RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade   : X   **Marks: 40**
marks
Chapter: TRIGNOMETRY   **SET 2**   **Time: 90**
minutes

SECTION A

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

1. In a ΔABC, right angled at B, if base line is AB =12 and BC = 5, then the value of cos C is

    (a) 5/13   (b) 13/5   (c) 5/17   (d) 17/5

2. $\tan^2\theta \cdot \sin^2\theta$ is equal to

    (a) $\tan^2\theta - \sin^2\theta$ (b) $\tan^2\theta + \sin^2\theta$ (c) $\tan^2\theta\sin^2\theta$ (d) $\sin^2\theta \cdot \cot^2\theta$

3. $2 \cos^2 30° + \sec^2 30° + 2 \cos0° + 3 \sin 90° - \tan^2 60°$ is
    (a) 6/29   (b) 4/25   (c) 29/6   (d) 3/26

4. If $\tan \theta = 12/13$, then the value of $(2\sin\theta\cos\theta)/(\cos^2\theta-\sin^2\theta)$ is
    (a) 312/25   (b) 25/312   (c) 312/15   (d) 15/312

5. $\sin^6\theta + \cos^6\theta$ is equal to
    (a) $3\sin^2\theta\cos^2\theta$ (b) $(\sin^3\theta + \cos^3\theta)^2$ (c) $\dfrac{3\sin^3\theta\cos^3\theta}{\text{cosec}\theta\sec\theta}$ (d) $1 - 3\sin^2\theta\cos^2\theta$

6. If $\sin \theta + \text{cosec } \theta = 2$, then $\sin^2 \theta + \text{cosec}^2 \theta$ is equal to
    (A) 1   (B) 4   (C) 2   (D) None of these

7. The value of $\tan 1° \tan 2° \tan 3° ... \tan 89°$ is
    (A) 0   (B) 1   (C) 1/ 2   (D) Not defined

8. The value of $\tan 75° - \cot 75°$ is equal to
    (A) $2\sqrt{3}$ (B) $2 + \sqrt{3}$ (C) $2 - \sqrt{3}$ (D) 1

9. The value of $\tan 3A - \tan 2A - \tan A$ is equal to
    (A) tan 3A tan 2A tan A   (B) – tan 3A tan 2A tan A   (C) tan A tan 2A – tan 2A tan 3A – tan 3A tan A   (D) None of these

10. The value of $\sin (45° + \theta) - \cos (45° - \theta)$ is

    (A) $2 \cos\theta$ (B) $2 \sin\theta$ (C) 1   (D) 0

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

11. $(\cosec A - \sin A)(\sec A - \cos A) = \dfrac{1}{\tan A + \cot A}$

12. If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, then prove that $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$.

13. If $\sqrt{3}\tan 2\theta - 3 = 0$, then find the value of $\cos\theta$.

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

14. Prove that $(\tan^2 A - \tan^2 B) = (\sin^2 A - \sin^2 B)/(\cos^2 A\cos^2 B) = (\cos^2 B - \cos^2 A)/(\cos^2 B\cos^2 A)$

15. If $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$, then prove that find the $\cos\theta + \sin\theta = \sqrt{}\cos\theta$.

16. Prove the trigonometric identity $\sqrt{\dfrac{\csc A + 1}{\csc A - 1}} + \sqrt{\dfrac{\csc A - 1}{\csc A + 1}} = 2\sec A$

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

17. If $\tan A = n\tan B$ and $\sin A = m\sin B$, then prove that $\cos^2 A = \dfrac{m^2 - 1}{n^2 - 1}$

18. Prove that

$$\frac{(1 + \cot A + \tan A)(\sin A - \cos A)}{(\sec^3 A - \cosec^3 A)} = \sin^2 A \cos^2 A$$

19. If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, then show that $(m^2 - n^2)^2 = 16\,mn$ or $(m^2 - n^2) = 4\sqrt{mn}$