LEVEL 6

Demonstrate Numeracy Skills

November/December 2023

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION

COUNCIL (TVET CDACC)

WRITTEN ASSESSMENT

TIME: 3 Hours

INSTRUCTIONS TO CANDIDATE

1. This paper has two sections A and B.
2. Attempt questions in each section as per instructions given in the section.
3. You are provided with a separate answer booklet.
4. Answer all questions in the answer booklet.
5. Marks for each question are indicated in the brackets.
6. 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 (40 MARKS)

*Answer **ALL** the questions in this section*

1. Two numbers are in the ratio 3:4. If their sum is 63, find the numbers.   (4 Marks)

2. Fifteen men working for eight hours a day can complete a certain job in exactly 24 days. For how many hours a day must sixteen men work in order to complete the same job in exactly 20 days?   (3 Marks)

3.   A saleslady earns a basic salary of Ksh. 25,000 and a commission of 7.5% for the sales in excess of Ksh. 100,000. In May 2023 she earned a total of Ksh. 48,700 in salaries and commissions. Determine the amount of sales that she made in that month. (4 Marks)

4. A transport company operates three types of trucks A, B and C. Their load capacities are 32 tonnes, 8 tonnes and 10 tonnes respectively. Calculate the least possible mass in tonnes that the company can transport with the three trucks.   (3 Marks)

5.   Amani, Makena and Zainabu planned to start a business that deals with beauty products. They contributed the capital in the ratio 3:4:7. Zainabu contributed Kshs.35,000.

    (i)   How much capital did the three raise.   (4 Marks)

    (ii)   Determine the total amount of money contributed by Amani and Makena

                                (3 Marks)

6. A nursery school in Upendo town consumes 6500 milliliters of milk every day. How much milk in Litres did they consume in the month of September?   (4 Marks)

7. Amina sold a car to Judith and made a profit of 20%. After two years Judith sold the car to Boni at Kshs.324, 000, making a loss of 10%. Determine the price at which Amina bought the car.   (5 Marks)

8. A construction blueprint uses a scale of 1:100. If the length of a wall on the blueprint is 8 centimeters. Find the actual length of the wall in metres.   (3 Marks)

9. Sarah had 8 units of competency during her first term in college. She scored the following Marks in each unit, 56, 70, 63, 84, 90, 77, 70 and 81. Find the: -

    (i) Median mark   (2 Marks)

    (ii) Mean mark   (2 Marks)

10. Simplify the expression   (3 Marks)

$$\frac{a^2-b^2}{a^2+ab-a-b}$$

SECTION B (60 MARKS)

*Answer any **THREE** questions in this section.*

11.

a) Zawadi is a mother of three children namely John, James and Maria. She divided her monthly income among her children in the ratio 2: 3: 5 respectively. If Maria got Ksh. 50,000. Find:

    (i)   Zawadi's monthly income. (4 Marks)

    (ii)   Amount of money received by John and James. (4 Marks)

    (iii)   How much did John receive more than James? (2 Marks)

(b) The mass (M) of a cylinder varies jointly as the square of the radius (r) and inversely as the square root of the height (h). If the radius is reduced by 25% and the height increased by 21%, calculate the percentage change in the mass of the cylinder.

(5 Marks)

(c) An irregular polygon has *n* sides. Its interior angles are such that two of them are right angles while the exterior of each of the remaining angles is 30. Find the value of *n* and hence the sum of the interior angles of the polygon. (5 Marks)

12.

