

LEVEL 6**DEMONSTRATE NUMERACY SKILLS****July/August 2024****TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)****WRITTEN ASSESSMENT****3 HOURS****INSTRUCTIONS TO CANDIDATE:**

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section **A** and any **THREE** questions in section **B** in the answer booklet provided.
3. Use non – programmable calculators
4. Marks for each question are indicated in brackets.
5. Do not write on this question paper.
6. Answer all the questions in **English**

This paper consists of FOUR (4) printed pages.

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

SECTION A (40 MARKS)

Answer **all** the questions in this section

1. Evaluate $\frac{180 \div 3 - 150 \div 5}{4 \times 3 + 9 \times 2} - \frac{5 - 2 + 6}{4}$ (3 marks)
2. Given that the ratios $x : y = 2 : 5$ and $y : z = 3 : 4$, determine the ratio $x : y : z$ (3 marks)
3. The initial cost of a plot is Ksh. 800,000. At the end of each year, the land value increases by 2%.
Find the value of the plot at the end of three years. (3 marks)
4. Evaluate $\frac{(3^2)^{\frac{3}{2}} \times (8^2)^{\frac{1}{3}}}{3^2 \times (4^3)^{\frac{1}{2}} \times 9^{-\frac{1}{2}}}$ (4 marks)
5. A picnic site is in form of a triangle ABC such that A and B are 120 m apart, angles $CAB = 80^\circ$ and $CBA = 40^\circ$. Determine its total area in hectares correct to 2 decimal places. (4 marks)
6. Solve the following simultaneous equation using elimination method. (4 marks)
$$3x + y = 7$$

$$6x + 3y = 12$$
7. A quantity y is inversely proportion to x^2 . Given that $y = 12$ when $x = 3$, find x when $y = 27$. (4 marks)
8. A straight line passes through the point (1, 5) and is perpendicular to the line $8y + 4x - 3 = 0$.
Find the equation of the line. (4 marks)
9. Three people Brian, Ian and Ryan contributed to a fund. Brian provided $\frac{2}{5}$ of the total, Ian gave $\frac{1}{3}$ of the remainder and Ryan provided Ksh. 8000. Determine the total amount contributed to the fund. (4 marks)
10. Given the formulae $m = \frac{ax^2}{x^2 + b} - c$, make x the subject and hence find the value of x when $c = 2, m = 3, b = 1$ and $a = 9$. (4 marks)
11. A washing basin is in shape of a hemisphere and has a capacity of 19.404 litres. Calculate its radius in centimetres. (take $\pi = \frac{22}{7}$) (3 marks)

SECTION B: (60 MARKS)

Answer any **three** questions in this section

12. (a) A conical flask of base radius 21 cm and height 35 cm is filled with water. Half of this water is then poured into a rectangular tank with a square base of side 12 cm. Find the depth of water in the tank in metres correct to 2 decimal places. (take $\pi = \frac{22}{7}$) (10 marks)
- (b) Table 1 shows the distribution of marks scored by 220 students in a numeracy skills test.

Table 1

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	9	25	32	40	44	30	28	12

Determine the:

- (i) Mean (5 marks)
- (ii) Interquartile range (5 marks)
13. (a) Mr. Koech wishes to fence off his rectangular plot whose area is 1200 m^2 . One of the side is already catered for by a wall and he has a fencing wire of 100 metres long. Form a quadratic equation and solve it to find two possible dimensions of the plot. (10 marks)
- (b) A cyclist travels his first part of the journey at 25 km/h , and the remaining 70 km of the journey at 20 km/h . If the whole journey took 5 hours, find the:
- (i) Distance travelled at first part. (6 marks)
- (ii) Average speed of the journey. (4 marks)
14. (a) Three rangers Kamau, Peter and John were in patrol to lay an ambush for poachers. Peter was positioned 50 km on a bearing of 043° from Kamau, while John was placed on a bearing of 160° from Peter and 133° from Kamau. Sketch their position and determine the area of patrol to the nearest km^2 . (10 marks)
- (b) Three quantities P, Q and R are such that P varies directly as Q and inversely as the square of R. If $P=8$, $Q=16$ and $R=12$, determine the:
- (i) The equation connecting the three quantities (4 marks)
- (ii) Percentage change in Q if P increases by 25% and C decreases by 5%. (6 marks)

15. (a) Table 2 shows marks scored by 170 students in a digital literacy test.

Table 2

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	10	20	x	40	y	25	15

Given that the median mark is 35, determine the:

- (i) Values of x and y (5 marks)
- (ii) Standard deviation of the marks. (5 marks)

(b) An arc of length 8.8 m subtends an angle of 72° at the centre of a circle. Calculate the:

- (Take $\pi = \frac{22}{7}$)
- (i) Radius of the circle. (4 marks)
- (ii) Area of the segment bounded by the arc and the corresponding chord.(6 marks)