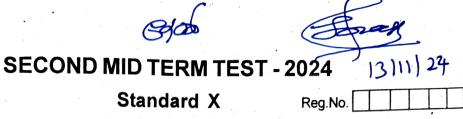
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MATHEMATICS

Standard X

Tin	ïme : 1.30 hrs Part - I	Marks : 50
Ι.		7x1=7
1.		
	a) 3 b) 4 c) 2 d) 5	
2.	, , , , , , , , , , , , , , , , , , , ,	
	a) unit matrix b) diagonal matrix	
	c) column matrix	
3.		
	a) one b) infinite c) two d) zero	
4.		A and PB.
	If $\angle APB = 70^{\circ}$ then the value of $\angle AOB$ is	
	a) 110° b) 100° c) 120° d) 130°	
5.		the angle
	of elevation of the sun has measure	
	a) 45° b) 30° c) 90° d) 60°	
6.	. The height of a right circular cone whose radius is 5 cm and slant height is	13 cm will
	be	
	a) 12 cm b) 10 cm c) 13 cm d) 5 cm	
7.	The total surface area of a hemi-sphere is how much times the square of	its radius?
	a) π b) 4π c) 3π d) 2π	
	Part - II	1 - 1 - E.
11.	Answer any 5 questions. (Q.No.14 is compulsory)	5 x 2 = 10
	[8 9 <u>4</u> 3]	
	$\begin{vmatrix} 1 & \sqrt{3} & 5 \end{vmatrix}$	
	$A = \begin{bmatrix} -1 & \sqrt{7} & -2 & 5 \end{bmatrix}$	
8 .	In the matrix $\begin{bmatrix} 1 & 4 & \overline{3} & 0 \end{bmatrix}$	
	In the matrix $A = \begin{bmatrix} 8 & 9 & 4 & 3 \\ -1 & \sqrt{7} & \frac{\sqrt{3}}{2} & 5 \\ 1 & 4 & 3 & 0 \\ 6 & 8 & -11 & 1 \end{bmatrix}$	
	write i) The number of elements ii) The order of the matrix	
	iii) Write the elements a_{22} , a_{23} , a_{24} , a_{34} , a_{43} , a_{44} .	
9.	If $A = \begin{vmatrix} \sqrt{7} & -3 \\ -\sqrt{5} & 2 \\ \sqrt{3} & -5 \end{vmatrix}$, then find the transpose of $-A$.	
	$\begin{bmatrix} \sqrt{3} & -5 \end{bmatrix}$	

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X Maths

5 X 5 = 25

10. If $A = \begin{bmatrix} 2 & 5 \\ 4 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -3 \\ 2 & 5 \end{bmatrix}$, find AB, BA and verify AB = BA?

- 11. A kite is flying at a height of 75 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60°. Find the length of the string, assuming that there is no slack in the string.
- 12. From the top of a rock $50\sqrt{3}$ m high, the angle of depression of a car on the ground is observed to be 30° . Find the distance of the car from the rock.
- 13. The curved surface area of a right circular cylinder of height 14 cm is 88 cm². Find the diameter of the cylinder.
- 14. Find the length of the tangent drawn from a point whose distance from the centre of a circle is 5 cm and radius of the circle is 3 cm.

Part - III

III. Answer any 5 questions. (Q.No.21 is compulsory)

15. If
$$A = \begin{bmatrix} 1 & 1 \\ -1 & 3 \end{bmatrix}$$
, $B = \begin{bmatrix} 1 & 2 \\ -4 & 2 \end{bmatrix}$, $C = \begin{bmatrix} -7 & 6 \\ 3 & 2 \end{bmatrix}$, verify that $A(B + C) = AB + AC$.
16. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, show that $A^2 - (a+d)A = (bc - ad)I_2$

- 17. State and Prove Pythagoras Theorem.
- 18. P and Q are the mid-points of the sides CA and CB respectively of a $\triangle ABC$, right angled at C. Prove that $4(AQ^2 + BP^2) = 5AB^2$
- 19. Two ships are sailing in the sea on either sides of a lighthouse. The angle of elevation of the top of the lighthouse as observed from the ships are 30° and 45° respectively. If the lighthouse is 200 m high, find the distance between the two ships. $(\sqrt{3} = 1.732)$
- 20. A container open at the top is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends are 8 cm and 20 cm respectively. Find the cost of milk which can completely fill a container at the rate of ₹40 per litre.

21. If
$$A = \begin{bmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{bmatrix}$$
, $B = \begin{bmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{bmatrix}$, verify that $(AB)^{T} = B^{T}A^{T}$

Part - IV

IV. Answer any one.

 $1 \times 8 = 8$

- 22. a) Draw the graph of $y = x^2 + 3x 4$ and hence use it to solve $x^2 + 3x 4 = 0$ (OR)
 - b) Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

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