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 **Friday November 12, 2004 a.m.**

Instructions

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

This paper consists of 5 printed pages.

SECTION A (20 marks)

Answer all questions in this section.

1. For each of the following items (i) - (x) choose the correct answer from among the given alternatives and write its letter beside the item number.

(i) The strength of a wall is the product of the strength of the

A foundation and floor of a building
B type of plaster and rendering applied to the wall
C brick or block cuttings and mortar joints of a wall
D number of brick or block courses and wall junctions
E units of brick or block and the mortar from which it is built.

(ii) Firring pieces to timber flat roofs are used to

A stiffen the roof joists
B provide a slight fall of the roof
C prevent rainwater leakage into the room
D reduce the span of the roof
E act as fixing medium for ceiling boards.

(iii) The sanitary appliance designed to receive human excreta is known as

A wash basin
B sink
C bath
D shower
E water closet.

(iv) Which of the following are used mostly for sheds and outhouses?

A Panelled doors
B Flush doors
C Match boarded doors
D Glazed doors
E Wooden doors.

(v) The vertical member of a traditional casement window is called

A stile
B mullion
C transome
D horn
E wire gauze.

(vi) The space in which the stairs and landings are housed is called

A stairs
B flight
C string
D step
E stair well.

(vii) 1 m^3 of concrete with mix ratio of 1:3:6 requires _____ m^3 of sand.

A 0.3
B 0.2
C 0.4
D 0.1
E 0.5

(viii) A length of pipe laid to remove soil/waste water from a building situated within one boundary is called

A private sewer
B public sewer
C vent pipe
D drain
E junction line.

(ix) A vertical member of a structure used to carry the loads and transmit them to the foundation is called

A beam
B footing
C column
D lintel
E ground beam.

(x) The purpose of a D.P.C. is to

A block the passage of raising ground water into the structure
B prevent water from penetrating the wall through a window sill
C make the interior of the building dampless
D stop water from flowing into the toilet
E prevent running water from flowing into the wash sink

2. Match the responses in **LIST B** with the words/phrases in **LIST A** by writing the letter of the correct response beside the item number.

LIST A

(i) Admixture
(ii) Centering
(iii) Base course
(iv) Filtration
(v) Induces an adequate flow of combustion to fire in fire places
(vi) Expansion joint
(vii) Cornice
(viii) Needle
(ix) Clerk of work
(x) The loads on foundations

LIST B

A The designation of quality, as of logs or plywood
B A decorative member, usually moulded, placed at or near the top of a wall
C The opening in a chimney through which smoke can pass
D Monolithic concrete
E A bituminous fibre strip used to separate blocks or units of concrete to prevent cracking due to expansion caused by temperature changes
F The lowest course of masonry in a wall
G Masonry units which do not meet the standards or specification and have been rejected
H Temporary formwork for the supports of masonry arches or lintels during construction

I The process of protecting concrete against loss of moisture during the earlier stages of setting

J Transfers loads of the wall to the shore legs in dead shoring

K A system of conveying portable water to a point of disposal

L Adhesives

M The accumulation of dead loads of a building, imposed loads and wind loads

N Do not require any intermediate support such as purlins

O Flue

P A technical term used to describe pumping of water from deep wells

Q Represents an architect on large sites

R One of the water treatment process through sand

S Useful to carry both foul and surface water in the same pipe work to a disposal unit

T Materials added to mortar as a water repellent or colouring agent or to retard setting.

SECTION B (40 marks)

Answer **all** questions in this section.

3. (a) What is meant by the term "site clearing"?
   (b) Define the term "strip foundation".

4. What are the functions of a ground floor?

5. Define the following terms:
   (a) Main pipe.
   (b) Service pipe.

6. (a) Name the **three (3)** types of stairs commonly used in Tanzania.
   (b) Describe briefly the **two (2)** main systems of erecting tubular scaffolding.

7. Draw and label the ledged and battened door.

8. (a) What are the functions of a roof?
   (b) Name the **two (2)** types of walls.

9. What are the uses of the following iron mongeries with respect to joinery works?
   (a) Butt hinges.
   (b) Barrel bolts.

10. What is the purpose of the following window frame parts?

(a) Horns.

(b) Weathering window sills.

11. (a) What part of a stair provides a means of changing direction of flight?

(c) Name **four (4)** parts of a stair which make a balustrade.

12. Where is each of the following used in the construction of buildings?

(a) Damp proof course.

(b) Damp proof membrane.

SECTION C (40 marks)

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

13. (a) What are the desirable properties of mortar?

(b) By means of a neat sketch, show the plan of a chimney situated in a

(i) separating wall

(ii) cavity external wall

(iii) back to back fire place.

14. (a) (i) Why should reinforcement rods be free from old paints, grease and any other impurities if they are to be used for a concrete structure?

(ii) Where are the main reinforcement rods placed for a concrete cantilever beam? Show your answer by means of a sketch.

(b) State **four (4)** factors which affect the stability of a wall.

(c) With the aid of sketches explain the difference between a shallow and a steep stair and hence state the disadvantages in each case.

15. (a) By means of neat sectional sketch show how driving rain can be prevented from penetrating inside a building between a wooden window sill and bottom rail for an inward opening window.

(b) What is the role of sprocketed eaves in roof construction? Make a sketch to show how it is constructed.

(c) Sketch neatly a soakway filled with coarse granular materials and covered with top soil on it. Show clearly how a surface water drain enters a soak way.