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, 08th November 2013 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 and Cellular phones are **not** allowed in the examination room.
5. 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.

(i) In lettering, legibility depends on the
- A shape of an individual letter
- B spacing of the letters
- C sizes of letters in terms of height
- D shape, spacing and sizes of letters
- E shape and spacing of letters.

(ii) In every type of reproduction, equipment used for making prints require
- A the original tracing to have opaque
- B the tracing ink to shade lines
- C the specified drawing paper used
- D strictness in routine maintenance
- E sustainable electrical power supply.

(iii) Lights for stairway must be controlled from
- A the bottom of the stair
- B both ends of the stair
- C outside the building
- D the landing of the stair
- E the soffit of the stair case.

(iv) Why are insulations placed around hot water lines?
- A To conserve hotness in water.
- B To ensure safety of water users.
- C To avoid loss of water.
- D To avoid whistling sound in pipes.
- E To remove hammering.

(v) The aspect of unlimited varieties of tastes and needs of individuals in the residential house planning is achieved by
- A consultations with the client
- B involving an Architect
- C discussions with the expected occupants
- D discussions with the building team
- E the use of planning check list.

(vi) The building specifications is meant to tell the contractor
- A methods and techniques of construction
- B materials required for construction
- C materials and methods of constructions
- D the conditions of construction
- E materials, methods and conditions for constructions.

(vii) The aim of the window schedule is to
- A ensure finishing and ordering manufactured items as required
- B ensure complete finishing and materials specifications
- C ensure sizes and complete finishing of the items
- D check standards and quality of the materials used
- E help the quantity surveyor in cost estimations.

(viii) What is the advantage of chimney breast projecting externally?
- A To get warmth from heat of the sun.
- B Adding value to the building aesthetics.
- C Saving room space in the building.
- D Being able to hold more than one flue.
- E To facilitate smooth down-draught.

(ix) The finishing size of the perspective drawing is mostly affected by
- A the horizon line placement below or above the ground
- B distance between station point and picture plane
- C the orientation of vanishing points
- D position of the centre line of vision
- E distance between the two vanishing points.

(x) The vent provided on the drainage system is for
- A making the sewage easily dissolved
- B facilitating digestion by giving long life to bacteria
- C facilitating the breaking down of solids
- D balancing air pressure in the drainage system
- E facilitating inspections of the drainage system.

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

List A	List B
(i) In their construction, no muntins interfere with the framed view.	A Sky lights windows
(ii) Having a series of small windows; their height affords privacy.	B Picture windows
(iii) Having 'babble' shaped plastic units with flanges or sealing rims around the base.	C Clerestory windows
(iv) Open out horizontally, with the hinges of each sash at the top and the cranking hardware operating all sashes in each unit simultaneously.	D French windows
(v) Having small horizontal panels that operate horizontally.	E Hopper windows
(vi) Having fixed glass units which often become the centre unit of several regular windows.	F Double hung windows
(vii) Having a sash hinged on the side.	G Vertical sliding windows
(viii) Having two sashes that operate vertically.	H American windows
(ix) Having small sash opening either in or out combined with larger fixed windows.	I Horizontal sliding windows
(x) In their construction, the individual glass panels have no frames.	J Panel windows
	K Jalousie windows
	L Corner windows
	M Casement windows
	N Dutch windows
	O Awning windows

SECTION B (40 Marks)

Answer **all** questions in this section.

3. (a) Name and give sizes of the two types of drawing boards commonly used in architectural offices.
   (b) Mention two uses of T-square as drawing tool in architecture.

4. Outline four ways of caring drawing boards.

5. Briefly explain the use of four types of the information captured from the strip foundation plan drawing.

6. Explain four factors that influence choice and use of draughting media.

7. List down eight general information found in the title blocks of architectural drawings.

8. Briefly explain how you would offer the First Aid to victims of ammonia during diazo reproduction of drawings:
   (a) When ammonia spilled on the skin.
   (b) When ammonia fumes is inhaled.

9. Sketch the isometric axes and label to show the procedure and meaning of each axis.

10. Sketch the plans of part of the old brick wall to show:
    (a) The introduced new opening.
    (b) The closed existing opening.

11. (a) What is 'micro-climate' as site analysis is concerned?
    (b) List down six information that can be obtained from the site plan drawing.

12. Sketch the section-elevations of the stair plans as shown in **Figure 1 (a)** and **(b)** through section lines **A-A** and **B-B** respectively.

