**MOKASA II 2024**

**PAPER 1 121/1**

1. Without using a calculator, evaluate:

0.3 + 0.15 (4 marks)

0.6

2. A two digit number is such that, the sum of its digits is 11. When the digits are interchanged, the original number exceeds the new number by 9. Find the original number. (3 marks)

3. Three towns A, B and C are such that B is 50km on a bearing of N70°W from A and C is 70km east of B.

a) Using a scale of 1cm to represent 10km, draw a diagram to show the relative position of towns A, B and C (2 marks)

b) Determine the distance in km, of C from A (1 mark)

4. Points A(-1, -6) and B(-4, -5) are mapped into AI(5, -5) and BI(-1, -3) respectively by an enlargement. Find the coordinates of the centre of enlargement (3 marks)

5. The displacement s metres, of a moving particle after t seconds is given by s=t3-9t2+40t+8. Find the maximum velocity of the particle (3 marks)

6. John bought 15 text books and 25 exercise books for a total of ksh. 10,000. If John had bought 10 text books and 20 exercise books, he would have spent ksh. 3000 less. Taking x to represent the price of a text book and y to represent the price of an exercise book, form two equations and use matrix method to find the price of a text book and an exercise book (4 marks)

7. The figure below represents a speed-time graph for a car which covered 61250m in 1500 seconds.

Speed

(m/s)

Time (seconds

1. State the speed of the car when recording of its motion started. (1 mark)
2. Calculate the maximum speed attained by the car in km/h (4 marks)
3. Calculate the acceleration of the car in:
4. The first 500 seconds (2 marks)
5. The last 250 seconds (1 mark)
6. Calculate the average speed of the car in the first 1250 seconds (2 marks)

8. The equation of a curve is y = x3 + 2x2.

a) Find:

(i) The x-intercept of the curve; (2 marks)

(ii) The y-intercept of the curve; (1 mark)

b)i) Determine the stationary points of the curve (3 marks)

ii) For each point in b)i) above, determine whether it is a maximum or minimum.

(2 marks)

c) Sketch the curve (2 marks)