

Topics : Trigonometric Ratio & Identities, Sequence & Series

Type of Questions

M.M., Min.

Multiple choice objective (no negative marking) Q.1,2

(5 marks, 4 min.)

[10, 8]

Subjective Questions (no negative marking) Q.3,4,6

(4 marks, 5 min.)

[12, 15]

Fill in the Blanks (no negative marking) Q.5

(4 marks, 4 min.)

[4, 4]

Match the Following (no negative marking) Q.7

(8 marks, 8 min.)

[8, 8]

1. If $\sec A = \frac{17}{8}$ and $\operatorname{cosec} B = \frac{5}{4}$, then $\sec(A + B)$ can have the value equal to

(A) $\frac{85}{36}$

(B) $-\frac{85}{36}$

(C) $-\frac{85}{84}$

(D) $\frac{85}{84}$

2. If S_n denotes the sum of first n terms of an arithmetic progression and a_n denotes the n^{th} term of the same A.P. given $S_n = n^2 p$; where $p, n \in \mathbb{N}$, then

(A) $a_1 = p$

(B) common difference = $2p$

(C) $S_p = p^3$

(D) $a_p = 2p^2 - p$

3. Prove that $\frac{\sin A + 2\sin 3A + \sin 5A}{\sin 3A + 2\sin 5A + \sin 7A} = \frac{\sin 3A}{\sin 5A}$

4. Prove that $2 \cos \frac{\pi}{13} \cos \frac{9\pi}{13} + \cos \frac{3\pi}{13} + \cos \frac{5\pi}{13} = 0$

5. If $\tan 25^\circ = a$, then the value of $\frac{\tan 205^\circ - \tan 115^\circ}{\tan 245^\circ + \tan 335^\circ}$ in terms of 'a' is _____.

6. Find the sum of the series $(2^2 - 1)(6^2 - 1) + (4^2 - 1)(8^2 - 1) + \dots + (100^2 - 1)(104^2 - 1)$

7. Column - I

The roots of the equation $x^3 + bx^2 + cx + d = 0$ are

(A) in A.P. if

(B) in G.P. if

(C) in H.P. if

(D) equal if

Column-II

(p) $b^3 = 27d$

(q) $2b^3 - 9bc + 27d = 0$

(r) $27d^3 = 9bcd^2 - 2c^3d$

(s) $b^3d = c^3$

Answers Key

1. (A)(B)(C)(D) 2. (A)(B)(C)(D) 5. 1

6. $\frac{1}{10} [99 \cdot 101 \cdot 103 \cdot 105 \cdot 107 + 1 \cdot 3 \cdot 5 \cdot 7]$

7. $(A) \rightarrow (q), (B) \rightarrow (s), (C) \rightarrow (r), (D) \rightarrow (p,q,r,s)$