Q.1 If the starting side extends beyond the terminal side, the angle is _____
(a) 0° (b) 180° (c) 90° (d) 270°

Q.2 If rotation begins and, after completing one revolution, the starting side once again aligns with the terminal side, the resulting angle is _____.
(a) 0° (b) 180° (c) 90° (d) 360°

Q.3 1 radian is equal to.
(a) 54°48’ (b) 57°16’ (c) 180° (d) 17°46’

Q.4 What is the value of 1 degree in radian.
(a) π (b) 0.046 (c) 0.1746 (d) 0.01746

Q.5 Change 4 radians into degree.
(a) 720° (b) 240°51’53” (c) 229°10’59” (d) 233°11’48”

Q.6 If the arc angle measures 60 degrees, and the arc length is 20 cm, determine the radius of the circle from which the arc is intercepted.
(a) 18.08 cm (b) 17.07 cm (c) 19.09 cm (d) 18 cm

Q.7 If the arc length is 40 cm and the radius of the circle containing the arc is 10 cm, calculate the angle formed by the arc.
(a) 720° (b) 240°51’53” (c) 229°10’59” (d) 233°11’48”

Q.8 In a span of 40 seconds, the tip of the watch's second hand, which is 2 cm long, will cover a certain distance.
(a) 6.28 cm (b) 12.56 cm (c) 3.14 cm (d) 1.57 cm

Q.9 If two circles have arcs of equal length that create central angles of 45° and 60°, determine the ratio of their radii.
(a) 2:3 (b) 2:5 (c) 3:4 (d) 4:3

Q.10 If the minute hand travels a distance of 24 cm in 30 minutes, what is the total length covered by the minute hand?
(a) 19.1 cm (b) 38.2 cm (c) 57.3 cm (d) 45 cm

Q.11 When the sin x=0 the value of x is_____.
(a) nπ (b) $(2n+1)\frac{\pi}{2}$ (c) (n+1) π (d) $\frac{n\pi}{2}$

Q.12 When the cos x=0 the value of x is.
(a) nπ (b) $(2n+1)\frac{\pi}{2}$ (c) (n+1) π (d) $\frac{n\pi}{2}$

Q.13 If the tan x = 0 then x =?
(a) nπ (b) $(2n+1)\frac{\pi}{2}$ (c) (n+1) π (d) $\frac{n\pi}{2}$

Q.14 Find the value of $1-\sin^2 45°$.
(a) $\frac{1}{2}$ (b) 1 (c) 0 (d) $\frac{\sqrt{3}}{2}$

Q.15 $1-\cos^2 x$=_____
(a) sin x (b) cos x (c) sin 2x (d) $\sin^2 x$

Q.16 $1-\sec^2 x$=_____
(a) $\cot^2 x$ (b) $\tan^2 x$ (c) $-\tan^2 x$ (d) $-\cot^2 x$

Q.17 $1+\tan^2 x=$_____

(a) $\sec^2 x$ (b) $-\sec^2 x$ (c) $\operatorname{cosec}^2 x$ (d) $-\operatorname{cosec}^2 x$

Q.18 $\cot^2 x - \operatorname{cosec}^2 x =$ _____

(a) 1 (b) -1 (c) $\sin^2 x$ (d) $\cos^2 x$

Q.19 $\operatorname{cosec}^2 x - 1 =$ _____

(a) $\cot^2 x$ (b) $-\cot^2 x$ (c) $\tan^2 x$ (d) $-\tan^2 x$

Q.20 tan x is undefined for_____

(a) 0 (b) $\frac{n\pi}{2}$ (c) $(2n+1)\frac{\pi}{2}$ (d) $n\pi$

Q.21 sin (-45°) = _____

(a) 1 (b) -1 (c) $\frac{1}{\sqrt{2}}$ (d) $\frac{-1}{\sqrt{2}}$

Q.22 cos (-60°) = _____

(a) $\frac{-\sqrt{3}}{2}$ (b) $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{-1}{2}$

Q.23 cos(75°) =_____

(a) $\frac{(1-\sqrt{3})}{2\sqrt{2}}$ (b) $\frac{(\sqrt{3}+1)}{2\sqrt{2}}$ (c) $\frac{(\sqrt{3}-1)}{2\sqrt{2}}$ (d) $\frac{(-\sqrt{3}-1)}{2\sqrt{2}}$

