Q.1 The general solution of $\tan\left(\frac{2}{3}\theta\right) = \sqrt{3}$ is –

(A) $\frac{3n\pi}{2} + \frac{\pi}{2}$; n ∈ I **(B)** $\frac{n\pi}{2}$; $\pm\frac{\pi}{2}$ n ∈ I

(C) $n\pi \pm \frac{\pi}{2}$; n ∈ I **(D)** None of these

Q.2 If $\tan\theta + \tan 2\theta + \tan\theta \tan 2\theta = 1$ then general value of θ is –

(A) nπ; n ∈ I **(B)** $n\pi \pm \frac{\pi}{3}$; n ∈ I

(C) $\frac{n\pi}{3} + \frac{\pi}{12}$; n ∈ I **(D)** none of these

Q.3 Find the general value of θ, when $\sec\theta = \frac{2}{\sqrt{3}}$

(A) $n\pi + \frac{\pi}{6}$ **(B)** $n\pi - \frac{\pi}{6}$

(C) $2n\pi \pm \frac{\pi}{6}$ **(D)** $n\pi + (-1)^n \frac{\pi}{6}$

Q.4 Find the general value of θ, when $\cos\left(\frac{-\theta}{2}\right) = 0$

(A) (n + 1)π ; n ∈ I **(B)** nπ; n ∈ I

(C) (2n + 1)π ; n ∈ I **(D)** 2nπ; n ∈ I

Q.5 If $\tan a\theta - \tan b\theta = 0$, then the values of θ for a series in –

(A) A.P. **(B)** G.P.

(C) H.P. **(D)** None of these

Q.6 **Find the general solution of 2 sinx + tanx = 0**

(A) $n\pi$, $(3k \pm 1)\frac{2\pi}{3}$; $k \in I$

(B) $2n\pi$, $(3k + 1)\frac{2\pi}{3}$; $k \in I$

(C) $2n\pi$, $(3k \pm 1)\frac{2\pi}{3}$; $k \in I$

(D) None of these

Q.7 **The solution set of**

$(2 \cos x - 1)(3 + 2 \cos x) = 0$ in the interval $0 \leq x \leq 2\pi$ is-

(A) $\{\pi/3\}$

(B) $\{\pi/3, 5\pi/3\}$

(C) $\{\pi/3, 5\pi/3, \cos^{-1}(-3/2)\}$

(D) None of these

Q.8 **The general solution of the equation $\tan^2\theta + 2\sqrt{3}\tan\theta = 1$ is given by -**

(A) $\theta = \frac{\pi}{2}$ **(B) $\left(n + \frac{1}{2}\right)\pi$**

(C) $(6n + 1)\frac{\pi}{12}$ **(D) $\frac{n\pi}{12}$**

Q.9 **If $\cos\theta + \cos 7\theta + \cos 3\theta + \cos 5\theta = 0$,**

then θ =

(A) $\frac{n\pi}{4}$; $n \in I$ **(B) $\frac{n\pi}{2}$; $n \in I$**

(C) $\frac{n\pi}{8}$; $n \in I$; $n \neq 8k$ **(D) $\frac{n\pi}{3}$; $n \in I$**

Q.10 **The value of θ satisfying $\sin 7\theta = \sin 4\theta - \sin\theta$ and $0 < \theta < \pi/2$ are -**

(A) $\frac{\pi}{9}, \frac{\pi}{4}$ **(B) $\frac{\pi}{3}, \frac{\pi}{9}$**

(C) $\frac{\pi}{6}, \frac{\pi}{9}$ **(D) $\frac{\pi}{3}, \frac{\pi}{4}$**

Q.11 The general solutions of the equation $\sec^2 x = \sqrt{2}\ (1 - \tan^2 x)$ are given by-

(A) $n\pi + \frac{\pi}{8}$ (B) $n\pi \pm \frac{\pi}{4}$

(C) $n\pi \pm \frac{\pi}{8}$ (D) None of these

Q.12 The general solution of the equation

$7\cos^2 x + \sin x \cos x - 3 = 0$ is given by-

(A) $n\pi + \frac{\pi}{2}$ $(n \in I)$

(B) $n\pi - \frac{\pi}{4}$ $(n \in I)$

(C) $n\pi + \tan^{-1}\frac{4}{3}$ $(n \in I)$

(D) $n\pi - \frac{\pi}{4}$, $k\pi + \tan^{-1}\frac{4}{3}$ $(n, k \in I)$

Q.13 Find the general solution of x,

$\cos^2 2x + \cos^2 3x = 1$

(A) $(2k + 1)\frac{\pi}{10}$, $k \in I$

(B) $(\pi k + 1)\frac{\pi}{10}$; $k \in I$

(C) $(2k - 1)\frac{\pi}{10}$, $k \in I$

(D) Both (A) and (C)