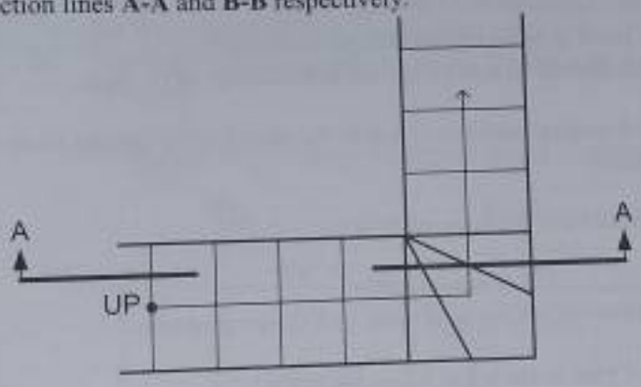

Figure 1 (a)

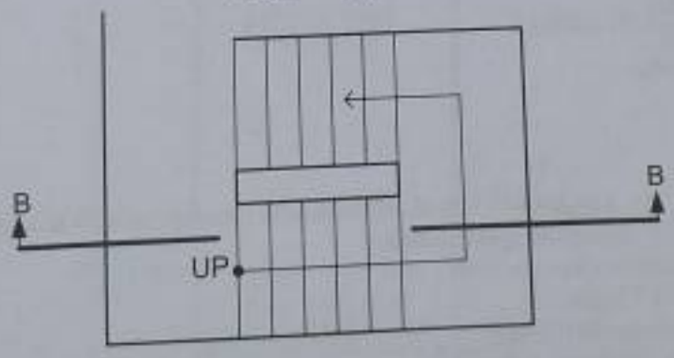

Figure 1 (b)

SECTION C (40 Marks)

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

13. (a) Draw an elevation of a four-panel door made up of hardwood timber (mninga). The sizes of members are as follows:
    (i) Top rail; 40 mm x 100 mm.
    (ii) Middle rail; 40 mm x 150 mm.
    (iii) Bottom rail; 40 mm x 200 mm.
    (iv) Stiles; 40 mm x 100 mm.
    - The overall door size is 1200 mm x 2100 mm.
    - The middle rail is exactly at the middle from the bottom edge of the bottom rail.
    - All stiles are fixed at equal distances from each other.
    - Panels are chamfered150 mm all around at both sides of the door.

    (b) Draw the horizontal and vertical sections of a door by assuming the cutting plane line passes through the panels.

    Note: All drawings should be in the scale of 1:20

14. (a) What is the difference between a King post truss and Queen post truss?

    (b) Sketch the structural roof plan to show the following parts:
    (i) Valley rafter
    (ii) Hip rafter
    (iii) Common rafter
    (iv) Hip jack rafter
    (v) Valley jack rafter
    (vi) Ridge board
    (vii) Purlin.

    (c) To a scale of 1:20; draw a sectional view of a Queen post truss spanning 9 m and label the parts basing on the following specifications:
    (i) Tie beam; 50 mm x 150 mm.
    (ii) Purlin; 50 mm x 75 mm.
    (iii) Ridge board; 50 mm x 175 mm.
    (iv) Common rafter; 50 mm x 100 mm.
    (v) Queen post; 50 mm x 150 mm.
    (vi) Wall plate; 50 mm x 100 mm.
    (vii) Overhang; 750 mm.

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

15. To a scale of 1:50; draw the detailed floor plan of a one-bed residential house out-lined in **Figure 2** and present the hipped- roof plan to cover the house. The following information may help you in the presentation of drawings:

(a) All walls are made of bricks with thickness of 150 mm.
(b) The front open veranda is supported with 150 mm R.C square columns.
(c) The plinth level is at 300 mm above the average ground level.
(d) The wall plate covers the whole thickness of the wall.
(e) The ring beam runs over all walls and columns.
(f) Two hardwood paneled doors:
  (i) D_1 = 2.10 m x 1.10 m which is hung 150 mm from the corner.
  (ii) D_2 = 2.10 m x 0.90 m flashing to the corner.
(g) Five casement windows (glazed):
  (i) W_1 =Height (1.20 m), width (1.80 m) fixed 300 mm from the nearest corner.
  (ii) W_2 =Height (1.20 m) and width (1.50 m) fixed 300 mm from the nearest corner.
(h) Roofing is by corrugated iron sheets (C.I.S) with the overhang of 900 mm all over the structure.

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

Figure 2 (Not to scale); **All dimensions are in millimetres**