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 **Monday, 07th November 2016 p.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. 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).

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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) Scales can be expressed as
A an instruction B a fraction C a whole number
D a section E a detail.

(ii) Construction details are always shown in the
A horizontal section B vertical section C elevation
D plan E isometric projection.

(iii) Which one of the following is a roof member that runs from ridge board to the wall?
A Ridge board B Tie beams C Purlin
D Rafter E Fascia board.

(iv) The part of a window that **cannot** be opened is called
A Roof light B Vent light C Dead light
D Live light E Sky light.

(v) A soffit line of a stairway is parallel to
A riser B balusters C head room
D nosing line E landing.

(vi) A part of fireplace construction which reflects the heat into an intended room is called
A Flue B Smoke chamber C Hearth
D Fire front E Fire back.

(vii) A rectangular vessel completely closed and used to store water is known as
A Tank B Cylinder C Storage cistern
D Cistern E Boiler.

(viii) Intercepting traps are installed in the
A public sewer B drain C private sewer
D septic tank E the final inspection chamber.

(ix) PVC insulated and sheathed cables are very likely to be fixed and supported by
A wood screws E cap screw C an expansion bolt
D clip on girder fixed B PVC clip and hardened nail.

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(x) Which among the following shows the finished appearance of the building?

A Section. B Plan. C Elevation.
D Top view. E Orthographic projection.

2. Match the functions of electrical items in **List A** with their responses in **List B** by writing a letter of the correct response beside the item number in the answer booklet provided.

List A	List B
(i) Electrical item that provides the connections of wires within the building.	A Conduit
(ii) Electrical item that allows systematic flow of electricity within the building.	B Short circuit
(iii) Electrical item that terminates the flow of electricity within the building.	C Bracket
(iv) Electrical item that used as media electricity within the building.	D Service line
(v) Electrical item that melts when wires are overloaded in the system.	E Receptacle
(vi) Electrical item that minimizes the damage of the system from lighting.	F Outlet
(vii) Electrical item used as the distribution centre of electricity in the building.	G Fuse
(viii) Electrical item that allows electricity to be drawn off.	H Circuit
(ix) Electrical item that brings electricity to the building.	I Ground
(x) Electrical item that gives alarm of improper connections between Live and Neutral wires.	J Circuit breaker
	K Conductors
	L Single phase
	M Junction box
	N Switch socket
	O Service panel

SECTION B (40 Marks)

Answer **all** questions in this section.

3. (a) What is lettering?
   (b) Give two points for which legibility in lettering depend.

4. Mention factors which determine the nature of building design.

5. (a) What is a floor?
   (b) Mention two classes of floors.

6. (a) List four things that are being described in building specification.
   (b) Differentiate between natural foundation and artificial foundation.

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7. State the basic steps for constructing a framed, braced and battened door.

8. (a) Enumerate three general principles of stair case design.
   (b) What is the maximum angle from the horizontal of the stair flight?

9. Define the following members as applied in a suspended timber floor:
   (a) Honeycomb sleeper walls.
   (b) Air bricks.
   (c) Damp-proof course. (DPC)
   (d) Floor joists.

10. (a) What is the importance of elevations?
    (b) List two factors affecting building planning.

11. (a) What is a detail drawing?
    (b) Mention four roof elements that can be viewed from the detail section.

12. (a) What are "specifications" as applied in architectural drawing?
    (b) Why specifications are needed in drawings?

SECTION C (40 Marks)

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

13. (a) Figure 1 gives a kitchen floor plan. By using scale 1:50 within a given space, design a kitchen with the following requirements: **(12 marks)**
    (i) Position for single lavatory
    (ii) Position for two burner range
    (iii) Wall cabinet and base cabinet
    (iv) A double action door into the kitchen
    (v) Refrigerator.

