FORM 2 ENDTERM 3 EXAM MATHEMATICS

NAMEADM.....CLASS.....

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided at the top of this page.
This paper consists of two sections: Section l and Section II
Answer all questions in section l and Section II.
Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.
Marks may be given for correct working even if the answer is wrong.
Non- programmable silent electronic calculators and KNEC Mathematical tables may be used.

FOR EXAMINER'S USE ONLY

SECTION I

1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL

SECTION II

14	15	16	TOTAL		

SECTION I(40 MARKS)

ANSWER ALL QUATIONS IN THIS SECTION

1. Find the equation of a line through point (5, -1) and perpendicular to line 4x + 2y - 3 = 0. (3mks)

Two spheres have surface areas of 36cm² and 49cm². If the volume of the smaller sphere is 20.2cm³calculate the volume of the larger one. (3 mks)

3. Find the integral values of x which satisfy the following inequality.

4. Factorize the quadratic expression below: x^2+6x+9 (3mks)

5. The interior angle of a regular polygon is 150°. Find the value of n. (3 mks)

6. Simplify the following expression $\frac{ax-ay+bx-by}{bx-by}$

a+b

(3 marks)

7. Calculate the area of the shaded region given that the radius is 27cm. (4 mks)



8. Simplify:
$$\frac{\frac{1}{2}of\frac{5}{7} + (\frac{3}{5} + 2/5)}{3\frac{1}{3} - 1\frac{4}{9}}$$
(3 mks)

9. Using a pair of compasses and a ruler only construct a triangle ABC such that AB=4cm, BC = 6cm and angle $ABC = 135^{\circ}$. (3mks)

10. Calculate the volume of a sphere of radius 9cm.

(3mks)

11. Solve for **x**. If $3^{2X+3} + 1 = 28$. (3mks)

12. A straight line passing through A (-2,1) and B(2,-k). The line is perpendicular to a line 3y + 2x = 5. Determine the value of **k** and hence the equation passing through A and B. (3mks)

13. Use substitution method to solve

3y+2x=13 2y-3x=0

(3mks)

(3mks)

SECTION II (30 MARKS)

ANSWERALLQUATIONS IN THIS SECTION

14. A soda depot had 30816 sodas which were packed in crates. Each crate contained 24 sodas. The mass of an empty crate was 2kg and that of a full crate is 12 kg.a) How many crates were there? (2mks)

b) What was the total mass of empty crates? (2mks)

c) What was the total mass of sodas alone?

d) A lorry was hired to transport the crates at a cost of sh. 5 per crate of soda per trip. The lorry could only carry 107 crates per trip. How much money was spent on transporting all the crates? (3mks)

15. Triangle PQR has vertices P(3,2), Q(-1,1) and R(-3,-1).

(a) Draw PQR on the grid provided.

(b) Under a rotation the vertices of $P^1Q^1R^1$ are $P^1(1,4)$, $Q^1(2,0)$ and $R^1(4,-1)$. Find the centre and angle of rotation using points P and Q. (4mks)

(c) Triangle PQR is enlarged with scale factor 3 centre O(0,0) to give triangle $P^2Q^2R^2$. Draw triangle $P^2Q^2R^2$ and state its co-ordinates. (2mks)

(d) Triangle $P^1Q^1R^1$ undergoes reflection in line y = x to give triangle $P^3Q^3R^3$. Draw $P^3Q^3R^3$ and state its coordinates. (3mks)



(1mk)

16. A country bus left Nairobi at 10.45a.m and traveled towards Mombasa at an average speed of 60km/h. A matatu left Nairobi at 1:15p.m on the same day and traveled along the same road at an average speed of 100km/h. The distance between Nairobi and Mombasa is 500km.

(a) Determine the time of the day when the matatu overtook the bus (5mks)

(b) Both vehicles continued towards Mombasa at their original speeds. How long had the Matatu waited before the bus arrived? (5mks)