Q.24 cos(15°) =_____

(a) $\frac{(1-\sqrt{3})}{2\sqrt{2}}$ (b) $\frac{(\sqrt{3}+1)}{2\sqrt{2}}$ (c) $\frac{(\sqrt{3}-1)}{2\sqrt{2}}$ (d) $\frac{(-\sqrt{3}-1)}{2\sqrt{2}}$

Q.25 sin (75°) =_____

(a) $\frac{(1-\sqrt{3})}{2\sqrt{2}}$ (b) $\frac{(\sqrt{3}+1)}{2\sqrt{2}}$ (c) $\frac{(\sqrt{3}-1)}{2\sqrt{2}}$ (d) $\frac{(-\sqrt{3}-1)}{2\sqrt{2}}$

Q.26 sin(15°) =_____

(a) $\frac{(1-\sqrt{3})}{2\sqrt{2}}$ (b) $\frac{(\sqrt{3}+1)}{2\sqrt{2}}$ (c) $\frac{(\sqrt{3}-1)}{2\sqrt{2}}$ (d) $\frac{(-\sqrt{3}-1)}{2\sqrt{2}}$

Q.27 Does cos(90° – x) equal sin x?

(a) True (b) False

Q.28 Is sin (90°+x) = cos x.

(a) True (b) False

Q.29 tan(75°) =_____

(a) $2+\sqrt{3}$ (b) $2-\sqrt{3}$ (c) $1+\sqrt{3}$ (d) $\sqrt{3}-1$

Q.30 tan(15°) =_____

(a) $2+\sqrt{3}$ (b) $2-\sqrt{3}$ (c) $1+\sqrt{3}$ (d) $\sqrt{3}-1$

Q.31 cot 75° =_____

(a) $2+\sqrt{3}$ (b) $2-\sqrt{3}$ (c) $1+\sqrt{3}$ (d) $\sqrt{3}-1$

Q.32 cot 15° =_____

(a) $2+\sqrt{3}$ (b) $2-\sqrt{3}$ (c) $1+\sqrt{3}$ (d) $\sqrt{3}-1$

Q.33 Determine cos 2x given that $\sin x = \frac{1}{2}$.

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\frac{\sqrt{3}}{2}$ (d) 1

Q.34 Calculate cos 2x when $\cos x = \frac{1}{\sqrt{2}}$.

(a) $\frac{1}{2}$ (b) 0 (c) $\frac{\sqrt{3}}{2}$ (d) 1

Q.35 Determine cos 2x when $\tan x = \frac{1}{\sqrt{3}}$.

(a) $\frac{1}{2}$ (b) 0 (c) $\frac{\sqrt{3}}{2}$ (d) 1

Q.36 The angle formed at the middle of a circle with a radius of 3 meters by an arc that is 1 meter long is the same as.

(a) 20° (b)60° (c) $\frac{1}{3}$ radian (d) 3 radian

Q.37 If $\tan\theta = \frac{-4}{3} =$ then $\sin\theta$ is equal to

(a) $\frac{-4}{5}$ but not $\frac{4}{5}$ (b) $\frac{-4}{5}$ or $\frac{4}{5}$ (c) $\frac{4}{5}$ but not $\frac{-4}{5}$ (d) $\frac{3}{5}$ or $\frac{-3}{5}$

Q.38 $\sin(\frac{\pi}{2}+\theta)\cdot\cos(\frac{3\pi}{2}+\theta)\cdot\tan(\frac{5\pi}{2}+\theta)\cdot\cot(\frac{7\pi}{2}+\theta)$ is equal to

(a) $-\sin^2\theta$ (b) $-\cos^2\theta$ (c) $\sin\theta\cdot\cos\theta$ (d) $-\sin\theta\cdot\cos\theta$

Q.39 $\sin(\frac{17\pi}{3})$ is equal to

(a) $-\frac{1}{2}$ (b) $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $-\frac{\sqrt{3}}{2}$

Q.40 If $\sin\theta = \frac{24}{25}$ and θ lies in the second quadrant, then $\sec\theta + \tan\theta =$

(a) –3 (b) –5 (c) –7 (d) –9

Q.41 Which of the following is positive number?

