073206T4CEN

CIVIL ENGINEERINGLEVEL 6

CON/CO/CET/CR/06/6/A

PRODUCE BUILDING DRAWINGS

July /August 2024

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper has two sections A and B.
2. Answer ALL the questions as guided in each section.
3. You are provided with a separate answer booklet.
4. Marks for each question are indicated in the brackets.
5. Do not write on the question paper

This Paper consists of five (5) Printed Pages.

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no pages are missing

SECTION A (40 MARKS)

Answer ALL questions

1. As a Civil Engineer you are called upon to advice the County Government of Garissa on construction dimensions of their proposed hall. Outline TWO types of linear dimensions you would consider appropriate. (2 Marks)
2. When designing structural elements, Engineers use various codes of design. State any THREE codes. (3 Marks)
3. When designing a building various elements are designed to meet specifications. Give FOUR structural elements. (4 Marks)
4. With respect to computer aided design software's (CAD), differentiate between system software and application software citing TWO examples in each. (4 Marks)
5. Eaves play an important role of spilling off rain water from the roof as well as protecting the wall from adverse weather conditions. Sketch and label a closed eave of a pitched roof. (5 Marks)
6. Briefly describe how you would save an architectural drawing in pdf format. (5 Marks)
7. Architectural drawings have numerous formats. Write the following abbreviated formats in full.
    a. PLA. (1 Mark)
    b. DWG. (1 Mark)
    c. DXF. (1 Mark)
8. When installing water, pipe sizes are usually determined as per the consumption requirements. List FOUR consumption requirements to be considered. (4 Marks)
9. Sketch the following sanitary fittings
    a. Caps. (2 Marks)
    b. Male threaded adaptor. (2 Marks)
10. A client approached you to prepare a plumbing layout for his two bed roomed house. List THREE types of pipes you would consider appropriate for this task. (3 Marks)
11. A circular base plate for a water tank has a diameter of 2000mm. Calculate the GI – sheet for the base plate in square meter. (3 Marks)

SECTION B (60 MARKS)

Answer THREE questions

12.

a. Define each of the following terms:

i. Circuit; (1 Marks)

ii. Electromotive force ; (1 Marks)

iii. Conductors ; (1 Marks)

iv. Switch. (1 Marks)

b. Explain FOUR causes of accidents during electrical installation works. (8 Marks)

c. Figure 1 shows a battery of 1.5V and two resistors 6 ohms and 3 ohms in parallel connected in series to a 4 ohms' resistor.

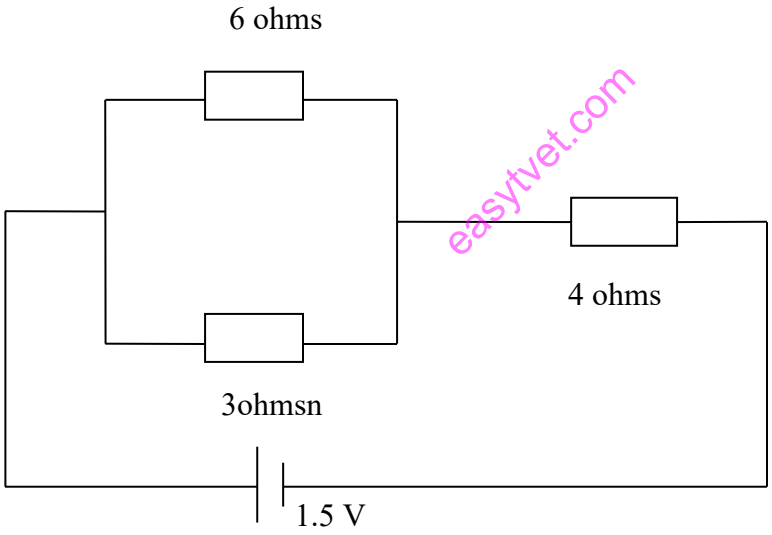

Figure 1

i. Calculate current through 4 ohm resistor ; (4 Marks)

ii. Voltage across 6 ohm resistor. (4 Marks)

13.

a. Outline THREE advantages of indirect water supply systems. (6 Marks)

b. Sketch and label a high bell type flashing cistern. (6 Marks)

c. With the aid of a suitable sketch, explain how direct system of cold water supply is laid in a domestic building. (8 Marks)

14.

a. State FOUR roles of the architect in the construction industry (4 Marks)

b. Figure 2 below shows the plan of a stair. To a scale of 1:25 draw section A- A using the data provided in Table 1. (16 Marks)

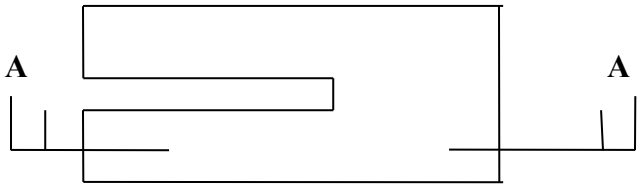

Fig. 2

Table 1

ITEM	
Floor to headroom height	2700mm
Risers	150mm
Tread	250mm
Slab thickness	150mm
Main reinforcements	Y12
Distribution bars	Y10
Landing	1200mm
Wall thickness	200mm
Waist	150mm

15. In order to accommodate a significant difference in invert levels, a drop – pipe manhole is provided. To a scale of 1:20 draw the drop – pipe manhole given the following information:
    - Width of manhole 800 x 800mm
    - Manhole depth 2m
    - Difference in invert levels 1500mm
    - Foundation depth 2150mm
    - Foundation thickness 150mm
    - Thickness of brick wall 225mm
    - Diameter of drain 100mm
    - Assume any other information not given. (20 Marks)

THIS IS THE LAST PRINTED PAGE