

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

Wednesday, October 26, 2005 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).



CPS

This paper consists of 7 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) One of the lettering hints in architectural draughting is as follows:

- A write in freehand and always use upper case letters
- B always use heavy guidelines
- C refer lettering as printing
- D letters of words should always touch each other
- E leave no space between words.

(ii) Location drawings which identify the proposed site in relation to the surrounding is called _____ plan

- A topographic
- B land
- C survey
- D block
- E site.

(iii) Casement windows require no

- A frame rebate
- B frame jambs
- C hinges
- D frame sills
- E stile.

(iv) Perspective views look realistic but

- A cannot be understood
- B cannot be measured exactly
- C cannot portray the shape of the object
- D vanishing points are not always located
- E far features look larger than nearby features.

(v) A soffit line of a stair way is parallel to

- A stairwell opening
- B head room
- C total going
- D nosing line
- E stair clearance.

(vi) Water supply pipelines are used to

- A remove water from sanitary fixtures
- B keep water in a storage tank
- C carry water to the sanitary fixture
- D remove discharges from septic tank
- E convey cold water into hot water.

(vii) Vertical dimensions of a building are shown on

- A elevation drawings
- B floor plans
- C both elevation and floor plans
- D detailed drawings
- E roof plan.

(viii) An open divided scale means

- A only small units are indicated
- B large and small units are indicated
- C only main units are indicated
- D the scale is not numbered
- E no units are indicated at all.

(ix) A member of a fireplace construction which reflects the heat into an intended room is called

- A flue
- B hearth
- C smoke chamber
- D fireback
- E chimney.

(x) The size of the septic tank in the drainage system of a house depends on the

- A type of soil upon which the septic tank is constructed
- B distance of the septic tank from the house
- C number of occupants of the house
- D building materials used to construct the septic tank
- E the availability of the discharged water to septic tank.

CPE



2. Match the words or phrases in List A with the responses in List B by writing the letter of the correct response beside the item number.

LIST A

- (i) Upper case
- (ii) Closet
- (iii) A double rebated member of a window frame
- (iv) The use of schedule
- (v) Circumscribe
- (vi) A method of showing room sizes
- (vii) Has greater distance between ridge line and cave line
- (viii) Controls the escape of smoke through the in fireplace
- (ix) Reduce sides in perspective drawing diminish to
- (x) A chart of materials and products for a proposed building

LIST B

- A. Smoke shelf
- B. Varnishing point
- C. Specification
- D. Damper
- E. Picture plane line
- F. Sill
- G. Site plan
- H. Title block
- I. Schedule
- J. High picture roof
- K. Stating width and length
- L. Small letters
- M. Sanitary fixture
- N. Preparation of building materials
- O. Capital letters
- P. Designing and ensuring that the finishing is complete as planned
- Q. Storage area in a residential house
- R. Draw a line around
- S. Circumference
- T. Transom

SECTION B (40 marks)

Answer all questions in this section.

3. What does each of the following mean in the design of buildings?
- (a) Formal design.
 - (b) Informal design.
4. Figure 1 below shows the horizontal section through the middle part of a casement window. Label the parts indicated.

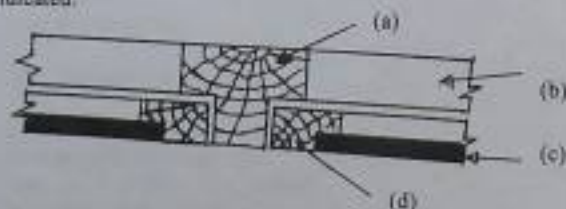


Figure 1

5. What does each of the variables stated in the formula below stand for as used in stair calculations?
 $2r + g = 600 \text{ mm.}$
6. Define the following terms as used in water supply:
 - (a) Communication pipe.
 - (b) Portable water.
7. Sketch neatly the following lines when used in sectioning objects.
 - (a) Full cutting plane line.
 - (b) Offset cutting plane line.
8. What is the function of the following as related to fireplaces?
 - (a) Damper.
 - (b) Throat.
 - (c) Fireback.
 - (d) Hearth.
9. Name the parts shown in the following drawing (figure 2).

