**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** **Wednesday, 05th November 2014 p.m.**

**Instructions**

1. This paper consists of sections A, B and C.
2. Answer **all** the questions in sections A and B, and **two (2)** questions from section C.
3. Calculators and Cellular phones are **not** allowed in the examination room.
4. Write your **Examination Number** on every page of your answer booklet(s).

## 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 strength of a brick wall depends on
A units of brick and mortar from which it is built
B number of block courses
C mortar joints of a wall
D foundation of a building
E type of plaster applied to the wall

(ii) What are the two classes of walls?
A External and internal walls.
B Low and high walls.
C Brick and block walls.
D Partition and enclosed walls.
E Non-load and load bearing walls.

(iii) In designing a building, the following factor should be considered for proper room orientation
A Easy access to all spaces.
B Availability of electricity.
C A site plan to be on level surface.
D Building material.
E Shape of a building.

(iv) The component providing a solid level surface for screed and finishing to be applied is known as
A damp proof membrane (DPM)
B concrete bed
C hard core
D earth rammed floor
E timber.

(v) Which one among the following is **not** a functional requirement of a floor?
A Durable
B Fire resistant
C Moisture resistant
D Thermal resistant
E Sound insulator.

(vi) Why the process of ramming in excavated trench is done?
A To prevent water from entering the trench.
B To increase the strength of base.
C To prevent sand granules from wind erosion.
D To obtain the level base.
E To remove water.

(vii) In the construction process, the site agent is the representative of
A Client
B Quantity surveyor
C Engineer
D Architect
E Contractor.

(viii) Which one among the following is a binding agent in mortar and concrete?
A Cement
B Sand
C Aggregate
D Paint
E Sandstone.

(ix) Spraying water to strengthen the fresh concrete is known as
A compaction B brandering C curing
D slump test E haunching.

(x) Which one is the temporary structure used to support workers and materials during construction above the ground level?
A Shore B Strut C Bridle
D Scaffold E Staircase

2 Match the items in **List A** with responses 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 brick laid with its breath or width parallel to the face. | A Bed |
| (ii) A brick laid with its length parallel to the face. | B Bat |
| (iii) The lower surface of the brick when laid flat. | C Mitred closer |
| (iv) A piece of brick cut parallel to its width to form portion of a brick. | D Bull nose |
| (v) A brick moulded with a rounded angle. | E Queen closer |
| (vi) A triangular portion of a brick through its width and making an angle of 45°-60°. | F Squint quoin |
| (vii) A brick which is cut or moulded in such a way that an angle other than right angle is formed in plan | G Stretcher |
| (viii) A triangular portion of a brick such that half a header and half a length are obtained on the adjoining cut faces | H King closer |
| (ix) Cutting the brick longitudinally into two equal parts. | I Beveled closer |
| (x) Indentation in the face of a brick to form a key for holding the mortar. | J Header |
| | K Closer |
| | L Frog |
| | M Arris |
| | N Half bat |
| | O Quoin |

## SECTION B (40 Marks)

Answer **all** questions in this section.

3. Outline the four simple ways of checking the correctness of the foundation?

4 Describe the given two types of partition walls:
(a) Timber partition wall
(b) Glass partition wall

5 Briefly explain four causes of dampness in buildings.

6 Draw a neat sketch to show Horizontal D.P.C and Vertical D.P.C

7. Explain how the following may cause the brick wall failure:
(a) Impact
(b) Settlement

8. Briefly explain how roofs and Corrugated Iron Sheets roof covers are protected from the effect of:
   (a) Corrosion
   (b) Wind.

9. Describe the following Match boarded doors:
   (a) Ledged battened doors
   (b) Ledged, braced and battened doors.

10. Briefly describe the given types of staircases:
   (a) Timber staircase
   (b) Steel stair case.

11. (a) Describe the connections of indirect cold water supply system for different uses in the residential house.

   (b) Briefly explain how flow of water can be controlled in the supply system.

12. (a) What are the two classes of aggregates?
   (b) Outline the two general requirements of aggregates

## SECTION C (40 Marks)

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

13. (a) Describe how Ordinary Portland Cement is manufactured.
**(08 marks)**

   (b) Outline how concrete is prepared by hand mixing.
**(06 marks)**

   (c) Why should cement made structure be cured after the initial setting time?
**(02 marks)**

   (d) Explain advantages of reinforced concrete over mass concrete.
**(04 marks)**

14. (a) The following are some dimensions of a certain house which is to be built:
   - Depth of the strip foundation from the average ground level is 800 mm.
   - Length of the house from each end is 17 m.
   - Width of the house from end to end is 12 m.
   - Thickness of the wall is 225 mm.

   (i) Calculate the total volume of the soil which is to be excavated at the site all around the foundation of the house.
   (ii) Sketch a dimensioned section through the foundation.
**(12 marks)**

(b) If you are commissioned to supervise construction of the sketched foundation in (a):
(i) Calculate the cost of casting the footing if the rate per $m^3$ is Tshs. 100,000/=
(ii) Calculate the trips of Lorries of sand required for backfill after building the foundation wall provided that each Lorry carries 5 $m^3$ of sand.
**(08 marks)**

15. (a) Describe the three classes of wooden doors. **(06 marks)**

(b) Elaborate the two methods for fixing glass into panels. **(04 marks)**

(c) State three principles applied in fire place design. **(06 marks)**

(d) Outline four areas where manhole should be provided in the sewer. **(04 marks)**