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, 23rd October 2009 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. Electronic calculators are **not** allowed in the examination room.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

This paper consists of 6 printed pages.

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.

(i) All construction sites should be fenced to avoid vandalism, therefore it
- A protects the outsiders from entering the construction site
- B protects loss of goods and materials
- C protects injury to children
- D protects other people from seeing construction works
- E provides security for workers and materials

(ii) The method of measuring the suitability of fresh concrete is known as:
- A Sponge test
- B Workability test
- C Slump test
- D Mobility test
- E True slump test

(iii) The amount of excavation required at site is determined by:
- A Profiles
- B Spoil rails and spoil kept back from trench
- C Building line
- D Timbering to trenches
- E Sight rails and boning rods

(iv) Sludge soak pit is defined as the one
- A in which effluent from the septic tank is discharged
- B in which treated sewage from groups of houses is discharged
- C provided at the junctions of house drain
- D in which the sewage effluent from the house drain is directly discharged
- E that disconnect sullage drain from drain

(v) The tendency of water to rise to the surface of freshly laid concrete is
- A Segregation
- B Bulking
- C Hydration
- D Entrained air
- E Bleeding

(vi) Terrazzo flooring can be defined as
A Small pieces of broken tiles mixed together with cement
B Special concrete containing cement and marble chips of different colour mixed in good proportions
C Superior flooring where marble slab is laid over cement mortar
D Special concrete containing tiles and marbles
E Special laminated stones, well shaped laid over cement mortar

(vii) One of the functions of retaining wall is to
A serve as a decoration to the building
B allow further construction
C protect land slides on sloping site
D reinforce concrete counter fort
E prevent the penetration of moisture to the internal surface of the wall

(viii) The duration before removing form work to in-situ casted lintels and beams depends on the following factors
A Cement type used, shape of structure, load and humidity
B Cement type used, curing, position of form work and humidity
C Cement type used, reinforcements, curing and humidity
D Cement type used, position of formwork, shape of structures
E Cement type used, mixing duration, curing and humidity

(ix) The following are requirements of partition walls except that should
A be strong enough to carry imposed loads
B be strong enough to resist impacts subjected by occupants
C have the capacity to support some wall fixtures
D be as light as possible
E act as a sound barrier, specially when it divides two rooms

(x) Water closets as part of sanitary fittings is defined as
A Special sink used to collect water for toilet use
B Device used in the toilet and remains full of water
C Device used to receive and discharge human excreta directly from the person
D Special types of fittings which disconnect sullage drain
E Cisterns used for flushing

2. Match the items in **List A** with the responses in **List B** by writing the letter of the correct response beside the item number.

List A		List B	
(i)	Method of improving bearing capacity of the sub-soil	A	Pad foundation construction
(ii)	Strutting	B	Used to support and decorate timber floors
(iii)	Function of sand in mortar	C	Bottoming up
(iv)	Wall tiles	D	Decorative building units used to cover rough wall e.g. at toilets
(v)	Method used to gauge concrete in foundation trenches	E	Addition of certain water proofing compound to concrete mix
(vi)	Integral damp proofing	F	To increase the volume of the mortar and consequently making it more economical
(vii)	The advantage of steel over timber on windows	G	Have elegant appearance and occupy minimum areas
(viii)	Architect's duty	H	Compacting granular material
(ix)	The main function of head of opening	I	Designs and prepares working drawings for construction works
(x)	Development of hair cracks, usually in an irregular pattern over the finished plastered work.	J	Curing
		K	To carry the triangular load of brickwork over the opening and transmit it to jambs
		L	Cracking
		M	Used to resist the movement and twisting of floor joists
		N	Crazing
		O	Metal material used to strengthen cavity wall during construction
		P	To accommodate light, ventilation and access to people
		Q	To increase the strength of mortar
		R	Have no contraction or expansion due to weathering effect
		S	Supervises tendering and construction works
		T	Surface treatment of layer by water repellent substance to protect dampness

SECTION B (40 Marks)

Answer **all** questions in this section.

3. Why it is necessary to clear turf and vegetable soil from the land before any construction begins?

4. List down four (4) stages of building construction circle.

5. Briefly explain anti- termite treatment as related to site preparation.

6. Mention four (4) reasons of performing dewatering in construction site.

7. (a) Define water-cement ratio.

   (b) State the main reason for bending reinforcement ends when used in beams.

8. Briefly explain arches as used in wall openings.

9. Define the following terms as used in stair case construction.
   (a) Flight
   (b) Soffit
   (c) Baluster
   (d) Nosing

10. Sketch a timber raised ground floor and show the following parts:
   (a) Sleeper wall,
   (b) Floor joists,
   (c) Floor boards and
   (d) Wall plate.

11. Mention four (4) main ways by which moisture enters into the building.

12. Briefly explain curing of building materials.

SECTION C (40 Marks)

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

13. (a) (i) Describe the term "Traps" as applied to drainage systems.
   (ii) Sketch a well labelled manhole with intercepting trap.

   (b) (i) What is plastering in building construction?
   (ii) Outline the four (4) objectives of plastering.

(c) State the two (2) factors upon which the choice of foundation for domestic building depends.

14. (a) Design a half-turn (dog leg) stair for a residential house in which the vertical distance between each floor is 3.40m.
The size of space for the stair is limited to 2.5m x 5.0m. Adopt:

- 2RISE + 1 x TREAD = 630 mm.
- Tread = 290 mm; and
- Width of landing space = 1.20 m.

(Show all the calculations to your arguments)

(b) Make a neat sketch of the plan of a stair designed in (a) above and show location and dimensions for the following:

- The limited space for a stair i.e. 2.5 m x 5.0 m;
- The passage space before climbing;
- The space covered by steps in the first flight;
- The landing space;
- Direction of movement from ground floor upwards.

(Any other assumptions should clearly be shown on the drawing).

15. (a) With the aid of sketches, describe the following items:
(i) Skeleton core flush door
(ii) Skirting to walls
(iii) Coping to walls

(b) Draw a section through a window opening and show the following parts:
(i) Head of opening
(ii) Window frame
(iii) Pre-cast concrete sill
(iv) Throating