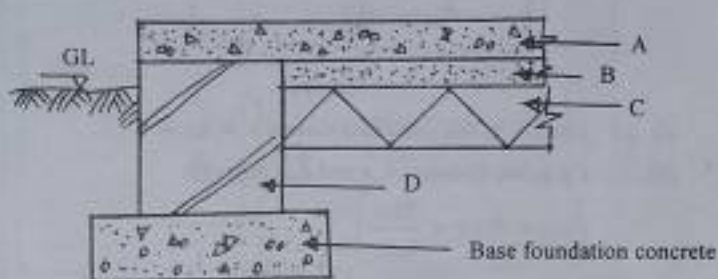


Figure 2

10. What is a septic tank? Explain briefly.
11. Write down the long form of each of the following abbreviations as used in perspective drawing.
 - (a) C.V.
 - (b) V.P.
 - (c) P.P.
 - (d) P.P.L.
12.
 - (a) What is an eave?
 - (b) On which member is each of the following fixed in the construction of roofs?
 - (i) Ceiling joists.
 - (ii) Roof covering bearers.



SECTION C (40 marks)

Answer two (2) questions from this section

13. (a) What is the purpose of each of the following to a building?
- Design section.
 - Structural section.
- (b) Outline five (5) activities that are usually carried out in a living room.
- (c) The gable roof geometry is shown in figure 3 below where the roof pitch is $\frac{1}{6}$ and distance b is 7.2 m.

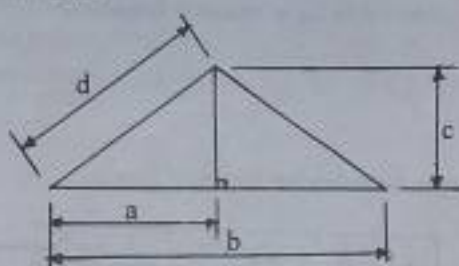
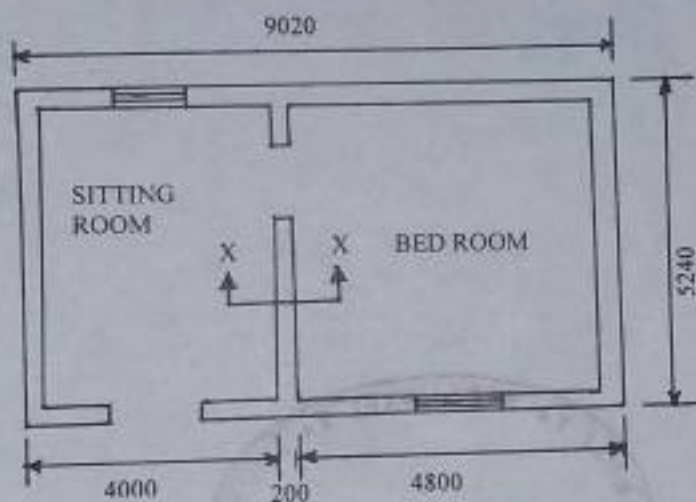


Figure 3

- Identify by their names distances a , b , c and d .
 - Calculate distances a , c and d in metres
 (Note: Pitch = $\frac{\text{Rise}}{\text{Span}}$)
14. (a) Explain briefly the duties of each of the following people in architectural draughting.
- Estimator.
 - Specification writer.
 - Architectural illustrator.
 - Architectural drafter.
- (b) A straight flight stair of a certain residential house has thirteen risers each of height 190 mm, stair width of 1.2 m, waist of 200 mm and the stair is constructed between two parallel walls. (Note: $2r + g = 640$ mm). Calculate the:
- going.
 - total.
 - number of treads.
- (c) To a scale of 1:20 project the sectional elevation and plan of the stair showing at least three treads.
15. (a) A fixed casement window is associated with an openable top hung vent light. Neatly, sketch a single line window diagram and clearly indicate the conversion for the opening direction for the hung vent light.

- (b) A small house is constructed to include the following information:
- (i) Base foundation concrete 460 mm wide x 150 mm deep.
 - (ii) Brick foundation wall 340 thick x 440 mm deep.
 - (iii) Hardcore 150 mm thick.
 - (iv) Blinding 50 mm thick.
 - (v) Oversite concrete 100 mm continuously laid on top of foundation wall as well.
 - (vi) Screed 25 mm thick.
 - (vii) Main brick wall 220 mm thick.

Guided with the floor plan shown in figure 4 below, draw section X – X showing all details from the base foundation concrete up to just above the floor screed. Use scale 1:10.



FLOOR PLAN (Not to Scale)

Figure 4