(a) sin1290° (b) cos570° (c) cot1200° (d) tan960°

Q.42 $\cos 45^\circ\cdot\cos 46^\circ\cdot\cos 47^\circ \ldots \cos 135^\circ =$

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.43 The maximum value of $\sin x_1 + 2\sin x_2 + 3\sin x_3$ is

(a) 5 (b) 6 (c) 7 (d) 8

Q.44 Domain of sin8x is

(a) $[-8,8]$ (b) $[-\frac{1}{8},\frac{1}{8}]$ (c) $[-1,1]$ (d) R

Q.45 Range of cos4x is

(a) [–4, 4] (b) [–1, 1] (c) All positive integer (d) $(0,\infty)$

Q.46 $\sec^2 100^\circ - \tan^2 100^\circ =$

(a) Zero (b) 1 (c) 2 (d) 3

Q.47 $\sin^2\theta + \cos^2\theta - \tan^2\theta + \sec^2\theta - \cot^2\theta + \text{cosec}^2\theta$ if $\theta \neq \frac{n\pi}{2}, n \in I$ is equal to

(a) Zero (b) 2 (c) 3 (d) 6

Q.48 If $\tan\theta = \frac{b}{a}$, then the value of $\cos 2\theta$ is

(a) $a^2 - b^2$ (b) $a^2 + b^2$ (c) $\frac{a^2-b^2}{a^2+b^2}$ (d) $\frac{a^2}{b^2}$

Q.49 If $\sin A = \frac{3}{5}$ and $\cos B = \frac{9}{41}, 0 < A < \frac{\pi}{2}$, and $-\frac{\pi}{2} < B < 0$ then $\sin(A - B)$ is equal to

(a) $\frac{84}{205}$ (b) $\frac{94}{205}$ (c) $\frac{187}{205}$ (d) $\frac{181}{205}$

Q.50 The value of $\frac{\tan 15^\circ}{2-\sec^2 15^\circ}$ is equal to

(a) $\frac{1}{2\sqrt{3}}$ (b) $\frac{\sqrt{3}}{2}$ (c) $-\frac{1}{2\sqrt{3}}$ (d) $\frac{1}{8\sqrt{3}}$

Q.51 $\sin^2 24^\circ - \sin^2 6^\circ$ is equal to

(a) $\frac{\sqrt{5}-1}{4}$ (b) $\frac{\sqrt{5}-1}{8}$ (c) $\frac{\sqrt{5}+1}{4}$ (d) $\frac{\sqrt{5}+1}{8}$

Q.52 $\frac{1-\tan^2(\frac{\pi}{4}-A)}{1+\tan^2(\frac{\pi}{4}-A)}$ is equal to

(a) sin2A (b) cos2A (c) tan2A (d) cot2A

Q.53 $\cos^2\frac{\pi}{8}+\cos^2\frac{3\pi}{8}+\cos^2\frac{5\pi}{8}+\cos^2\frac{7\pi}{8}$ is equal to

(a) 2 (b) 3 (c) 1 (d) 4

Q.54 $\cot\frac{\theta}{2}-\tan\frac{\theta}{2}$ is equal to

(a) 2tanθ (b) 2cosθ (c) 2secθ (d) 2cotθ

Q.55 The angle formed at the middle of a circle with a radius of 12 meters by an arc that is 4 meters long is the same as.

(a) 20° (b) 60° (c) $\frac{1}{3}$ radian (d) 3 radian

Q.56 A round wire, originally in a circle with a radius of 7 cm, is cut and bent to form an arc in a circle with a radius of 12 cm. The angle created by this arc at the center is...

(a) 50° (b) 210° (c) 100° (d) 60°

Q.57 The circle's radius, where an arc measuring 15 cm creates an angle of $\frac{3}{4}$ radian at the center, is...

