**FORM FOUR MID TERM EXAMS YEAR 2021**

**NAME………………………….………….…………………ADM NO……….CLASS……….**

**Instructions:**

**ANSWER ALL QUESTIONS.**

1. The points with co-ordinates (6,1) and (-4,9) are the ends of a diameter of a circle centre A

1. Find the co ordinates of the centre.1mk
2. Determine the equation of the circle in the form x2+y2+ax+by=C where a,b and c are constants 2mks

2). A merchant blends 350kg of tea costing Sh. 84 kg with 140kg of tea costing Sh. 105 per kg. At what price must he sell the mixture to gain 25% .3mks

3 A curve whose equation is 2y = 6-12x+9x2- 2x3 turns at points a and b.

(a) Find the coordinates of a and b 2mks

(b) ) Determine the nature of points a and b 4mks

© Sketch the curve 2mks

4). Evaluate  3mks

5). Evaluate  4mks

6. Using mid-ordinates rules, estimate the area under the curve y= ½ x2-2, using six strips between x=2 and x=8 and x-axis 3mks

7 An aircraft leaves town P(30oS, 17oE) and moves directly northwards to Q (60oN, 17oE). It then moved at an average speed of 300 knots for 8 hours westwards to town R. Determine.

a). The distance PQ in nautical miles.2mks

b) The position of town R 2mks

c) The local time at R if local time at Q is 3.12pm and the total distance moved from P to R in kilometers. (take 1nm = 1.853km 3mks

8 The displacement s metres of a moving particle after t seconds is given by s = 2t3 – 5t2 + 4t + 2

 Determine

a). The velocity of the particle when t = 2 2mks

b). The value of t when the particle is momentarily at rest 2mks

c). The displacement when the particle is momentarily at rest 3mks

d). The acceleration of the particle when t = 5. 2mks

9) Find the equation of tangent to a curve x2 = 4y+1 at the point (2, 0.75) 2MKS

10. The figure below shows curve of *y*=2*x*2 + 4*x* + 3 and a straight line intersecting the curves at A and B

7

x

y

y=2*x*2 + 4*x* + 3

-3.5

If the *x* – intercept is -3.5 and *y* – intercept as 7, find:

a). The Equation of the straight line 2mks

b) The coordinates of A and B.2mks

c) The area of the shaded region 4mks.