



RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade : X
marks

Marks: 40

Chapter: Trigonometry
minutes

SET-1

Time: 90

SECTION A

(This section comprises of Multiple-choice questions (MCQ) of 1 mark each.)

1. Given that $\sin \theta = ab$, then $\cos \theta$ is

- (a) $\frac{b}{\sqrt{b^2 - a^2}}$ (b) b/a (c) $\frac{\sqrt{b^2 - a^2}}{b}$ (d) $\frac{a}{\sqrt{b^2 - a^2}}$

2. $(\sec A + \tan A)(1 - \sin A)$ is equal to

- (a) $\sec A$ (b) $\sin A$ (c) $\operatorname{cosec} A$ (d) $\cos A$

3. If $\sin(A - B) = \sin A \cos B - \cos A \sin B$, then the value of $\sin 15^\circ$ is

- (a) $\frac{\sqrt{3} - 1}{\sqrt{2}}$ (b) $\frac{\sqrt{2} - 1}{2\sqrt{2}}$ (c) $\frac{\sqrt{3} - 1}{2\sqrt{2}}$ (d) $\frac{1 - \sqrt{3}}{\sqrt{2}}$

4. $\frac{\sin 45^\circ}{\sec 45^\circ} + \frac{\tan 45^\circ}{\operatorname{cosec} 30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5 \sin 90^\circ}{2 \cos 0^\circ}$

- (a) $3/2\sqrt{2}$ (b) 0 (c) $1/2\sqrt{2}$ (d) $1/2$

5. The value of $\cos^2 \theta + 11 + \cot^2 \theta$ is

- (a) 0 (b) 1 (c) -1 (d) None of these

6. $\cos^4 x - \sin^2 x$ is equal to

- (a) $2 \sin^2 x - 1$ (b) $1 - 2 \cos^2 x$ (c) $\sin^2 x - \cos^2 x$ (d) $2 \cos^2 x - 1$

7. Given that, $\sin \alpha = 1/2$ and $\cos \beta = 1/2$, then the value of $\alpha + \beta$ is

- (a) 60° (b) 30° (c) 0° (d) 90°

8. $\frac{\cos 3\theta - 2 \cos 4\theta}{\sin 3\theta + 2 \cos 4\theta}$
If $\theta = 15^\circ$, then $\frac{\cos 3\theta - 2 \cos 4\theta}{\sin 3\theta + 2 \cos 4\theta}$ is equal to

- (a) $1/\sqrt{2}$ (b) $1 + \sqrt{2}/1 - \sqrt{2}$ (c) $2 + \sqrt{2}/2 - \sqrt{2}$ (d) $1 - \sqrt{2}/1 + \sqrt{2}$

9. In a right angled ΔABC , right angled at C, if $\tan A = 1$, then the value of $2 \sin A \cos A$, is

- (a) 0 (b) 1 (c) 2 (d) $1/2$

10. If $\tan^2 45^\circ - \cos^2 30^\circ = x \sin 45^\circ \cos 45^\circ$, then the value of x is

(a) $\frac{1}{2}$

(b) 1

(c) 2

(d) $\frac{1}{3}$

SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

11 If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$; $0^\circ < A + B < 90^\circ$; $A > B$, find A and B.

12 Find the value of x $2 \operatorname{cosec}^2 30^\circ + x \sin^2 60^\circ - \tan^2 30^\circ = 10$

13 If $\cos \theta = \frac{b}{\sqrt{a^2 + b^2}}$, $0 < \theta < 90^\circ$, find the value of $\sin \theta$ and $\tan \theta$.

SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

14 If $1 + \sin^2 \theta = 3 \sin \theta \cos \theta$, then prove that $\tan \theta = 1$ or $\frac{1}{2}$.

15 If $\tan \theta = \frac{7}{13}$, then find the value of $\frac{(2 + 2\sin\theta)(1 - \sin\theta)}{(1 + \cos\theta)(2 - 2\cos\theta)}$.

16 Prove that $\frac{1}{2} = 1 + \sec \theta \operatorname{cosec} \theta$.

SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

17 Prove that $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A$
Using the identity $\operatorname{cosec}^2 A - \cot^2 A = 1$.

18 Evaluate $\sin^2 63^\circ + \sin^2 27^\circ - 2 \cos^2 17^\circ + \cos^2 73^\circ + 1$.

19 If $\sec \theta = x + \frac{1}{x}$, then prove that $\sec \theta + \tan \theta = 2x$ or $\frac{1}{2x}$.