(a) Figure 1 shows a histogram that represents the Marks scored by trainees at Zeraki Institute of technology in a Numeracy skills contest. **Figure 1:**
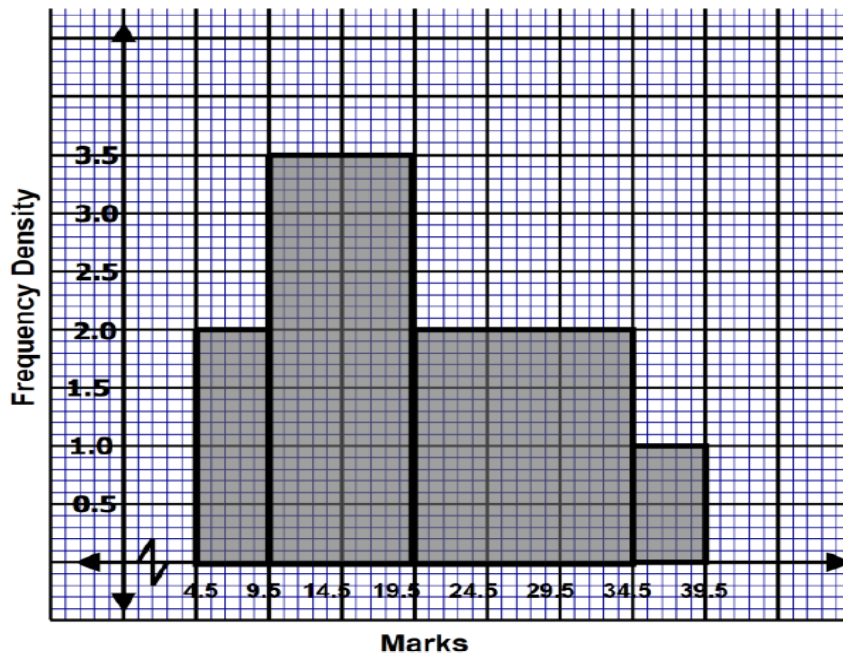
(i)   If the frequency of the first class is 10 as shown in table 1, develop a frequency distribution table from the histogram above.   (4 Marks)

Table 1

Marks	Frequency
5 – 9	10

(ii)   Find the total number of students who sat for the contest.   (1 Mark)

(iii)   From the histogram, determine the mean and the median.   (6 Marks)

b) Table 2 shows Marks obtained by trainees in a Numeracy skills class.

Table 2

Marks	55-60	60-65	65-70	70-75	75-80	80-85	85-90
No. of students	2	4	9	15	6	3	1

(i)   Using assumed mean of 72.5 calculate the actual mean.   (5 Marks)

(ii)   Determine the median mark.   (4 Marks)

13.

(a) Five towns A, B, C, D and E are such that B is on a bearing of 046^0 and a distance of 8 km form A. The bearing and distance of C from B are $S40^0E$ and 101 km respectively. Towns D and E is 5.8 km from C and on a bearing of 125^0 from A such that E is closer to A than D. Using the scale of 1: 100 000, show the relative positions of the towns A, B, C, D and E.   (8 Marks)

(b) Use the scale drawing to determine:

(i)   the distance between A and D   (2 Marks)

(ii)   the compass bearing of B from E   (1 Mark)

(c) Two police patrol vehicles leave town B and C simultaneously. The one from B travels due south while the one from C travels on a bearing of 270^0. The two vehicles meet at town T.

(i)   Use scale drawing to locate the position of T.   (2 Marks)

(ii)   How far is D from T?   (1 Mark)

(d) Pump P can fill an empty tank in 7 ½ hours while pump Q can fill the same tank in 11 ¼ hours. On a certain day, when the tank was empty, both pumps were opened for 2 ½ hours. Determine the fraction of the tank that was still empty at the end of the 2 ½ hours.   (6 Marks)

14.

a) Figure 1 shows a closed water tank comprising of a hemispherical part surmounted on top of a cylindrical part. The two parts have the same diameter of 2.8cm and the cylindrical part is 1.4m high as shown: -
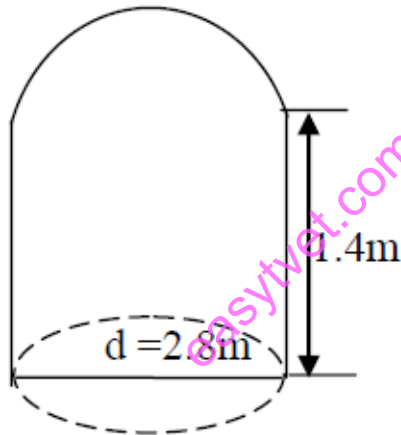

Fig 1

Determine;

(i)   Volume   (7 Marks)

(ii)   Total surface Area   (7 Marks)

b) A cylindrical tank has the capacity of 1848 m^3 and the diameter of the base is 14 m. Find the depth of the tank in cm.   (6 Marks)

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