Q.14 The set of values of x for which

$\sin x \cdot \cos^3 x > \cos x \cdot \sin^3 x$, $0 \le x \le 2\pi$, is-

(A) $(0, \pi)$ (B) $\left(0, \frac{\pi}{4}\right)$

(C) $\left(\frac{\pi}{4}, \pi\right)$ (D) None of these

Q.15 The general solution of the equation ($\sqrt{3}$ – 1) sin θ + ($\sqrt{3}$ + 1) cos θ = 2 is -

(A) $2n\pi \pm \frac{\pi}{4} + \frac{\pi}{12}$

(B) $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{12}$

(C) $2n\pi \pm \frac{\pi}{4} - \frac{\pi}{12}$

(D) $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{12}$

Q.16 If $0 \le x \le 2\pi$, $0 \le y \le 2\pi$ and

sin x + sin y = 2 then the value of x + y is-

(A) π **(B)** π/2

(C) 3π **(D)** None of these

Q.17 If $x \in \left[-\frac{5\pi}{2}, \frac{5\pi}{2}\right]$, the greatest positive solution of $1 + \sin^4 x = \cos^2 3x$ is-

(A) π **(B)** 2π

(C) 5π/2 **(D)** None of these

Q.18 If $\cos x = \sqrt{1 - \sin 2x}$, $0 < x < \pi$, then a value of x is-

(A) $\tan^{-1} 2$ **(B)** 0

(C) π **(D)** None of these

Q.19 The number of values of x in [0, 5π] satisfying the equation 3cos 2x – 10cos x + 7 = 0 are-

(A) 5 **(B)** 6 **(C)** 8 **(D)** 10

Q.20 Total number of solution of

$16^{\cos^2 x} + 16^{\sin^2 x} = 10$ in $x \in [0, 3\pi]$ is equal to-

(A) 4 **(B)** 8

(C) 12 **(D)** 16

Q.21 The solution of the equation

$\log_2(\sin x + \cos x) - \log_2(\cos x) + 1 = 0$:

(A) $\tan^{-1}\left(-\frac{1}{2}\right)$ **(B) 0**

(C) $\tan^{-1}\left(\frac{1}{2}\right)$ **(D) None of these**

Q.22 The set of solution satisfying inequality

$|\sin x| < \frac{1}{2}$ is-

(A) $\left(n\pi,\ n\pi+\frac{\pi}{6}\right)(n \in I)$

(B) $\left(2n\pi,\ 2n\pi+\frac{\pi}{6}\right)$

(C) $\left(n\pi+\frac{\pi}{6},\ n\pi+\frac{5\pi}{6}\right)$

(D) None of these

Q.23 The solution of equation

$13 - 4\cos^2 x = 12 \sin x$ is -

(A) $n\pi + (-1)^n \sin^{-1}\left(\frac{3}{2}\right)$

(B) $n\pi + (-1)^n \sin^{-1}\left(-\frac{3}{2}\right)$

(C) $n\pi$

(D) No solution

Q.24 The solution set of equation

$\cos^5 x = 1 + \sin^4 x$ is-

(A) $n\pi$ $(n \in I)$ **(B)** $2n\pi$ $(n \in I)$

(C) $4n\pi$ $(n \in I)$ **(D) None of these**

Q.25 The number of ordered pairs (x, y) satisfying $y = 2\sin x$ and $y = 5x^2 + 2x + 3$ is -

(A) 0 **(B) 1** **(C) 2** **(D) ∞**

Q.26 If $0 \le x \le 3\pi$, $0 \le y \le 3\pi$ and $\cos x \cdot \sin y = 1$ then the possible number of values of the ordered pair (x, y) is -

(A) 6 **(B) 12** **(C) 8** **(D) 15**

Q.27 The most general values of x for which

$\sin x + \cos x = \min_{a \in R} \{1, a^2 - 4a + 6\}$ are given by -

(A) $2n\pi$

(B) $2n\pi + \frac{\pi}{2}$

(C) $n\pi + (-1)^n \cdot \frac{\pi}{4} - \frac{\pi}{4}$

(D) None of these

Q.28 The number of distinct solutions of

$\sin 5\theta \cdot \cos 3\theta = \sin 9\theta \cdot \cos 7\theta$ in $[0, \pi/2]$ is-

(A) 4 **(B) 5** **(C) 8** **(D) 9**

Q.29 The values of $x \in [-2\pi, 2\pi]$ such that $\frac{\sin x + i \cos x}{1 + i}$, $i = \sqrt{-1}$, is purely imaginary, are given by -

(A) $n\pi - \frac{\pi}{4}$ **(B) $n\pi + \frac{\pi}{4}$**

(C) $n\pi$ **(D) None of these**

Q.30 The general solution of the equation

$\tan 2\theta \cdot \tan\theta = 1$ for $n \in I$ is, θ is equal to-

(A) $(2n + 1)\frac{\pi}{4}$ **(B) $(2n + 1)\frac{\pi}{6}$**

(C) $(2n + 1)\frac{\pi}{2}$ **(D) $(2n + 1)\frac{\pi}{3}$**

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	D	C	C	A	A	B	C	C	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	C	D	D	B	A	A	B	A	C	C
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	A	D	D	B	A	A	C	D	A	B