Demonstrate Numeracy Skills Level 6

3 Hours

March/April 2023

THE KENYA NATIONAL EXAMINATIONS COUNCIL

WRITTEN ASSESSMENT

Time: 3 hours

INSTRUCTIONS TO CANDIDATE

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

*Answer **ALL** questions in sections **A** and any **THREE** in section **B** in the answer booklet provided.*

Marks for each question are indicated in brackets.

You should have a non-programmable calculator.

Do not write on this question paper.

*Answer 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. Kamau and Wafula wages are in the ratio 5: 3. If Kamau's wage increases by 12%, his new wage becomes Ksh. 5600. Find the corresponding percentage change in Wafula's wage if the sum of their new wages is Ksh. 9600. (4Marks)

2. Evaluate $\dfrac{-16 \div (-4) \times 3 - (-24)}{-12 \times 3 \div + (-6)}$ (4Marks)

3. The area of a rectangular garden is 1384.74 m^2. If its length is 44.1m, find its width (2Marks)

4. Solve for x in the equation: $\dfrac{x+2}{4} + \dfrac{3}{x-1} = 7$ (4Marks)

5. A spherical metallic shot-put ball of radius 14cm is melted and casted into a cylindrical solid rod of height 10cm. If $\dfrac{3}{22}$ of the material is lost during the process, find the:

   a) Cross sectional area of the rod; (3Marks)

   b) Curved surface area of the rod. (4Marks)

6. The weights of 9 sheep in kilograms are 13, 8, 16, 17, 19, 20, 15, 14, 11. Determine the quartile deviation of the data. (4Marks)

7. Four children shared two-thirds of a loaf of bread. Find the fraction taken by each child.

   (2 Marks)

8. A family consumes 5500 milliliters of milk every day. How much milk in Litres did they consume in the month of April? (4Marks)

9. Simplify the expression: $\dfrac{9x^2 - 25y^2}{6x^2 + 19xy + 15y^2}$ (4Marks

10. Jane sold her car to Mike and made a profit of 20%. After two years, Mike sold the car to Tedd at Sh. 324, 000, making a loss of 10%. Determine the price at which Jane bought the car.

    (5Marks)

SECTION B: (60 MARKS)

*Answer **THREE** questions in this section*

11. (a) Figure 1 shows two circles, centres A and C, radii 7cm and 24cm respectively. The two circles intersect at B and D. Length AC = 25cm.
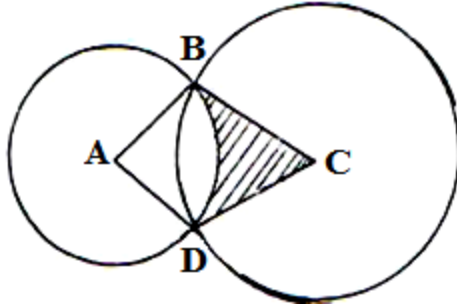

Figure 1

    i.   Show that angle ABC is a right angle;   (4Marks)

    ii.   Determine Size of obtuse angle BAD;   (3Marks)

    iii.   Area of the shaded part.   (7Marks)

(b) John can plough a piece of land in 6 days. Mary can complete the same task in 8 days while Carol can complete the task in 12 days. How many days will they take to plough the land together?   (6Marks)

12. Using a ruler and a pair of compasses only,

    i.   Construct a parallelogram ABCD, such that angle DAB = 75^0. Length AB = 6cm and BC = 4cm. From point D, drop a perpendicular to meet line AB at N;   (8Marks)

    ii.   Measure length DN;   (2Marks)

    iii.   Find the area of the parallelogram.   (2Marks)

(b) A calibration robot moves from point P to Q. It moves 6m towards the west, then 20m towards south, then turns east and moves another 12m. Finally, it moves 12m to point Q towards the north.

    i.   Using the scale 1cm represent 2m. Draw a diagram to illustrate the movement of the Robot.   (5Marks)

    ii.   Join the last point with the starting point hence measure to determine where and how far the calibration robot is from his initial position?   (3Marks)

13. (a) A boiler consists of a cylindrical section of length 8 m and diameter 6 m. On one

end a hemispherical cap of diameter 6 m is mounted while on the other end conical
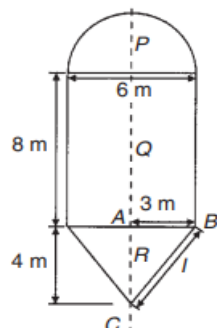
section of height 4 m and base diameter 6 m is fixed.

Figure 2

Determine the:

    (i)   Volume of the boiler;   (5Marks)

    (ii)   Total Surface area .   (5Marks)

(b) A metal plate is rectangular in shape with one side 7cm longer than the other. Calculate the

dimensions of the plate if it has an area of 228cm^2 (5Marks)

(c) A pile of coal weighing 300tonnes is divided between three oil companies A, B and C. Company A got 15%, B got 30% of the remainder and C half of what was left. Find the weight of coal each company received.   (5Marks)

14. Table 1 shows marks obtained by 100 students at Bodex Technical College in Mathematics examination. Determine the: -

Table 1

Marks	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94
Frequency	6	14	24	14	x	10	6	4

    a) value of x;   (2Marks)

    b) Modal class;   (1Marks)

    c) Median mark;   (5Marks)

    d) Mean mark;   (6Marks)

    e) Standard deviation.   (6Marks)

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