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

072

ARCHITECTURAL DRAUGHTING
(For Both School and Private Candidates)

Time: 3 Hours *Friday, 07th October 2011 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. Drawings should be in pencil and all drawings in section C should be prepared in **A3 standard paper** format.
4. Calculators are **not** allowed in the examination room.
5. Cellular phones are **not** allowed in the examination room.
6. 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 items (i) –(x), choose the correct answer from among the given alternatives and write its letter beside the item number.

(i) Foundation plans show part of the foundation to be
- A watered
- B timbered
- C back filled
- D excavated
- E leveled.

(ii) A light switch should be conveniently near a
A lintel height B window C door D kitchen E bathroom.

(iii) Information included in the door schedule is
- A materials, methods of making doors and their fixing
- B width, height, thickness, material and quality
- C materials, type of door, finish, location and key
- D type of door, materials, varnish used and treatment
- E location, type, quality and use.

(iv) The part of stair constructed at the point where it changes direction is called
A carriage B balustrade C riser D landing E newel post.

(v) Sufficient roof overhang serves the purpose of
- A assisting better view to outside
- B creating ample space for resting
- C protecting the wall from weather effects
- D preventing moisture through the roof
- E providing space for better fixing of gutters.

(vi) The main purpose of a chimney is to
- A facilitate draught so that fuel in a fire place can burn
- B provide solid structure for the flue to be fitted in a firebox
- C assist the burning of fuel in a fireplace
- D maximize the flow of heat to the building
- E minimize the loss of heat to the outside

(vii) The building owner prefers domestic houses which at its front view the roof appears trapezium in shape. The most likely type of a roof is
A clerestory B mansard C gable D dome E hipped.

(viii) If the object is placed above the horizon line in perspective drawing
- A the top surface of an object will be seen
- B the bottom surface of an object will be seen
- C neither the top nor the bottom will be seen
- D an object will show its full size
- E an object will be dimensioned exactly.

(ix) "Balustrade" of a stair describes all
- A stairs with winders and spirals
- B balusters of a staircase
- C stairs with double row of balusters
- D balusters, handrail, stringer and newel post
- E members of a stair in the first flight.

(x) A transverse sectioning of a building is made
- A vertically between adjacent external walls
- B horizontally along one internal wall
- C vertically across one external wall
- D vertically across the entire width
- E horizontally along the entire length.

2. Match the items in **List A** with responses in **List B** by writing the letter of the corresponding match beside the item number. The options in **List B** may be used once, more than once or not at all.

List A	List B
(i) Design drawings of picture type conveying more or less the actual appearance of the object.	A. Detailed drawings
(ii) Two dimensional arrangements of drawings where the plan is placed below the front elevation with its associated end view.	B. Pictorial drawings
(iii) Three dimensional drawings projected at an angle of 45° both sides.	C. Preliminary sketches drawings
(iv) Two dimensional arrangements of drawings where the plan is placed above the front elevation with its associated end view.	D. Isometric drawings
(v) Working drawings made for the purpose of conveying precise constructional information.	E. Free hand drawings
(vi) Three dimensional objects presented in two dimensional drawings.	F. Scheme design drawings
(vii) The three dimensional drawings having appearance affected by the distance from observer.	G. Oblique drawings
(viii) Drawings prepared for the purpose of preliminary checking of workability, functions and cost implication.	H. Perspective drawings
(ix) All three dimensional drawings prepared for different purposes in the design work.	I. 3rd angle projection drawings
(x) Arrangement of related views of plans, elevations and sections in one plane.	J. Axonometric drawings
	K. 1st angle projection drawings
	L. Development drawings
	M. Orthographic projection drawings
	N. Production drawings
	O. Location drawings

SECTION B (40 Marks)

Answer **all** questions in this section.

3. (a) When are reduced scales used in making drawings?

   (b) Write down the long form of each of the following abbreviations as used in perspective drawings:
   - (i) P.P
   - (ii) V.P
   - (iii) S.P
   - (iv) G.P
   - (v) H.L
   - (vi) T.H.L

4. (a) Write down four features that are dimensioned on a floor plan drawing.

   (b) Explain the function of the following parts of the fireplace:
   - (i) Fire back
   - (ii) Hearth

5. Illustrate how the exterior features of a building can be presented on the drawing paper.

6. By means of simple cross-section sketches, show a wooden window sill and a bottom rail arranged as follows:
   - (i) Inward opening casement
   - (ii) Outward opening casement

7. Define the following terms:
   - (i) Stair
   - (ii) Baluster
   - (iii) Tread
   - (iv) Rise

8. With aid of a sketch, explain "working triangle" in a kitchen.

9. Outline the application of four elements of design.

10. With the aid of labeled sketches, differentiate the functions of footing and a foundation wall in the strip foundation.

11. By citing some basic environmental behaviors, explain how natural ventilation is achieved in a classroom.

12. (a) Name four sanitary appliances that have to be shown on the floor plan drawing of a residential house.

    (b) What are soil appliances in the residential house? Give two examples.

SECTION C (40 Marks)

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

13. (a) Outline the three advantages of cavity wall construction.

(b) Sketch a well labeled section through a casement window with deadlight constructed on a brick cavity wall.

14. A symmetrical couple roof consists of the following details:

- Pair of common rafters each 50 mm x 120 mm.
- A ridge board 20 mm thick.
- Wall plate 50 mm x 150 mm placed at the centre of the wall; walls are 220 mm thick.
- The roof span is 3.4m
- The roof pitch is $\frac{1}{6}$
- The roof overhang is 500 mm.

(a) Calculate the:

(i) Position of a pitch line from the bottom edge of a rafter when it is in position.

(ii) Roof rise (in cm).

(iii) Length of pitch line (in cm).

(b) To a scale of 1:20, draw a roof section of the left part from the eave to the ridge board showing clearly the position of pitch line and eave allowance. All dimensions should be in millimetres.

15. The following are the details of a straight flight timber stair case:

- Going of steps are 250 mm.
- Rise of steps are 180 mm.
- The total going is 3800 mm and total rise is 2700 mm.
- The width of the stair which is also the width between the two walls in which the balustrades are fixed is 1200 mm.

To a scale of 1:25 draw:

(a) The plan of a stair

(b) The sectional elevation of a stair and then label its main parts.

NB: Any other assumptions made should be clearly shown on the drawing.