www.Padasalai.Net www.Trb Tnpsc.Com

SMS

SECOND MID TERM TEST - 2024

10 - Std

MATHS

Time : 1.30 Hrs. Marks : 50

I Answer all the questions. **8 x 1 = 8**

Choose the correct answer from the given four alternatives.

1. The number of points of intersection of the quadratic polynomial $x^2+ 4x + 4$ with the x axis is
   a) 0 b) 1 c) 0 (or) 1 d) 2
2. Transpose of a column matrix is
   a) unit matrix b) diagonal matrix c) column matrix d) row matrix
3. A tangent is perpendicular to the radius at the
   a) centre b) point to contact c) infinity d) chord
4. The two tangent from an external points P to a circle with centre at O are PA and PB. If $\angle APB = 70^\circ$ then the value of $\angle AOB$ is
   a) 110° b) 100° c) 120° d) 130°
5. If the ratio of the height of a tower and the length of its shadow is $\sqrt{3}:1$, then 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 5cm and slant height is 13cm will be
   a) 12 cm b) 10 cm c) 13 cm d) 5 cm
7. The curved surface area of a right circular cone of height 15cm and base diameter 16cm is
   a) 60π cm^2 b) 68π cm^2 c) 120π cm^2 d) 136π cm^2
8. If the radius of the base of a cone is tripled and the height is doubled then the volume is
   a) made 6 times b) made 18 times c) made 12 times d) unchanged

II Answer any 6 questions. Question No. 16 is compulsory. **6 x 2 = 12**

9. If $A = \begin{pmatrix} \sqrt{7} & -3 \\ -\sqrt{5} & 2 \\ \sqrt{3} & -5 \end{pmatrix}$ then find the transpose of - A.

10. A man goes 18cm due east and then 24m due north. Find the distance of his current position from the starting point?

Scanned with OKEN Scanner
Kindly Send Me Your Key Answer to Our email id - Padasalai.net@gmail.com

www.Padasalai.Net www.Trb Tnpsc.Com

11. If radii of two concentric circles are 4cm and 5cm then find the length of the chord of one circle which is a tangent to the circle.
12. A kite is flying at a height of 75m above the ground. The string attached to the kite is temporarily tired 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.
13. Find the angle of elevation of the top of a tower from a point on the ground. Which is 30m away from the foot of a tower of height $10\sqrt{3}$ m.
14. If the ratio of radii of two spheres is 4 : 7, find the ratio of their volumes.
15. Find the diameter of a sphere whose surface area is $154m^2$.
16. Construct a 3 X 3 matrix whose elements are $a_{ij} = 2i-3j$.

III Answer any 4 question. Question No. 23 is compulsory. 4 X 5 = 20

17. Let $A=\begin{pmatrix}1 & 2\\ 1 & 3\end{pmatrix}$, $B=\begin{pmatrix}4 & 0\\ 1 & 5\end{pmatrix}$, $C=\begin{pmatrix}2 & 0\\ 1 & 2\end{pmatrix}$ show that, (A-B)C = AC - BC.
18. If $A=\begin{pmatrix}5 & 2 & 9\\ 1 & 2 & 8\end{pmatrix}$, $B=\begin{pmatrix}1 & 7\\ 1 & 2\\ 5 & -1\end{pmatrix}$ verify that $(AB)^T = B^T A^T$.
19. The hypotenuse of a right triangle is 6m more than twice of the shortest side. If the third side is 2m less than the hypotenuse, find the sides of the triangle.
20. Show that in a triangle, the medians are concurrent.
21. From a point on the ground, the angles of elevation of the bottom and top of a tower fixed at the top of a 30m height building are 45° and 60° respectively. Find the height of the tower. ($\sqrt{3}$ =1.732)
22. A solid iron cylinder has total surface area of 1848 sq.cm. Its curved surface area is five - sixth of its total surface area. Find the radius and height of the iron cylinder.
23. The volume of a cone is $1005\frac{5}{7}$ cu.cm. The area of its base is $201\frac{1}{7}$ sq.cm. Find the slant height of the cone.

IV Answer all the questions. 2 X 5 = 10

24. a) Draw a circle of radius 4.5cm. Take a point on the circle. Draw the tangent at that point using the alternate segment theorem. ***(OR)***
    b) Take a point which is 11cm away from the centre of a circle of radius 4cm and draw the two tangents to the circle from that point.
25. a) Discuss the nature of solutions of $x^2+x-12=0$. ***(OR)***
    b) Discuss the nature of solution of $x^2-4x+4=0$.

Scanned with OKEN Scanner
Kindly Send Me Your Key Answer to Our email id - Padasalai.net@gmail.com