

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

2006/10/25 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).



CS_06

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) Pictorial views are easily identified as they show
- A straight edges of objects
 - B three dimensions of an object on drawing
 - C non-cylindrical shapes of objects
 - D limited faces of objects in a drawing
 - E two faces when directly viewed from any side.
- (ii) The system of pipework for drainage must be able to
- A discharge the flow to sanitary appliances
 - B supply water from water mains to the building
 - C receive the discharge from any sanitary appliance
 - D receive excreta from inspection chambers
 - E absorb underground dampness and thus convey it to disposal point.
- (iii) Cutting plane lines are drawn extra thick and black for the reasons that
- A they act as reference lines to elevations
 - B the edges of objects to be cut are properly aligned
 - C the corners of objects cut are clearly visible
 - D they show extra positions to be sectioned
 - E they will appear more prominent on a drawing than other lines.
- (iv) The foundation wall is built centrally to the foundation base below it so that
- A the foundation can carry any load without failure
 - B the load of the building is axially loaded to the foundation for safe supporting
 - C much larger buildings can be constructed on foundations
 - D cracks on the building are completely prevented
 - E the storeys can be erected easily.
- (v) The best method of drawing construction details of a fireplace is to prepare the
- A front elevational drawing
 - B side view
 - C plan
 - D sectional drawing
 - E perspective drawing.

(vi) Written specifications must be prepared to accompany

- A the working drawings
- B perspective drawings
- C presentation drawings
- D schedules
- E site plan.

(vii) Braces are incorporated into match boarded doors in order to

- A provide fixing for the hinges
- B join match boardings together
- C protect the door from weather
- D increase the width of the door
- E prevent the door from sagging.

(viii) Flights of stair are separated by

- A baluster
- B tread
- C landing
- D stringer
- E nosing.

(ix) In perspective drawing V.P. is the abbreviation for

- A vanishing point
- B view point
- C visible plane
- D vacuum plane
- E vision perspective.

(x) — is used for cutting tracing paper

- A Eraser
- B Razor blade
- C Stiff brush
- D Cutting knife
- E t-square or ruler.



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

List A

- (i) Tapered steps of a stair
- (ii) Architectural elevation drawings
- (iii) Locating the object above the horizon line and vanishing points in perspective drawing
- (iv) Specifications
- (v) The factor used to determine the proper size of floor joists
- (vi) Cesspool
- (vii) Residence
- (viii) Birdsmouth
- (ix) Mullion
- (x) Partition

List B

- A It divides a house
- B Functions as a seepage pit
- C Additional detail drawings for specific parts of a building
- D Have much wider treads than common stairs
- E Are prepared to accompany the working drawings
- F Facilitates no use of landing at the change of direction of stair flights
- G An upright member which divides windows
- H A joint to the common rafter to meet with a wall plate
- I Spacing, span and strength of joints
- J Always projected from floor plans
- K Dwelling
- L It divides a room within a building
- M Timber floor members
- N The bottom surface of the object will be seen
- O Usually drawn first before floor plans are prepared
- P Restricts veranda exposure
- Q A common joint between stile and rail of a door
- R A middle member of a door
- S Detail drawing
- T Watertight pit which receives effluent from septic tank and is emptied at intervals.

SECTION B (40 marks)

Answer all questions in this section.

3. State **four (4)** parts of a service area in a residential building.
4. Give the appropriate abbreviations for the following items:
 - (a) Foundation
 - (b) Hardcore
 - (c) Hardwood
 - (d) Concrete
5. Explain the difference of the following terms as related to architecture.
 - (a) Formal design
 - (b) Informal design.
6. Why are the location plans essential?
7. State **four (4)** factors upon which an attractive and functional elevation of a structure depends.
8. What is
 - (a) closed floor plan?
 - (b) open floor plan?
9. The highest point of the gable wall is 76 mm on the drawing paper. What is its actual height (in metres) if it is drawn to scale of 1:50?
10. Write down **two (2)** uses of schedules.
11. Why should a building permit be obtained before construction begins?
12. State the **three (3)** important factors to be considered when designing a stairway.

