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**073203T4PLM**

## PLUMBING LEVEL 3

**CON/OS/PL/CC/01/3/** Printed By: Technical And Vocational College **Measure and**

**Calculate Object Parameters November/December 2025**

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

### WRITTEN ASSESSMENT

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**Time: 3 HOURS**

### INSTRUCTIONS TO CANDIDATE

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

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2. The paper consists of **TWO** sections: **A** and **B**.

3. **Answer All Questions in Section A and ALL Questions in Section B**

4. **Candidates are provided with a separate answer booklet**

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

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**This paper contains (5) printed pages**

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

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## SECTION A: 20 MARKS

### TRUE OR FALSE

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1. The circumference of a circle is calculated using the formula  $c = 2\pi r^2$  where  $r$  is the radius the circumference and  $\pi$  as the pie. (1Mark)  
A. True  
B. False
2. A square has four equal sides and four right angles (1Mark)  
A. True  
B. False
3. The volume of a cylinder is found by multiplying its base area by its height (1Mark)  
A. True  
B. False
4. Algebraic equations are not used in plumbing for measurement and calculation (1Mark)  
A. True  
B. False

The abbreviation for millimetre is mm (1Mark)

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A. True  
B. False

### MATCHING QUESTIONS Technical And Vocational College

Match the items in Column A with their correct descriptions in Column B. (1 Mark each)

Printed By: Technical And Vocational College Date: 20.11.2025 11:37 AM	<b>COLUMN A</b> <b>Item</b>	<b>COLUMN B</b> <b>Description</b>
6.	Perimeter	A measure of the three-dimensional space occupied by a solid object
7.	Ratio	The process of converting a unit of measurement to another, e.g., inches to millimetres
8.	Unit Conversion	A comparison of two quantities of the same kind
9.	Volume	The total length of the boundary of a two-dimensional shape
10.	Area	A comparison of two quantities of the same kind

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**MULTIPLE CHOICE QUESTIONS (10 MARKS)****Choose the correct answer from the multiple choices provided**

11. What is the formula for the area of a rectangle. (1Mark)

A.  $A = L \times W$

B.  $A = \frac{1}{2}bh$

C.  $A = \frac{4}{3} \pi r^2$

D

12. Which of the following is a common 2D shape in plumbing. (1Mark)

A. Cube

B. Sphere

C. Triangle

D. Pyramid

13. What fundamental operation is used to combine quantities to find a total. (1Mark)

A. Division

B. Multiplication

C. Subtraction

D. Addition

14. A tape is used to determine which of the following. (1Mark)

A. Volume

B. Linear measurement

C. Weight

D. Angles

15. What is the area of a rectangular water tank that is 2.0 meters long and 1.5 meters wide. (1Mark)

A. 3.5

D. 4.0

16. A cylindrical tank has a radius of 1.2 meters. The plumber needs to find the circumference of the tank. (1Mark)

A. 7.536 meters

B. 8.536 meters

C. 6.326 metres

D. 5.356 metres

17. A plumber is estimating the cost of a job. The labor cost is \$40 per hour. The job is estimated at 8 hours. The material cost is \$150. What is the total estimated cost of the job. (1Mark)

A. \$500

B. \$470.

C. \$300.

D. \$450.

18. A rectangular cistern is 1.5m long, 0.8m wide and 0.7m deep. What is its capacity in litres. (1Mark)

A. 800 litres

B. 860 litres

C. 840 litres.

D. 720 litres

19. A plumber has ~~1.0 kg of soldering wire~~ <sup>Printed By: Technical And Vocational College Date: 20.11.2025 11:37 AM</sup>. If each joint requires 50 grams of wire, how many joints can be made. (1Mark)

A. 200

B. 220

C.

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20. A plumber needs to order 12 toilet flanges. The flanges are sold in packs of 4. How many packs should be ordered. (1Mark)

A. 3

B. 4

C. 5

D. 2

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## **SECTION B: (30 MARKS) SHORT ANSWER QUESTIONS**

### **Answer all Questions**

21. A plumbing trench is ~~10 m long, 0.5 meters wide and 80 centimetres deep.~~ Date: 20.11.2025 11:37 AM Calculate the volume of soil to be excavated in cubic metre. (3 Marks)

22. A tank needs to hold a minimum of 2000 litres. If the tank has a square base with sides of 1.2 meters, ~~the required height. (1 m<sup>3</sup> = 1000 litres)~~ Date: 20.11.2025 11:37 AM (2 Marks)

23. Calculate the total cost of materials for a bathroom renovation, given that the cost of materials as follows: pipe (\$120), fittings (\$50), fixtures (\$300), and sealant (\$25). ~~Printed By: Technical And Vocational College~~ Date: 20.11.2025 11:37 AM (1 \$=Ksh130). (4 Marks)

24. A water tank is filled with a pump that has a flow rate of 2 cubic meters per hour. Determine the duration it will take to fill a 5000-liter tank? (1 cubic meter = 1000 litres. (2 Marks)

25. Using a calculator, evaluate the following, expressing the answers in standard form correct to four significant figures. (4 Marks)

ii.  $24.27^2 - 11.79^2$

26. Rainwater pipe A has a circumference of 154 cm and rainwater pipe B has a circumference of 77 cm. Calculate the ratio of radius of pipe A to pipe B. ~~Printed By: Technical And Vocational College~~ Date: 20.11.2025 11:37 AM (4 Marks)

27. Name THREE types of measuring instruments used in plumbing. (3 Marks)

28. You are installing a wash hand basin. What measurements would you take to ensure it is positioned correctly. ~~Printed By: Technical And Vocational College~~ Date: 20.11.2025 11:37 AM (3 Marks)

29. State THREE most common geometrical shapes a plumber might encounter and the measurement that is most relevant to each. ~~Printed Technical And Vocational College~~ Date: 20.11.2025 11:37 AM (3 Marks)

30. You are given a set of architectural drawings. State THREE information you would look for to distinguish the plumbing from other trades. ~~Printed And Vocational College~~ Date: 20.11.2025 11:37 AM (3 Marks)