073203T4PLM

PLUMBER LEVEL 3

CON/OS/PL/CR/03/3

MEASURE AND CALCULATE OBJECT'S PARAMETERS

NOV /DEC 2023

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION

COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATE

1. Marks for each question are indicated in brackets ().

2. This paper consists of **TWO** sections, A and B.

3. You are provided with separate answer booklet

4. Do not write on the question paper

This paper consists of Six (6) 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 (20 MARKS)

Answer all the questions in this section. Each question is one (1) mark

Indicate True or False for question 1 to 5

1. The accuracy of the drawing depends on the quality of the instruments used.

2. In getting the total volume of cone, we multiply the circumference of it and the height

3. Vernier has jaws on both sides for external and internal measurements and a blade for height measurement

4. A unit of mm^2 is smaller than a unit of cm^2 for unit of measurement

5. A ruler with damaged end can be used to measure a length accurately

Match the following conversion values.

	UNIT OF CONVERSION	CORRECT VALUE
6.	$1cm^3$	i. 36 inches
7.	1 meter	ii. 25 mm
8.	1 decilitre	iii. 0.001 km
9.	1 inch	iv. 1 ml
10.	1 yard	v. 0.1 litre

Choose the correct answer from the choices given

11. Using 30˚ – 60˚ – 90˚ and 45˚ – 45˚ – 90˚ set squares, which of the following angle is not possible to draw?

       A. 45˚

       B. 30˚

       C. 10˚

       D. 90˚

12. An outside micrometre has a negative error. The correct reading can be taken by

       A. Adding the negative error in the actual reading

       B. Deducting the negative error from the actual reading.

       C. Adding twice the negative error in the actual reading

       D. Deducting twice the negative error form the actual reading.

13. Alison plans to cut a 6ft pipe into pieces that are ¾ ft long. How many pieces can she get from the pipe?

A. 9

B. 8

C. 6

D. 4

14. What is the angle made when you offset a sewer with a 1/8 bend?

A. 45°

B. 60°

C. 72°

D. 90°

15. What is the value of x in the equation $3(x-2) = 9$?

A. 8

B. 4

C. 5

D. 3

16. The following are quadrilaterals except:

A. rectangle

B. square

C. circle

D. rhombus

17. If a 20-volt battery drill costs £100, how much will it cost after the store takes off 30%?

A. £70

B. £30

C. £ 6

D. £14

18. What is the diameter of a pipe sleeve with a circumference of 100 cm?

A. 31.85

B. 3.18

C. 5.77

D. 31.14

19. If a first-year plumbing apprentice earns £20.80 gross per week, how much does she earn per year?

A. £145.60

B. £1081.60

C. £ 249.60

D. £ 624.00

20. What is the mean of the following numbers 2, 2, 4, 4, 6, 8, 10, 12?

    A. 13

    B. 6
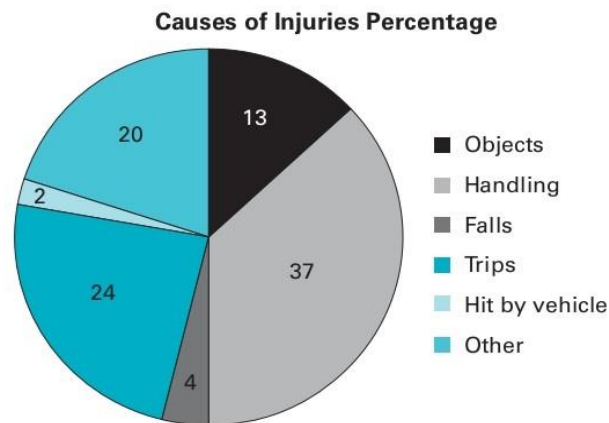
    C. 8

    D. 10

SECTION B (30 MARKS)

Attempt all the questions in this section

21. Rainwater pipe A has a diameter of 48 cm and rainwater pipe B has a diameter of 16 cm. What is the ratio of diameter A to B? (2 marks)

22. The Health and Safety at Work Act 1974 is the principal piece of legislation covering work-based health and safety requirements in plumbing. Below is a chart showing the most common types of work-based injuries. From the given data answer the following questions (5 marks)

Causes of Injuries Percentage

i. What is the name given to the above type of chart?

ii. What is the most common cause of injuries?

iii. What percentage of injuries does the most common cause make up?

iv. What percentage of injuries is caused by trips?

v. 20% of injuries are designated 'other'. Name some things you consider that 'other' could be.

23. What is the diameter of an LCS (low carbon steel) flange with a circumference of 16 cm?

(3 marks)

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

i. $631.7 - (6.21 + 2.95)^2$

ii. $46.27^2 - 31.79^2$

25. A plumber is measuring the floor area of a bathroom that is to be floor tiled. The floor measures 60 m by 13 m. Which tools will the plumber use and what is the total bathroom floor area? (3 marks)

26. How do we Measure the Outside Diameter (OD) of your pipe or pipe fitting? (3 marks)

27. A small plumbing job takes 1 ½ hours to complete. If the plumber is getting paid Ksh.3480 per hour, what is the total that she will earn? (2 marks)

28. What are types of errors experienced when carrying out measurement of plumbing objects

(2 marks)

29. A range boiler is 16 inches in diameter and 4 ft. high. How many gallons will it hold?

(4 marks)

30. An indirect cold-water supply, in a house, has a cold-water storage cistern that is 1.4m wide by 1.6 m long by 0.9 m high. What is its volume in cubic meters? (2 marks)