SECTION C (40 marks)

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

13. (a) Why are buildings with larger spans usually designed with high pitches?
 - (b) A truss is designed to cover a roof span of 6.0 m with a pitch of $\frac{1}{3}$. Calculate the
 - (i) rise of roof in cm.
 - (ii) true length of common rafter (T.L.CR) in cm.
- NOTE: Roof pitch = $\frac{\text{rise}}{\text{span}}$
- (c) To a scale of 1:50, construct a single line roof geometry for the building in 13. (b) and hence label clearly the span, roof rise, the true length of a common rafter and the roof pitch in degrees.



14. (a) How do blue prints differ from white prints as applied to the reproduction of drawings?
- (b) What purpose does an erasing shield serve?
- (c) A plan of inspection chamber is shown in figure 1 below. It is constructed in regard to the following data:
- Internal width and length is 500 mm by 650 mm respectively.
 - Brick wall thickness is 230 mm.
 - Base concrete slab is 150 mm thick.
 - The lowest depth of the inspection chamber is 500 mm below ground level, before benching.
 - The chamber cover is 50 mm thick \times 700 mm wide \times 800 mm long.
 - Benching has a slope of 1:6.
 - A 100 mm diameter PVC drainpipe is used.
- To a scale of 1:10 draw a cross section B - B.
- NOTE: Any other assumptions should be shown clearly.

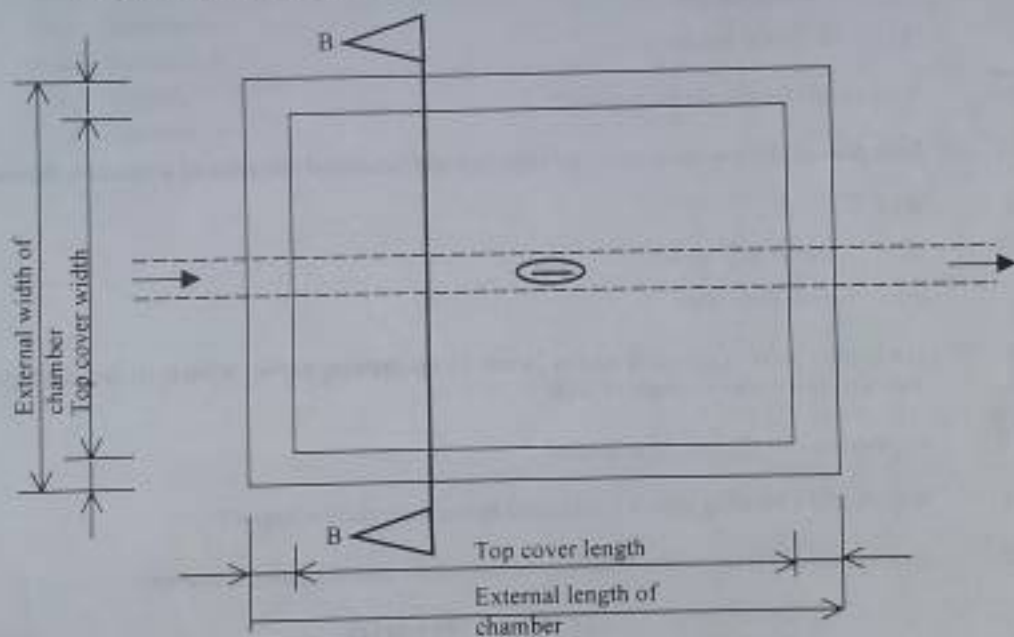


Fig. 1 PLAN OF INSPECTION CHAMBER (NOT TO SCALE)

15. (a) What common phenomena is experienced in regard to the walls, floor, ceiling and furniture when a one point perspective of a room is drawn?
- (b) Explain the main function of foundation walls.
- (c) Draw a section through a traditional fireplace showing the following:
- Constructional hearth
 - Flue
 - Superimposed hearth
 - Flue liners
 - Lintel
 - Throat
 - Fire back
 - Fender wall