

Standard - 10MATHMATICS

Time:

Part - A

Marks: 50

I. Choose the best option.**7x1=7**

1. For the given matrix $A = \begin{bmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{bmatrix}$ the order of the matrix A^T is
- a) 2×3 b) 3×2 c) 3×4 d) 4×3
2. A tangent is perpendicular to the radius at the
- a) centre b) point of contact
c) infinity d) chord
3. How many tangents can be drawn to the circle from an exterior point?
- a) one b) two c) Infinite d) zero.
4. The electric pole Substends an angle of 30° at a point on the same level as its foot. At a second point b metres above the first, the depression of the foot of the pole is 60° . The height of the pole (in metres) is equal to
- a) $\sqrt{3b}$ b) $\frac{b}{3}$ c) $\frac{b}{2}$ d) $\frac{b}{\sqrt{3}}$
5. The angle of Elevation of cloud from a point h metres above a lake is β . The angle of depression of its reflection in the lake is 45° The height of location of the cloud from the lake is
- a) $\frac{h(1+\tan\beta)}{1-\tan\beta}$ b) $\frac{h(1-\tan\beta)}{1+\tan\beta}$
c) $h \tan(45^\circ - \beta)$ d) None of these
6. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is
- a) $60\pi \text{ cm}^2$ b) $68\pi \text{ cm}^2$
c) $120\pi \text{ cm}^2$ d) $136\pi \text{ cm}^2$
7. The total surface area of cylinder whose radius is $\frac{1}{3}$ of its height is
- a) $\frac{9\pi h^2}{8}$ sq. units. b) $24\pi h^2$ sq. units.
c) $\frac{8\pi h^2}{9}$ sq. units. d) $\frac{56\pi h^2}{9}$ sq. units.

Part - B**II. Answer any 5 of the following questions:****5x2=10**

1. $A = \begin{bmatrix} 5 & 2 & 2 \\ -\sqrt{17} & 0.7 & \frac{5}{2} \\ 8 & 3 & 1 \end{bmatrix}$ then Verity $(A^T)^T = A$.
2. A man goes 18m due east and then 24m due north. Find the distance of his current position from the starting point?
3. state Ceva's Theorem

- A kite is flying at a height of 75m 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.
- From the top of a rock 50 V3 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.
- The radus and height of a cylinder are in the ratio 5:7 and Hs curved surface area is 5500 sq.cm find its radius and height.
- The Volume of a solid right circular cone is 11088 cm^3 . If its height is 24 cm then find the radius of the cone.

Part - C

II. Answer any 5 of the following questions:

5x5=25

- Find x and y if $x+y = \begin{bmatrix} 7 & 0 \\ 3 & 5 \end{bmatrix}$ and $x-y = \begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$
- If $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & -1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 \\ -1 & 4 \\ 0 & 2 \end{bmatrix}$ show that (AB).
- state and prove Baudhayana theorem.
- 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 200m high, find the distance between the two ships
- The angle of elevation of the top of a cell phone tower from the foot of a high apartment is 60° and the angle of depression of the foot of the tower from the top of the apartment is 30° If the height of the apartment is 50 m, find the height of the cell phone tower. According to radiations control norms, the minimum height of a cell phone tower should be 120 m. state If the height of the above mentioned cell phone tower meets the radiation norms
- An Industrial metallic bucket is in the shape of the frustram of a right circular cone whose top and bottom diameters are 10m and 4m and whose height is 4m. Find the curved and total surface area of the bucket.
- 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 its respectively. find the cost of milk which can completely fill a container at the rate of 40 per litre.

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Answer any one of the following question:

1x8=8

- Draw a Circle of diameter 6cm from a point p, which is 8cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

(OR)

- Draw the graph $y = (x-1)(x+3)$ and hence solve $x^2-x-6=0$