

Topics : Trigonometric Ratio & Identities, Sequence & Series

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1,2,3,4,5	(3 marks, 3 min.)	[15, 15]
Subjective Questions (no negative marking) Q.6	(4 marks, 5 min.)	[4, 5]
Match the Following (no negative marking) Q.7	(8 marks, 8 min.)	[8, 8]

- The value of $\cos^2 73^\circ + \cos^2 47^\circ - \sin^2 43^\circ + \sin^2 107^\circ$ is equal to :
 (A) 1 (B) $\frac{1}{2}$ (C) $\frac{\sqrt{3}}{2}$ (D) none of these
- The expression $4 \cos^4 x - 2 \cos 2x - \frac{1}{2} \cos 4x$ when simplified reduces to :
 (A) $2/3$ (B) $3/2$ (C) $-2/3$ (D) $-3/2$
- If $x \in \mathbb{R}$, the numbers $2^{1+x} + 2^{1-x}$, $\frac{b}{2}$, $36^x + 36^{-x}$ form an A.P., then b must lie in the interval
 (A) $[12, \infty)$ (B) $[6, \infty)$ (C) $(-\infty, 6]$ (D) $[6, 12]$
- If $f(r) = 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{r}$ and $f(0) = 0$, then $\sum_{r=1}^n (2r+1) f(r)$
 (A) $(n+1) f(n+1) - \frac{(n^2+3n+2)}{2}$ (B) $n f(n+1) - \frac{(n^2+3n+2)}{2}$
 (C) $(n+1)^2 f(n+1) - \frac{(n^2+3n+2)}{2}$ (D) $(n+1)^2 f(n) - \frac{(n^2+3n+2)}{2}$
- Value of $\cos^4 \frac{\pi}{8} + \cos^4 \frac{3\pi}{8} + \cos^4 \frac{5\pi}{8} + \cos^4 \frac{7\pi}{8}$ is
 (A) $\frac{1}{2}$ (B) $\frac{3}{2}$ (C) 1 (D) 0
- Suppose α , β , γ and δ are the interior angles of pentagon, hexagon, decoagon and dodecogon respectively, find the values of $|\cos \alpha + \sec \beta + \cos \gamma + \operatorname{cosec} \delta|$. Assume that all polygons are regular.
- Match the column**

Column – I	Column – II
(A) If $x = \sin \theta \sin \theta $ and $y = \cos \theta \cos \theta $ and $\frac{99\pi}{2} < \theta < 50\pi$, then $y - x$ is equal to	(p) -1
(B) If $\frac{\cos(\alpha - \beta)}{\cos(\alpha + \beta)} + \frac{\cos(\gamma + \delta)}{\cos(\gamma - \delta)} = 0$, then $(\tan \alpha \cdot \tan \beta \cdot \tan \gamma \cdot \tan \delta)$ has the value equal to	(q) 0
(C) If A lies in the third quadrant and $3 \tan A - 4 = 0$, then $5 \sin 2A + 3 \sin A + 4 \cos A$ is equal to	(r) 1
(D) If $\sum_{i=1}^n \cos \theta_i = n$, then $\sum_{i=1}^n \sin \theta_i$ is equal to	(s) 2

Answers Key

1. (A) 2. (B) 3. (B) 4. (C) 5. (B) 6. $\frac{\sqrt{5}}{2}$

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