(a) 10 cm (b) 20 cm (c) $11\frac{1}{4}$cm (d) $22\frac{1}{2}$ cm

Q.58 The incorrect statement is

(a) $\sin\theta = -\frac{1}{5}$ (b) $\cos\theta = 1$ (c) $\sec\theta = \frac{1}{2}$ (d) $\tan\theta = 20$

Q.59 Which of the following relations is possible

(a) $\sin\theta = \frac{5}{3}$ (b) $\tan\theta = 1002$ (c) $\cos\theta = \frac{1+p^2}{1-p^2}$ $(p \neq \pm 1)$ (d) $\sec\theta = \frac{1}{2}$

Q.60 tan1° tan2° tan3° tan 4° .....tan89° =

(a) 1 (b) 0 (c) ∞ (d) $\frac{1}{2}$

Q.61 If $\sin\theta + \text{cosec}\theta = 2$, the value of $\sin^{10}\theta + \text{cosec}^{10}\theta$ is

(a) 10 (b) 2^{10} (c) 2^9 (d) 2

Q.62 If $\sin\theta + \cos\theta = 1$, then $\sin\theta\cos\theta =$

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.63 If $\sin\theta = \frac{24}{25}$ and θ lies in the second quadrant, then cosθ is equal t

(a) $\frac{24}{7}$ (b) $-\frac{24}{25}$ (c) $-\frac{7}{25}$ (d) $\frac{7}{25}$

Q.64 $\frac{1+\sin A-\cos A}{1+\sin A+\cos A} =$

(a) $\sin\frac{A}{2}$ (b) $\cos\frac{A}{2}$ (c) $\tan\frac{A}{2}$ (d) $\cot\frac{A}{2}$

Q.65 interior angle of the regular dodecagon is

(a) $\frac{3\pi}{5}$ (b) $\frac{5\pi}{7}$ (c) $\frac{3\pi}{4}$ (d) $\frac{5\pi}{6}$

Q.66 The angle formed at the center of a circle with a radius of 5 meters by an arc measuring 3π meters is equal to...

(a) 30º (b) $\frac{5\pi}{3}$ radian (c) $\frac{3\pi}{5}$ radian (d) 3π radian

Q.67 $\sin^2 17.5° + \sin^2 72.5°$ is equal to

(a) $\cos^2 90°$ (b) $\tan^2 45°$ (c) $\cos^2 30°$ (d) $\sin^2 45°$

Q.68 The value of expression $1°.\cos 2° \ldots\ldots \cos 179°$ equals

(a) 0 (b) 1 (c) $\frac{1}{\sqrt{2}}$ (d) –1

Q.69 $\sin^2 5° + \sin^2 10° + \sin^2 15° + \ldots. + \sin^2 90°$ is equal to

(a) $8\frac{1}{2}$ (b) 9 (c) $9\frac{1}{2}$ (d) $4\frac{1}{2}$

Q.70 The value of $\cos^2\frac{\pi}{16} + \cos^2\frac{3\pi}{16} + \cos^2\frac{5\pi}{16} + \cos^2\frac{7\pi}{16}$ is

(a) 2 (b) 1 (c) 0 (d) None of these

Q.71 $3(\sin x - \cos x)^4 + 6(\sin x + \cos x)^2 + 4(\sin^6 x + \cos^6 x)$ is equal to

(a) 12 (b) 13 (c) 14 (d) 11

Q.72 The value of $(1 + \cos\frac{\pi}{6})(1 + \cos\frac{\pi}{3})(1 + \cos\frac{2\pi}{3})\ (1 + \cos\frac{7\pi}{6})$ is

(a) $\frac{3}{16}$ (b) $\frac{3}{8}$ (c) $\frac{3}{4}$ (d) $\frac{1}{2}$

Q.73 If sinA = sinB and cosA = cosB, then

(a) $\sin\frac{A-B}{2} = 0$ (b) $\sin\frac{A+B}{2} = 0$ (c) $\cos\frac{A-B}{2} = 0$ (d) cos(A + B) = 0

Q.74 If $\cos^2 48° - \sin^2 12° =$

(a) $\frac{\sqrt{5}-1}{4}$ (b) $\frac{\sqrt{5}+1}{8}$ (c) $\frac{\sqrt{3}+1}{4}$ (d) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

Q.75 $\sin 75° =$

(a) $\frac{2-\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ (c) $\frac{\sqrt{3}-1}{-2\sqrt{2}}$ (d) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

Q.76 The value of $\cos 15° - \sin 15°$ is equal to

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{\sqrt{2}}$ (d) 0

Q.77 In a $\triangle$ ABC, $\angle A = \frac{\pi}{2}$, then $\cos^2 B + \cos^2 C$ equals

