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073105T4PLM**PLUMBING LEVEL 5****CON/OS/PL/CC/0.1/5****Apply Basic Mathematics****July/August 2025**

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

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WRITTEN ASSESSMENT**Time: 3 HOURS**

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INSTRUCTIONS TO CANDIDATE

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1. Marks for each question are indicated in the brackets.

2. The paper consists of **TWO** sections: **A** and **B**.3. Answer ALL questions in section **A** and any **THREE** questions in section **B**.

4. Candidates are provided with a separate answer booklet

5. **DO NOT** write on this question paper.

6. You should have a scientific calculator.

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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 questions are missing.**

SECTION A (40 MARKS)*Answer ALL the questions in this section.*

1. A rectangular wash has the following measurements Length =

2 m

Width = 1.5m

Height = 1m

Calculate the total surface area.

(4 Marks)

2. Determine the measure of the third angle in a triangle if the other two angles are 45° and 60° .

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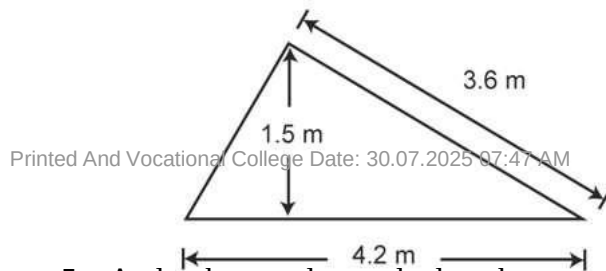
(3 Marks)

3. A pipe of length 25.5 meters is cut into three smaller pieces in the ratio 1:3:6. Determine the length of each piece.

(4 Marks)

4. Find the area of the figure below.

(4 Marks)



5. A plumber needs to calculate the amount of water in a cylindrical tank with a diameter of 1.5 meters and a height of 2 meters. Calculate the volume of water in litres when the tank is full. (Use $\pi=3.14$).

(4 Marks)

6. Convert the following units:

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a) 200 millimeters to meters.

(2 Marks)

b) 5 inches to centimeters.

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(2 Marks)

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7. The following set of data represents dimensions of pre-divided GI pipes in mm: 27.90, 34.70, 54.40, 18.92, 47.60, and 39.68. Determine the:

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i. Mean.

(2 Marks)

ii. Median.

(2 Marks)

8. Simplify:

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i. $-x - 2y + 5x + 3y$.

(2 Marks)

ii. $-2p \times -3p$.

(2 Marks)

9. Find the radius of a circle whose circumference is 50 cm.

(3 Marks)

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10. A plumber deposits Kshs. 40,000 with a bank at simple interest rate of 3% per annum.

Determine:

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- i. Total interest earned in the 5 years
 - ii. Amount in the bank after 5 years. (2 Marks)

11. Evaluate each to 4 significant figures. (2 Marks)

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SECTION B (60 MARKS)

Answer Any **THREE** Questions in This Section.

12.

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- a. A person standing 20m away from a tower observes the angle of elevation to the top of the tower as 30°. Find:
- i. The height of the tower. (4 Marks)
 - ii. If the person moves 10m closer, what is the new angle of elevation? (6 Marks)

- b. In the first week of a production 10,000 PVC pipes. If the rise in weekly production is 10% per week. How long will it take to produce 150,000 PVC pipes? (6 Marks)
- c. Find the selling price per kilogram of an adhesive mix made from 8 pounds of adhesives that sells at Ksh.1500 per pound and 12 pounds of adhesive that costs 800 per pound, given (2.2 pounds = 1Kg). (4 Marks)

13.

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- a. In a certain week a contractor bought 3 helmets and 4 dust coats at Kshs. 6,600. The next week he went to the same shop and found that the prices had not been changed and he bought 2 helmets and 5 dust coats at Kshs.7,200. Determine the cost of a helmet and a dust coat using three elimination. (7 Marks)
- b. Determine the value of $16x^2 = 8^{4x-3}$ (6 Marks)
- c. Solve the following quadratic equation using completing squares method correct to 3 decimal spaces $3x^2 - 4x - 2 = 0$ (7 Marks)

14.

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- a. The table below represents the lengths of pipe sections in a plumbing workshop.

Length	152-156	157-161	162-166	167-171	172-176	177-181
Frequency	12	14	24	15	8	7

Find the:

- i. an assumed mean of 169. (3 Marks)
 - ii. Standard deviation (11 Marks)
 - iii. Modal class. (1 Mark)
- b. The mean of the numbers 3, 4, a, 5, 7, a, 5, 8, 5, and 9 is equal to the mode. Find the value of *a* and hence the median of the data. (5 Marks)

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15.

a. A 24-hectare farm is divided as follows:

- Coffee - 4 ha
- Grass - 3 ha
- Maize - 7 ha
- Bananas - 5 ha
- Homestead-0.5ha
- Vegetables and paths -4.5 ha

Draw a pie chart to represent this information. (5 Marks)

b. A plumber needs to install a pipe that runs diagonally across a rectangular room.

The room is 12 feet long and 8 feet wide. How long does the pipe need to be?

(5 Marks)

c. The cost of two skirts and three blouses is sh. 600. If the cost of one skirt and two blouses of the same quality is sh. 350, find the cost of each item. (10 Marks)

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