PRACTICE QUESTIONS FOR COMPETITIVE EXAMINATIONS

TOPIC : TRIGONOMETRY

1.	The angle subtended at the centre of a circle of radius 3 m by an arc of length 1 m is equal to (a) 20° (b) 60° (c)1/3 radian (d) 3 radians
2.	A circular wire of radius 7 cm is cut and bent again into an arc of a circle of radius 12 cm. The angle subtended by the arc at the centre is (a) 50° (b) 210° (c) 100° (d) 60°
3.	If $sin\theta + cos\theta = m$ and $sec\theta + cosec\theta = n$, then $n(m+1)(m-1) =$ (a) m (b) n (c) 2 m (d) 2 n
4.	If A lies in the second quadrant and $3tanA + 4 = 0$, then the value of $2\ cotA - 5\ cosA + \sin A$ is equal to (a) $\frac{-53}{10}$ (b) $\frac{-7}{10}$ (c) $\frac{7}{10}$ (d) $\frac{23}{10}$
5.	If $sinx + siny = 3(\ cosy - cosx)$, then the value of $\frac{\sin 3x}{\sin 3y}$ is (a) 1 (b) -1 (c) 0 (d) none of these.
6.	If $x + \frac{1}{x} = 2\ cos\alpha$, then $x^n + \frac{1}{x^n} =$ (a) $2^n \cos\alpha$ (b) $2^n \cos n\alpha$ (c) $2i \sin n\alpha$ (d) $2 \cos n\alpha$
7.	If $\tan\theta = \frac{x\ sin\varphi}{1-xcos\varphi}$ and $tan\varphi = \frac{y\ sin\theta}{1-y\ cos\theta}$, then $\frac{x}{y} =$ (a) $\frac{sin\varphi}{sin\theta}$ (b) $\frac{sin\theta}{sin\varphi}$ (c) $\frac{sin\varphi}{1-cos\theta}$ (d) $\frac{sin\theta}{1-cos\varphi}$
8.	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
9.	If $tan^2\alpha\ tan^2\beta + \ tan^2\beta\ tan^2\gamma + tan^2\gamma\ tan^2\alpha + 2\ tan^2\alpha tan^2\beta tan^2\gamma = 1$, then the value of $sin^2\alpha + sin^2\beta + sin^2\gamma$ is (a) 0 (b) -1 (c) 1 (d) none of these.
10.	In a $\Delta\ PQR$, if $3sinP + 4\cos Q = 6$ and $4sinQ + 3cosP = 1$, then the angle R is (a) $\frac{5\pi}{6}$ (b) $\frac{\pi}{6}$ (c) $\frac{\pi}{4}$ (d) $\frac{3\pi}{4}$
11.	The value of $tan20° + tan40° + \sqrt{3}\ tan20°\ tan40°$ is equal to (a) $\sqrt{12}$ (b) $\frac{1}{\sqrt{3}}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\sqrt{3}$
12.	If $\alpha, \beta, \gamma \in [0, \pi]$ and if α, β, γ are in A.P, then $\frac{\sin\alpha - sin\gamma}{\cos\gamma - \cos\alpha}$ is equal to (a) $\sin\beta$ (b) $\cos\beta$ (c) $\cot\beta$ (d) $2\cos\beta$
13.	$sin12° \sin 48° \ sin54° =$ (a) 1/ 16 (b) 1/32 (c) 1/8 (d) ¼
14.	If $\tan\alpha$ equals the integral solution of the inequality $4x^2 - 16x + 15 < 0$ and $\cos\beta$ equals to the slope of the bisector of first quadrant, then $\sin(\alpha+\beta)\sin(\alpha-\beta)$ is equal to (a) $\frac{3}{5}$ (b) $\frac{-3}{5}$ (c) $\frac{2}{\sqrt{5}}$ (d) $\frac{4}{5}$
15.	If $A + B = \frac{\pi}{4}$, then $(1 + tanA)(1 + \tan B) =$ (a) 1 (b) 2 (c) ∞ (d) -2
16.	$sin^2\frac{\pi}{8} + sin^2\frac{3\pi}{8} + sin^2\frac{5\pi}{8} + sin^2\frac{7\pi}{8} =$ (a) 1 (b) -1 (c) 0 (d) 2
17.	If $a\tan\theta = b$, then $a\ cos2\theta + b\ sin2\theta =$

	(a) a (b) b (c) $-a$ (d) $-b$
18.	If $\cos A = \frac{3}{4}$, then $32 \sin\left(\frac{A}{2}\right) \sin(\frac{5A}{2})$ = (a) 7 (b) 8 (c) 11 (d) none of these.
19.	The minimum value of $3\ cosx + 4\ sinx + 5$ is (a) 5 (b) 9 (c) 7 (d) 0.
20.	If α is a root of $25cos^2\theta + 5\ cos\theta - 12 = 0, \frac{\pi}{2} < \alpha < \pi$, then $\sin 2\alpha$ is equal to (a) 24/25 (b) -24/25 (c) 13/18 (d) -13/18
	ANSWERS:
	1.(c) 2.(b) 3.(c) 4.(d) 5.(b) 6.(d) 7.(b) 8.(b) 9.(c) 10.(b) 11.(d) 12.(c) 13.(c) 14.(d) 15.(b) 16.(d) 17.(a) 18.(c) 19.(d) 20.(b).