(a) –2 (b) –1 (c) 1 (d) 0

Q.78 The value of $\frac{\cot 54^\circ}{\tan 36^\circ} + \frac{\tan 20^\circ}{\cot 70^\circ}$ is

(a) 0 (b) 2 (c) 3 (d) 1

Q.79 If $\sum_{i=1}^{n} \sin\theta_i = n$, then the value of $\sum_{i=1}^{n} \cos\theta_i$ is

(a) n (b) 0 (c) 1 (d) n + 1

Q.80 The equation $(a+b)^2 = 4ab\sin^2\theta$ is possible only when

(a) 2a = b (b) a = b (c) a = 2b (d) a + b = 0

Q.81 $\log\tan 1^\circ + \log\tan 2^\circ + \cdots \ldots + \log\tan 89^\circ$ is

(a) 1 (b) 0 (c) $\frac{\pi}{4}$ (d) log2

Q.82 The value of $2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta) + 1$ is

(a) 2 (b) 0 (c) 4 (d) 6

Q.83 If $S_n = \cos^n\theta + \sin^n\theta$, then the value of $3S_4 - 2S_6$ is given by

(a) 4 (b) 0 (c) 1 (d) 7

Q.84 If $\frac{\cos A}{3} = \frac{\cos B}{4} = \frac{1}{5}, -\frac{\pi}{2} < (A, B) < 0$, then value of $2\sin A + 4\sin B$ is

(a) 4 (b) –2 (c) –4 (d) 0

Q.85 If $\sec\theta = m$ and $\tan\theta = n$, then $\frac{1}{m}[(m+n) + \frac{1}{(m+n)}]$ is

(a) 2 (b) 2m (c) 2n (d) mn

Q.86 If $\cos\theta = -\frac{\sqrt{3}}{2}$ and $\sin\alpha = -\frac{\sqrt{3}}{5}$, where θ does not lie in the third quadrant, then$25\cos^2\alpha + \sqrt{3}\tan\theta$ is

(a) 22 (b) 21 (c) 23 (d) 24

Q.87 The 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) 0 (b) $\frac{1}{2}$ (c) $\frac{3}{2}$ (d) 1

Q.88 If $12\cot^2\theta - 31\text{cosec}\theta + 32 = 0$, then the value of$\sin\theta$ is

(a) $\frac{3}{4}$ or 1 (b) $\frac{2}{3}$ or $-\frac{2}{3}$ (c) $\frac{4}{5}$ or $\frac{3}{4}$ (d) $\pm\frac{1}{2}$

Q.89 $\frac{\tan A}{1+\sec A} + \frac{1+\sec A}{\tan A}$ is equal to

(a) 2sin A (b) 2cos A (c) 2cosecA (d) 2secA

Q.90 If $x = a\cos^3\theta, y = b\sin^3\theta$ then

(a) $(\frac{a}{x})^{\frac{2}{3}} + (\frac{b}{y})^{\frac{2}{3}} = 1$ (b) $(\frac{b}{x})^{\frac{2}{3}} + (\frac{a}{y})^{\frac{2}{3}} = 1$

(c) $(\frac{x}{a})^{\frac{2}{3}} + (\frac{y}{b})^{\frac{2}{3}} = 1$ (d) $(\frac{x}{b})^{\frac{2}{3}} + (\frac{y}{a})^{\frac{2}{3}} = 1$

Q.91 θ eliminant between the equations $x = a\sec^3\theta, y = b\tan^3\theta$ is

(a) $(\frac{x}{a})^{\frac{2}{3}} + (\frac{y}{b})^{\frac{2}{3}} = -1$ (b) $(\frac{x}{a})^{\frac{2}{3}} - (\frac{y}{b})^{\frac{2}{3}} = 1$

(c) $(\frac{x}{a})^{\frac{2}{3}} + (\frac{y}{b})^{\frac{2}{3}} = -1$ (d) None of these

Q.92 If $a\cos\theta + b\sin\theta = m$ and $a\sin\theta - b\cos\theta = n$, then $a^2 + b^2 =$

