

CLASS TEST
CLASS X
SUB: MATHEMATICS
CHAPTER: INTRODUCTION TO TRIGONOMETRY

TIME: 35 Minutes

MAX. MARKS: 15

SECTION – A (Multiple Choice Questions)

(1 × 3 = 3)

1. An angle measures 50 grades in the centesimal system. Its measure in the circular system (radians) is:

- (a) $\pi/4$ (b) $\pi/3$ (c) $\pi/2$ (d) $\pi/6$

2. If $7 \sin^2 \theta + 3 \cos^2 \theta = 4$ ($0^\circ \leq \theta \leq 90^\circ$), then $\tan \theta$ equals:

- (a) $\sqrt{3}$ (b) $1/\sqrt{3}$ (c) 1 (d) 0

3. If $\sin \theta + \operatorname{cosec} \theta = 2$, then $\sin^4 \theta + \operatorname{cosec}^4 \theta$ equals:

- (a) 16 (b) 4 (c) 8 (d) 2

SECTION – B (Assertion-Reason Based Questions)

(1 × 2 = 2)

4. Assertion (A): If $\tan \theta = \sqrt{3}$, then $\sin \theta = \sqrt{3}/2$.

Reason (R) : In a right triangle, $\tan \theta = (\text{opposite side})/(\text{adjacent side})$ and
 $\sin \theta = (\text{opposite side})/(\text{hypotenuse})$.

5. Assertion (A): If $\cos^2 A + \cos^4 A = 1$, then $\sin^2 A + \sin^4 A = 1$

Reason (R) : $\sin^2 A + \cos^2 A = 1$

SECTION – C (Very Short Answer Question)

(2 marks)

6. Evaluate:
$$\frac{\tan \frac{\pi}{3} \sin 60^\circ}{1 - \cos^2 30^\circ} + \frac{\cot \frac{\pi}{4} + \sec \frac{\pi}{4}}{\operatorname{cosec} 30^\circ - \sin \frac{\pi}{2}}$$

SECTION – D (Short Answer Question)

(3 marks)

7. If $\sin \theta + \cos \theta = \sqrt{3}$, prove that $\tan \theta + \cot \theta = 1$.

SECTION – E (High Order Thinking Skills Question)

(5 marks)

8. If $k \tan \theta = \tan k\theta$, then prove that

$$\frac{\sin^2 k\theta}{\sin^2 \theta} = \frac{k^2}{(k^2 - 1) \sin^2 \theta + 1}$$