MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 34

Total Marks : 26

Max. Time : 25 min.

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]**

1. 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) $\frac{4}{3}$

2. 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

3. 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) $(p - r)^2 - 1$

4. 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) $\frac{5}{2}$

5. 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) $\cos(\theta-\phi) = \frac{a^2+b^2-2}{2}$

6. 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) $x = 11\pi/12$, $y = 3\pi/4$

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

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

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