

Topics : Trigonometric Ratio & Identities, Sequence & Series

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1,2,3,4	(3 marks, 3 min.)	[12, 12]
Multiple choice objective (no negative marking) Q.5,6	(5 marks, 4 min.)	[10, 8]
Subjective Questions (no negative marking) Q.7	(4 marks, 5 min.)	[4, 5]

- If $\sin \theta + \cos \theta = \frac{1}{5}$ and $0 < \theta < \pi$, then $\tan \theta$ is
 (A) $-\frac{4}{3}$ (B) $-\frac{3}{4}$ (C) $\frac{3}{4}$ (D) $\frac{4}{3}$
- If $A + B + C = 0$, then the value of $\sin^2 A + \cos C (\cos A \cos B - \cos C) + \cos B (\cos A \cos C - \cos B)$ is equal to :
 (A) -1 (B) 0 (C) 1 (D) none of these
- If the roots of the equation $x^3 - px^2 - r = 0$ are $\tan \alpha$, $\tan \beta$, $\tan \gamma$, then the value of $\sec^2 \alpha \cdot \sec^2 \beta \cdot \sec^2 \gamma$ is
 (A) $(p + r)^2 + 1$ (B) $(p - r)^2 + 1$ (C) $p^2 - r^2 - 2pr + 1$ (D) $(p - r)^2 - 1$
- If the sum of first three terms of a G.P. is to the sum of first six terms as $125 : 152$, then the common ratio of the G.P. is
 (A) $\frac{3}{5}$ (B) $\frac{5}{3}$ (C) $\frac{2}{5}$ (D) $\frac{5}{2}$
- If $\sin \theta + \sin \phi = a$ and $\cos \theta + \cos \phi = b$, then
 (A) $\cos \left(\frac{\theta - \phi}{2} \right) = \pm \frac{1}{2} \sqrt{a^2 + b^2}$ (B) $\cos \left(\frac{\theta - \phi}{2} \right) = \pm \sqrt{a^2 - b^2}$
 (C) $\tan \left(\frac{\theta - \phi}{2} \right) = \pm \sqrt{\frac{4 - a^2 - b^2}{a^2 + b^2}}$ (D) $\cos (\theta - \phi) = \frac{a^2 + b^2 - 2}{2}$
- If $\sin(x - y) = \cos(x + y) = 1/2$ then the values of x & y lying between 0 and π are given by:
 (A) $x = \pi/4$, $y = 3\pi/4$ (B) $x = \pi/4$, $y = \pi/12$
 (C) $x = 5\pi/4$, $y = 5\pi/12$ (D) $x = 11\pi/12$, $y = 3\pi/4$
- What are the most general values of θ which satisfy the equations,
 (a) $\sin \theta = \frac{1}{\sqrt{2}}$ (b) $\tan (x - 1) = \sqrt{3}$ (c) $\tan \theta = -1$
 (d) $\operatorname{cosec} \theta = \frac{2}{\sqrt{3}}$ (e) $2\cot^2 \theta = \operatorname{cosec}^2 \theta$

Answers Key

1. (A) 2. (B) 3. (B) 4. (A)

5. (A)(C)(D) 6. (B)(D)

7. (a) $n\pi + (-1)^n \frac{\pi}{4}, n \in \mathbb{I}$ (b) $n\pi + \frac{\pi}{3} + 1, n \in \mathbb{I}$

(c) $n\pi - \frac{\pi}{4}, n \in \mathbb{I}$ (d) $n\pi + (-1)^n \frac{\pi}{3}, n \in \mathbb{I}$

(e) $n\pi \pm \frac{\pi}{4}, n \in \mathbb{I}$