**DAV PUBLIC SCHOOL, THERMAL COLONY, PANIPAT**

**Class - XII (Maths)**

**Sample Question Paper – 2**

**Time : 3 Hrs. MM: 100**

**General Instruction:**

**a)Question 1-4 in Section A are very short answer type questions carrying 1 mark each.**

**b)Question 5-12 in Section B are short answer type questions carrying 2 marks each.**

**c)Question 13-23 in Section C are long answer-I type questions carrying 4 marks each.**

**d)Question 24-29 in Section D are long answer-II type questions carrying 6 marks each.**

**SECTION - A**

1. If vector and are such that = 3 = and x is a unit vector

then find angles between a and b .

2. If matrix is skew symmetrix , find the value of x.

3. If a line makes angles 900 , 600 and θ with x-axis, y-axis and z-axis

respectively , find the value of θ .

4. Find the sum of intercepts cut off by the plane 2x + y – z = 5 , on the coordinate

axis .

**SECTION - B**

5. Using principal value, Evaluate

6.Solve for x : =

7. Differentiate sec2x w. r. t.

8. = + b, find the value of b and a.

9. Form the differential equation of the family of circle having radius 2 units and

centre on x-axis.

10. Find a vector of magnitude which is perpendicular to both of the vectors

= + 2 - 3 and = 3- + 2

11. Find the points on the line = = at a distance of 5 units from

the point ( 1, 3 , 3 )

12. Find the probability of throwing two sides in 6 throws of a single die.

**SECTION - C**

13. There are 5 cards numbered from 1 to 5 , one number on one card. Two cards

are drawn at random without replacement. Let X denote the sum of numbers on

two cards drawn. Find the mean.

14. A man is known to speak truth 3 out of 4 times. He throws a die and report that

it is a six. Find the probability that it is actually a six.

15. If and are two unit vectors such that + is also a unit vector , then find

the angle between and .

16. Solve the differential equation:

(-1) + 2*xy* = ; | x |= 1

OR

Solve the differential equation : 2 - 2*xy* + y2 = 0

17. Evaluate : dx

OR

Evaluate : dx

18. Find the equation of the tangent and normal to the curve

x = 1- , y= θ - at θ =

19. Discuss the differentiability of the funcation

f(x) = at x =

20. If y = + :find

OR

If y = (sinx + cosx) ; Prove that -2 + 2y = 0

21. Using properties prove that

= (1+pxyz)(x - y)(y - z)(z - x)

22. Find inverse using elementry transformation method

3. Use product to solve the system of equations

x – y + 2z = 1 ; 2y - 3z = 1 ; 3x - 2y + 4z = 2

**SECTION - D**

24. Consider f : [-9, ∞) given by

f(x) = 5+ 6x - 9 .Prove that f is invertible with (y) =

25. Show that y = log(1 + x) – , x is an increasing funcation of x,

throughout its domain.

OR

A manufacturer can sell x items at price of Rs (5 -) each.The cost price of x items is Rs ( + 500). Find the number of items he should sell to earn maximum profit.

26. Evaluate :

OR

Evaluate : , as a limit of sum

27. Find the area of that part of the circle =16 which is exterior to the

parabola y2 = 6x

28. Find the equation of the plane passing through the intersection of the planes

. (+3) – 6 = 0 and . (3- - 4) = 0, whose perpendicular distance from

origin is unity.

OR

Show that the lines and are coplanar. Also

Find the equation of plane containing lines.

29. Minimize Z = 12000x + 15000y subject to the constraints

x ≥ 0 , y ≥ 0

50x + 40y ≥ 6400

5x + 2y ≥ 400

3x + 4y ≥ 480

Answer Key

2. 0
3. θ = 900(acute angle)
4. Sum of intercepts =
6. 2secx tanx (1+)
7. a = - b R
8. (yy1)2 + y2=4
9. - 11 -7)
10. −2 , -1, 3) and (4, 3, 7)
11. 3 .
12. Mean = 6
13. θ =
14. (x2-1) y = log +c

Or = log|x| + c

1. + log| (x - ) + |+ c

x - 2log|x - 2| + 2 log|x -1|+ c

1. 4x + 4( - 1)y – ( -1) π=0
2. Not differentiable at x = 1/2
3. +

22)

23) x = 0 , y = 5 , z = 3

25) Or x = 240 number of items to earn max. profit

26)

Or 34 + e(- 1)

27) (8π -) sq. units

28) .(2+ - 2) – 3 = 0 , .( - 2- 2) + 3 = 0

Or

17x – 47y – 24 + 172 = 0