**DECEMBER ASSIGNMENT**

**MATHEMATICS FORM 3**

1. Evaluate  (3 mks)

2. Simplify  (2mk)

3. Solve the following inequality and state the integral solutions. (3 marks)



4. The position vector of P is **OP = 2i – 3j** and M is the mid – point of PQ. Given **OM = i + 4j**, Obtain the vector **PQ.**  (3 marks)

5. A straight line passes through points A (-2,6) and B (4, 2).

(a) M is the midpoint of line AB. Find the coordinate of M. (2 mks)

(b) Determine the equation of a straight line passing through M and perpendicular to AB. (2 mks)

6. An open right circular cone has radius of 5cm and a perpendicular height of 12cm. Calculate the surface area of the cone. (take=3.142). (3 mks)

7. Mary spends a total of sh. 970 on buying 3 text books and 5 pens. If she had bought 2 textbooks and 8 pens, she would have saved sh. 90. Find the cost of one textbook. (3 mks)

8. In a bookstore, books packed in cartons are arranged in rows such that there are 50 cartons in the first row, 48 cartons in the next row, 46cartons in next and so on.

(a) How many cartons will be there in 8throw. (2 mks)

(b) If there are 20 rows in total, find the total number of cartons in the books store. (2 mks)

9. Find the value of x if. 

10. The image of a point K(1,2) after translation is K1 (-1,2). What is the coordinate of the point R whose image is R1 (-3,3) after undergoing the same translation? (3 mks)

11. Security light poles have been erected along both sides of a street in Bahati town. The poles are 50m apart along the left-handside of the road while they are 80m apart along the right-hand side. At one end of the road the poles are directly opposite each other. How many poles will be erected by time the poles are directly opposite each other at end of the road? (3 mks)

12. The exterior angle of a regular polygon is equal to one third of the interior angle. Calculate the number of number of sides of the polygon. (3 mks)

13. Nakuru county government is to construct a floor of an open wholesale market whose area is 800m2. The floor is to be covered with a slab of uniform thickness of 200mm. In order to make the slab, sand, cement and ballast are to be mixed such that their masses are in the ratio 3:2:3 respectively. The mass of dry mass of dry slab of volume 1m3 is 200kg. (a) Calculate (i) The volume of the slab. (ii) The mass of the dry slab. (iii) The mass of cement to be used. (b) If one bag of cement is 50kg, find the number of bags to be purchased. (c) If a lorry carries 10 tonnes of ballast, calculate the number of lorries of ballast to be purchased. (10 mks)

14. Paul is a sales executive earning sh 20,000 and a commission of 8% for the sales in excess of 100,000. In January 2014 he earned a total of 48000 in salaries and commissions.

(a) Determine the amount of sales he made in that month. (4 mks)

(b) If the total sales in the month of February and marchincreased by 18% and then dropped by 25% respectively. Calculate.

(i) Paul`s commission in the month of February. (3 mks)

(b) His total earnings in the month of March. (3 mks)

15. Two tanks are similar in shape. The capacity of the tanks are 1,000,000 litres and 512,00litres respectively.

(a) Find the height of the smaller tank if the larger one is 300cm tall. (5 mks)

(b) Find the surface area of the tank if the smaller one has a surface area of 768cm3 (3 mks)

(c) Calculate the mass of the larger tank if the mass of the larger one is 800kg. (2 mks)

16. Trasnsline bus left Nairobi at 8.00 am and travelled to Nakuru at an average speed of 80km/h. A car leftNakuru at 3.30 am and travelled to Nairobi at an average speed of 120km/h. Given that the distance between Nairobi and Nakuru is 400km, Calculate.

(a) The time the car arrived in Nairobi. (3 mks)

(b) The time the two vehicles met. (4 mks)

(c) The distance from Nairobi to the meeting point. (2 mks)

(d) The distance of the bus from Nakuru when the car arrived in Nairobi. (2 mks)

24. The table below gives some of the values of x and y for the functions y= ½x2 +22x + 1 in the interval 0x6.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| y | 1 |  |  |  |  | 23.5 |  |

(a) Complete the values in the table above. (1 mk) (b) Use the values in the table to draw the graph of function. (2 mks)

(b) Using the graph and the mid-ordinate rule with 6 stripes, estimate the area bounded by the curve, the x-axis, the y-axis and the line x=6. (3 mks)

(d) Using integration, calculate the exact area and hence find percentage error made when mid-ordinate rule is used. Give your answer correct to 2.dp. (4 mks)