highest point of an arch at which the key brick is placed is called
A span. B haunch. C crown.
D springer. E extrados.

(v) The part of the building which transfers the entire load of the building to subsoil is called
A beam. B wall. C plinth.
D foundation. E floor.

(vi) A ratio of the mass of water to the mass of solids found in the soil is known as
A soil capacity. B air content. C soil strength.
D density of soil. E moisture content.

(vii) Which of the following tools is used to measure accurately the amount of building materials to be used?
A Gauge box B Mortar pan C Bucket
D Wheelbarrow E Spade

(viii) A container of water in which the stored water is under atmospheric pressure is called
A bucket. B open drum. C cistern.
D tank. E cylinder.

(ix) The recommended ratio of cement to sand for plaster is
A 1:3 B $1:1\frac{1}{2}$ C 1:8
D 1:6 E 1:4

(x) The brick work structure that carries the flue above the roof is known as

A back. B chimney. C breast.
C hearth. D fireback.

2. Match the descriptions of scaffold members in **List A** with their correct technical names in **List B** by writing the letter of the corresponding response beside the item number in the answer booklet provided.

List A	List B
(i) A temporary support to the unsafe structure.	A Boarding
(ii) The diagonal members fixed on the vertical member of the scaffold.	B Transoms
(iii) The horizontal platform which support workmen and materials.	C Base plate
(iv) The vertical poles that carry the weight of the scaffolding to the ground.	D Wedges
(v) A component used to secure firmly of a vertical member placed vertically along the face of the wall.	E Ledger
(vi) The cross pieces that have one end built into the wall of the building.	F Fin wheel
(vii) The square metal plates that fit into the bottom of scaffold tubes to spread the load.	G Hoop
(viii) The components embedding the inclined members into the ground	H Toe board
(ix) An inclined members used to give lateral support to the wall.	I Rakers
(x) A member nailed directly on the wall plate or base plate for strengthening purpose.	J Braces
	K Straining piece
	L Standards
	M Shoring
	N Iron dogs
	O Putlogs
	P Post
	Q Needle
	R Cleat

SECTION B (40 Marks)

Answer **all** questions in this section.

3. Give four reasons of stripping-off vegetable soil before commencing construction of a building.

4. List four factors that may cause failure of the foundation.

5. (a) Briefly explain the meaning of reinforced concrete.

   (b) List four factors which influence the strength of a concrete.

6. List four causes of cracks in walls.

7. What are the structural requirements for chimneys in the construction of fireplaces?

8. List down four advantages of flat roof construction.

9. Outline four advantages of steel windows over wooden windows.

10. Differentiate 'back flap hinge' from 'parliamentary hinge' in fixing doors and windows.

11. What is the difference between separate drainage system and combined drainage system in building construction?

12. Give four advantages of using stones instead of bricks in wall construction.

SECTION C (40 Marks)

Answer **two (2)** questions from this section.

13. (a) (i) How is site clearance operation conducted?
(ii) What are the precautions to be observed during site clearance operation?

(b) (i) Why is it necessary to conduct site exploration before commencing of the construction works?
(ii) Give three advantages of site exploration.

(c) With the help of sketches, briefly explain 'auger boring' as applied in site exploration.

(d) Why larger sites should be fenced before commencement of construction works?

14. (a) With the aid of sketch, outline the procedures followed for setting out the building by using Builder's Square Method.

(b) Briefly explain how the bearing capacity or pressure of soil can be improved by using the following methods:
(i) Increasing depth of foundation.
(ii) Grouting.

(c) With the help of sketch, describe the timbering of trenches in extremely loose and soft ground by using a runner system.

15. (a) Briefly describe dead shore as applied in construction works.

(b) Enumerate the necessary operations for a successful dead shoring arrangement.

(c) Draw a typical well labeled sketch of single frame cantilever or needle scaffolds.