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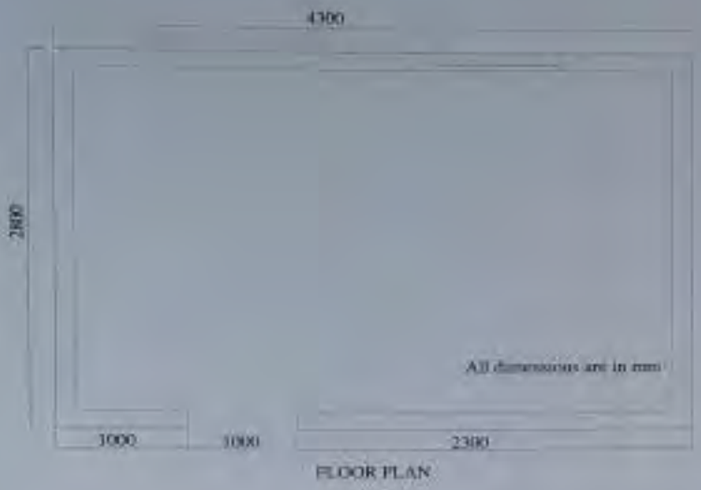

Figure 1

(b) Figure 2 is a plan of inspection chamber constructed using the following data:

(i) Internal width and length is 500 mm and 650 mm respectively.

(ii) Brick thickness is 230 mm.

(iii) Base concrete slab is 150 mm thick.

(iv) The lowest depth of the inspection chamber is 500 mm below the ground level before benching.

(v) The chamber cover is 50 mm thick, 700 mm wide and 800 mm long.

(vi) Benching has a slope of 1:6.

(vii) A 100 mm diameter PVC drain pipe is used.

To a scale of 1:10; draw a cross section A-A **(08 marks)**

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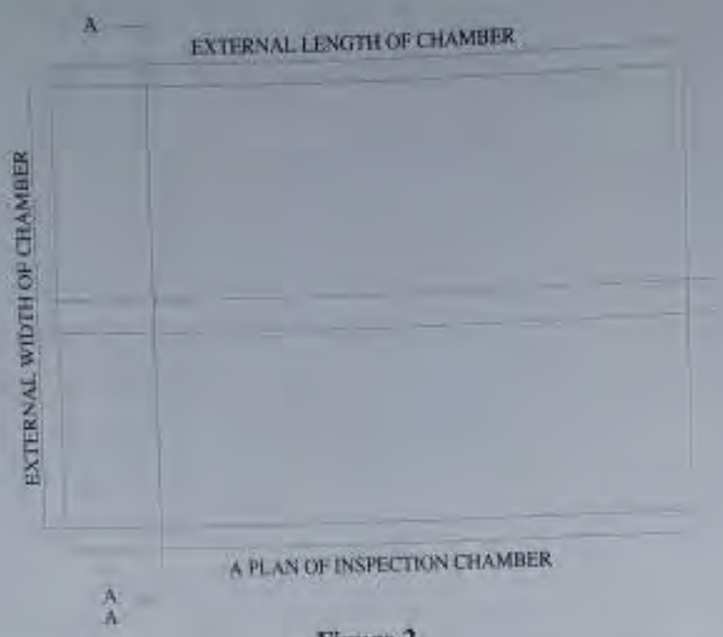

Figure 2

14. (a) Draw the plan conventional symbols for the following types of doors according to their nature of operations:
    (i) Folding door.
    (ii) Cased opening door. **(04 marks)**

    (b) Design a battened and ledged door with reference to the data given below:
    The door is 900 x 2100mm. The door is made up with six (6) battens of size 150 x 40 thick (neglecting tongues). The top and bottom ledge are 150mm wide x 30mm thick, fixed 100mm from the top and bottom of the door respectively with middle ledge of 30 x 200. They are also fixed 100mm from the end right and left. Using scale of 1:10:
    (i) Draw the rear elevation of this door.
    (ii) Draw a cross section (X-X) of the door not cut in the ledge.
    (iii) Draw a longitudinal section (Y-Y) of the door and show the top, middle and bottom ledges and battens. **(16 marks)**

15. (a) Elaborate how the fireplace works efficiently by the help of primary and secondary air. **(08 marks)**

    (b) Describe the principles and precautions to be observed while designing and constructing the chimneys. **(12 marks)**

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