Strive for Perfection

# ANGEL'S PUBLIC SCHOOL

## SAMPLE PAPER

**PERIODIC TEST – II SESSION 2025 – 26**

**CLASS – X**

**TIME : 1:30 HRS** **SUBJECT – MATHEMATICS** **M.M:40**

**General Instructions:**

**(a) Section A comprises 5 MCQ questions of 1 mark each**
**(b) Section B comprises 4 questions of 2 marks each.**
**(c) Section C comprises 4 questions of 3 marks each.**
**(d) Section D comprises 2 questions of 5 marks each.**
**(e) Section E comprises 1 case based question of 5 marks.**

### SECTION – A

**1.** $5\tan^2 A - 5\sec^2 A + 1$ is equal to:
(a) 6 (6) – 5 (c) 1 (d) – 4

**2.** If $y\sin 45° \cos 45° = \tan^2 45° - \cos^2 30°$, then y = …
(a) –1/2 (b) ½ (c) –2 (d) 2

**3.** The maximum number of parallel tangents that a circle can have are ___.
(a) 2 (b) 3 (c) Infinite (d) Zero

**4.** Which of the following statements is not true?
(a) A number of secants can be drawn at any point on the circle.
(b) Only one tangent can be drawn at any point on a circle.
(c) A chord is a line segment joining two points on the circle
(d) From a point inside a circle only two tangents can be drawn.

**5.** If $\theta = 30^o$ then the value of $3\tan^2 \theta$ is :
(a) 1 (b) $1/\sqrt{3}$ (c) $3/\sqrt{3}$ (d) Not defined

### SECTION – B

**6.** Given 15 cot A = 8, find sin A and sec A.

**7.** The following data gives information on the observed lifetimes (in hours) of 225 electrical components:

| Life times (in hours) | Frequency |
|---|---|
| 0 – 20 | 10 |
| 20 – 40 | 35 |
| 40 – 60 | 52 |
| 60 – 80 | 61 |
| 80 – 100 | 38 |
| 100 – 120 | 29 |

Determine the modal lifetimes of the given data.

**8.** Prove the following identity, where the angles involved are acute angles for which the expression is defined. $(\text{cosec}\theta - \cot\theta)^2 = \frac{1 - \cos\theta}{1+\cos\theta}$

**9.** Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

## SECTION – C

**10.** If $\cos\theta + \sin\theta = 1$, then prove that $\cos\theta - \sin\theta = \pm 1$

**11.** The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.

**12.** Breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.

**13.** Evaluate:

$2\sin^2 60^\circ - \tan^2 30^\circ / \sec^2 45^\circ$

## SECTION – D

**14.** From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower.

**15.** Find the mean and median of the following data:

| Class | 85-90 | 90-95 | 95-100 | 100-105 | 105-110 | 110-115 |
|---|---|---|---|---|---|---|
| frequency | 15 | 22 | 20 | 18 | 20 | 25 |

**OR**

The monthly expenditure on milk in 200 families is given below.

| Monthly Expenditure (in Rs.) | 1000-1500 | 1500-2000 | 2000-2500 | 2500-3000 | 3000-3500 | 3500-4000 | 4000-4500 | 4500-5000 |
|---|---|---|---|---|---|---|---|---|
| Number of families | 24 | 40 | 33 | x | 30 | 22 | 16 | 7 |

Find the value of x and also find the mean expenditure.

## SECTION – E

**16.** An electrician wanted to repair a street lamp at a height of 15 feet. He placed his ladder such that its foot is 8 feet from the foot of the lamp post, as shown in the figure below: Based on the given information, answer the following questions:

**(a)** The value of cos R is:

(i) 8/15 (ii) 8/17 (iii) 15/8 (iv) 15/17

**(b)** The value of cosec P is:

(i) 8/17 (ii) 15/17 (iii) 17/8 (iv) 17/15

**(c)** The value of is:

$$\frac{\sin R - \cos P}{\sin R + \cos P}$$

(i) 17/30 (ii) 30/17 (iii) 0 (iv) 1

(d) The value of cot P is:

(i) 15/17 (ii) 17/15 (iii) 8/15 (iv) 15/8

(e) The value of is:

$$\tan R + \frac{3}{\sec P} - 1$$

(i) 253/136 (ii) 357/136 (iii) 479/136 (iv) 1