

073205T4BLD

BUILDING TECHNOLOGY LEVEL 5

CON/OS/BUT/CC/01/5

Apply Basic Mathematics

March/April 2026



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

WRITTEN ASSESSMENT

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of FIVE (5) printed pages

Candidate 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 questions in this section*

1. Solve for x using factorization method.

$$11x^2 + 18x + 7 = 0 \quad (3 \text{ Marks})$$

2. Evaluate $\frac{\log 25 - \log 125 + \frac{1}{2} \log 625}{3 \log 5}$ (3 Marks)

3. Change 0.67 into a fraction. (3 Marks)

4. Solve for x in the equation $4^{(x-2)} = 3^{(x+4)}$ (4 Marks)

5. Prove that $(1 - \cos^2 \theta) \operatorname{cosec}^2 \theta = 1$ (3 Marks)

6. Given $\sin A = \frac{15}{17}$ where A is an acute angle. Determine $\cos A$, $\tan A$, and $\cot A$. (4 Marks)

7. The roots of a quadratic equation are $1/3$ and -2 . Determine the equation. (4 Marks)
- 8.

- a. A rectangle is 3.2 m by 2.4 m and has the same perimeter as a square. Find the length of the sides of the square. (3 Marks)

- b. Find the surface area of a sphere whose diameter is 21 cm. (3 Marks)

9. Determine the standard deviation from the mean of the following set of numbers 5, 6, 8, 4, 10, 3 correct to 4 significant figures. (4 Marks)

10. Solve $2x^2 + 9x + 8 = 0$ correct to three significant figures by completing the square method. (5 Marks)

11. Given $Ae^x + Be^{-x} \equiv 4 \cosh x - 5 \sinh x$. Determine the values of A and B . (5 Marks)

SECTION B (60 MARKS)*Answer THREE questions in this section.*

12.

- a. Use the elimination method to solve the system of linear equations below. (8 Marks)

$$x + y + z - 4 = 0$$

$$2x - 3y + 4z - 33 = 0$$

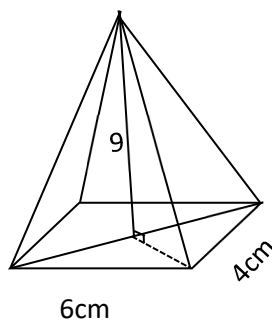
$$3x - 2y - 2z - 2 = 0$$

- b. Draw a histogram to represent the data below; (12 Marks)

Class	0-9	10-19	20-29	30-39	40-49	50-59
Frequency	5	7	8	9	10	12

13.

- a. Find the surface area of a right pyramid with a rectangular base of 6 cm by 4 cm and a height of 9cm. (11 Marks)



- b. A packet contains 100 washers, 24 of which are brass, 36 copper and the remainder steel. One washer is taken but not replaced, a second washer is treated similarly.

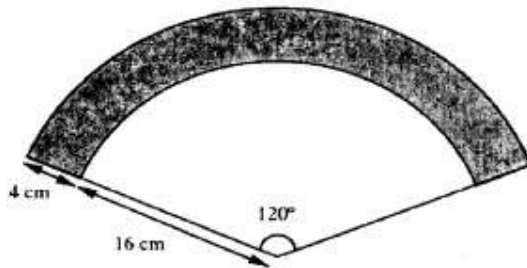
Determine the probability that;

- Both washers are steel
- The first is brass and second copper
- One is brass and one is steel

(9 Marks)

14.

- a. The figure below shows a sector of a circle.



- i. Calculate the perimeter of the sector. (4 Marks)
 - ii. Determine the area of the shaded region in m^2 correct to 4 significant figures. (6 Marks)
- b. A closed cylinder has a radius of 2.8 cm and a length of 13 cm. Calculate the surface area of the cylinder. (4 Marks)
- c. A chain hangs in the form given by $y = 40 \cosh x/40$. Determine correct to 4 S.f
- i. The value of y when x is 25. (3 Marks)
 - ii. The value of x when $y = 54.30$. (3 Marks)

15.

- a. The first and the last term of an AP are 20 and 48 respectively. If the sum of all the terms is 272, determine the following: (8 Marks)
- i. Number of terms in the series
 - ii. Common difference
 - iii. Fifth term.
- b. Obtain a numerical solution using Euler's method of the differential equation $dy/dx = y-x$, with the initial conditions that at $x=0$, $y=2$, for the range $x=0(0.1)0.5$. Draw the graph of the solution. (10 Marks)