(a) $m + n$ (b) $m^2 - n^2$ (c) $m^2 + n^2$ (d) $4mn$

Q.93 If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, then

(a) $m^2 - n^2 = 4mn$ (b) $m^2 + n^2 = 4mn$ (c) $m^2 - n^2 = m^2 + n^2$ (d) $m^2 - n^2 = 4\sqrt{mn}$

Q.94 If $p = \frac{2\sin\theta}{1+\cos\theta+\sin\theta}$ and $q = \frac{\cos\theta}{1+\sin\theta}$, then

(a) $pq = 1$ (b) $\frac{q}{p} = 1$ (c) $q - p = 1$ (d) $q + p = 1$

Q.95 If $\tan\theta - \cot\theta = a$ and $\sin\theta + \cos\theta = b$, then $(b^2 - 1)^2(a^2 + 4)$ is equal to

(a) 2 (b) –4 (c) ± 4 (d) 4

Q.96 Suppose that $a\cos\theta = b$ and $c\sin\theta = d$, for θ and some constants a, b, c, d. Then which of the following is true?

(a) $a^2c^2 = b^2c^2 + a^2d^2$ (b) $a^2d^2 = b^2c^2 + a^2c^2$

(c) $b^2c^2 = a^2d^2 + a^2c^2$ (d) $a^2b^2 = b^2c^2 + c^2d^2$

Q.97 The outer boundary of a specific part of a circle is the same as half of the entire circle's outer boundary. The circular measure of one angle in this part is...

(a) (π – 2) radian (b) (π + 2) radian (c) π radian (d) (π – 3) radian

Q.98 If $\alpha, \beta, \gamma \in [0, 2\pi]$, then the sum of all possible values of α, β, γ if $\sin\alpha = -\frac{1}{\sqrt{2}}$, $\cos\beta = \frac{-1}{2}$, $\tan\gamma = -\sqrt{3}$, is

(a) $\frac{22\pi}{3}$ (b) $\frac{21\pi}{3}$ (c) $\frac{20\pi}{3}$ (d) 8π

Q.99 The angles of a triangle are in A.P. and the number of degrees in the least to the number of radians in greatest is 60 to π. The angles in degree are

(a) 60°60°60° (b) 30°, 60°, 90° (c) 45°, 60°, 75° (d) 15° · 60° · 105°

Q.100 If ABCD is a cyclic quadrilateral such that $12\tan A - 5 = 0$ and $5\cos B + 3 = 0$, then the quadratic equation whose roots are cosC and tanD is

(a) $39x^2 - 16x - 48 = 0$ (b) $39x^2 + 88x + 48 = 0$

(c) $39x^2 - 88x + 48 = 0$ (d) $39x^2 - 13x - 46 = 0$

EXERCISE LEVEL –II

EL– II

Q.1 Find the value of $7\cos^2\theta + 3\sin^2\theta = 4$.

Q.2 Determine the value $\sin 3x + \cos 2x = -2$

Q.3 Evaluate $\sqrt{3\sin 5x - \cos^2 x - 3} = 1 - \sin x$

Q.4 Solve the following $\sin 2x + 5\sin x + 1 + 5\cos x = 0$

Q.5 Evaluate $3\cos x + 3\sin x + \sin 3x - \cos 3x = 0$

Q.6 Solve $(1 - \sin 2x)(\cos x - \sin x) = 1 - 2\sin^2 x$.

Q.7 Determine the value $\sqrt{3}\cos x + \sin x = 2$

Q.8 Find the value of $\sin 7\theta = \sin 3\theta + \sin\theta$

Q.9 Evaluate $5\sin x + 6\sin 2x + 5\sin 3x + \sin 4x = 0$

Q.10 Find the value of $\cos^3 x + \cos^2 x - 4\cos^2\frac{x}{2} = 0$

Q.11 Evaluate $\cos 2\theta - (\sqrt{2}+1)(\cos\theta - \frac{1}{\sqrt{2}}) = 0$

Q.12 Solve $\cot\theta = -1$

Q.13 Find $\sin\theta + \sin(\pi+\theta) + \sin(2\pi+\theta) + \sin(3\pi+\theta) + \cdots \ldots$ upto 2012 term.

Q.14 Find $\cos(\frac{\pi}{2}+\theta) + \cos(\frac{3\pi}{2}+\theta) + \cos(\frac{5\pi}{2}+\theta) + \cos(\frac{7\pi}{2}+\theta) \ldots \ldots$ upto 2021 terms .

