DEPARTMENT OF MATHEMATICS

S.3 MATHEMATICS PAPER 256/1

TIME: 2HOURS

INSTRUCTIONS

- Attempt all numbers for all sections

SECTION A

1. Solve the equation $2x^2 + x - 1 = 0$

2. Given that a*b = ab2 find the value of
   (i) 2 * 5 (ii) a if a * 3 = 63

3. Solve $\frac{n+1}{2} - \frac{n-3}{4} \leq \frac{n+2}{3}$

4. Given that P = $\begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix}$ $and\ Q \begin{pmatrix} 1 & 5 \\ 2 & 3 \\ 0 & 1 \end{pmatrix}$
   Find (i) PQ

5. A box contains 5 black and 3 red balls. Two balls are randomly picked one after another without replacement. Find the probability that both balls are red

6. Make P the subject of the formula S = $\frac{3x-1}{2y-p}$

7. Find the equation of a line passing though (3, 5) which is parallel to y = $\frac{1}{2}\ x + 7$

8. A point Q (3, -1) has its image at Q1 (6, 1) after an enlargement of scale factor -2. Find its centre of enlargement.

9. It $\tan\theta = \frac{-8}{15}\ for\ 0^0 \leq \theta \leq 180^0\ find\ sin\theta + Cos\theta$

10. Solve x + y = -3
    2x – y = 9

SECTION B

11. The table below shows the marks got in a maths test.

Scores	30-33	34-37	38-41	42-45	46-49	50-53	54-57
No. of students	6	3	10	12	5	3	1

Use it to calculate:-

(i) Mean

(ii) Mode

(iii) Median

12. (a) Given that $a^2 - b^2 = 16$ and $a + b = 8$ determine the values of a and b

(b) Two taxis a Nissan and Toyota transported students from Jinja to Kampala when the Nissan had made 3 journeys, the Toyota had made 4, and they had transported 116 students altogether when the Nissan had made 2 Journeys and the Toyota 4, they had transported 110 students. If each journey made was at full capacity, find the capacity for each taxi.

13. (a) Triangle ABC has vertices A (-2, 2) B (-6, 3) and C (-6, 6). After a rotation it has its image at $A^1(1, 5)$ B^1 (2, 9) and $C^1(5, 9)$. Find its:-

(i) Centre of rotation

(ii) Angle of rotation

(b) Taking the centre of rotation to be the centre of enlargement, enlarge triangle $A^1B^1C^1$ to a scale factor of -1 to give images A^{11} B^{11} C^{11} state the coordinates of $A^{11}B^{11}$and C^{11}.

(c) State the angle between $A^1B^1C^1$ and A^{11} B^{11} C^{11}.

END