Q.15 Find value of $\sec(1140°) + \operatorname{cosec}(1140°) + \sin(1140°) + \tan(1140°) + \cot(1140°) + \cos(1140°)$

Q.16 Find the angle, in degrees, subtended at the center of a circle by an arc whose length is 2.2 times the radius.

Q.17 A wheel makes 270 revolutions in 1 minute, through how many radians does it turn in 1 second?

Q.18 Prove that $\cos^2(\frac{\pi}{8}+\frac{A}{2}) - \sin^2(\frac{\pi}{8}-\frac{A}{2}) = \frac{1}{\sqrt{2}}\cos A$.

Q.19 Find the value of $\cos 210° + \sin\frac{5\pi}{3}$.

Q.20 Prove that $\sin 75°\cos 15° = \frac{2+\sqrt{3}}{4}$.

Q.21 Find the value of $\sqrt{3}\operatorname{cosec}20° - \sec 20°$.

Q.22 If $A = \cos^2\theta + \sin^4\theta$ for all values of θ, then prove that $\frac{3}{4} \le A \le 1$.

Q.23 Prove that $\sin 4A = 4\sin A\cos^3 A - 4\cos A\sin^3 A$.

Q.24 If $\sin\theta + \cos\theta = m$ and $\sec\theta + \operatorname{cosec}\theta = n$, then prove that $n(m+1)(m-1) = 2m$.

Q.25 Compare sin 1 and sin 2, cos 1 and cos 2, tan 1 and tan 2.

Q.26 Prove that $\sin\alpha + \sin(\alpha + \frac{2\pi}{3}) + \sin(\alpha + \frac{4\pi}{3}) = 0$

ANSWER KEY – LEVEL – I

Q.	1	2	3	4	5	6	7	8	9	10
Ans.	a	d	b	d	c	c	c	b	d	b
Q.	11	12	13	14	15	16	17	18	19	20
Ans.	a	b	a	a	d	c	a	b	a	c
Q.	21	22	23	24	25	26	27	28	29	30
Ans.	d	b	c	b	b	c	a	b	a	b
Q.	31	32	33	34	35	36	37	38	39	40
Ans.	b	a	a	b	a	c	b	c	d	c
Q.	41	42	43	44	45	46	47	48	49	50
Ans.	d	a	b	d	b	b	c	c	c	a
Q.	51	52	53	54	55	56	57	58	59	60
Ans.	b	a	a	d	c	b	b	c	b	a
Q.	61	62	63	64	65	66	67	68	69	70
Ans.	d	a	c	c	d	c	b	a	c	a
Q.	71	72	73	74	75	76	77	78	79	80
Ans.	b	a	a	b	b	a	c	b	b	b
Q.	81	82	83	84	85	86	87	88	89	90
Ans.	b	b	c	c	a	b	c	c	c	c
Q.	91	92	93	94	95	96	97	98	99	100
Ans.	b	c	d	d	d	a	a	a	b	a

ANSWER KEY – LEVEL – II

1. $n\pi \pm \frac{\pi}{3}, n \in I$

2. $(4\pi - 3)\frac{\pi}{2}, \pi \in I$

3. $2m\pi + \frac{\pi}{2}, m \in I$

4. $n\pi - \frac{\pi}{4}, n \in I$

5. $n\pi - \frac{\pi}{4}, n \in I$

6. $2n\pi + \frac{\pi}{2}, n \in I$ or $2n\pi, n \in I$ or $n\pi + \frac{\pi}{4}, n \in I$

7. $2n\pi + \frac{\pi}{6}, n \in I$

8. $\frac{n\pi}{3}, n \in I$ or $\frac{n\pi}{2} \pm \frac{\pi}{12}, n \in I$

9. $\frac{n\pi}{2}, n \in I$ or $2n\pi \pm \frac{2\pi}{3}, n \in I$

10. $(2n + 1)\pi, n \in I$

11. $2n\pi \pm \frac{\pi}{3}, n \in I$ or $2n\pi \pm \frac{\pi}{4}, n \in I$

12. $\theta = n\pi - \frac{\pi}{4}, n \in I$