Quantitative Aptitude Sunday Mega Quiz for SSC CGL

Q1. Angles of elevation of top of a tower having base O, from three collinear points A, B and C, on a line leading to the foot of the tower, are 30°, 45° & 60° respectively. Then ratio AB : BC is

(a) $\sqrt{3} : \sqrt{2}$

(b) $\sqrt{3} : 1$

(c) $1 : \sqrt{3}$

(d) 2 : 3

Q2. If $x + y + z = 0$, then $\frac{xyz}{(x+y)(y+z)(z+x)}$ equal $[x \neq -y, y \neq -z, z \neq -x]$

(a) –1

(b) 1

(c) xy + yz + zx

(d) None of these

Q3. Given below are respectively base and hypotenuse of four right angle triangles :

1 and $\sqrt{5}, 2$ and $\sqrt{13}, 3$ and $5, 4$ and $\sqrt{41}$ $\theta_1, \theta_2, \theta_3, \theta_4,$ are respectively angle included between them. What are the increasing order of these values.

1. $\sin\theta_1$ **2. $\tan\theta_2$**

3. $\cos\theta_3$, **4. $\sec\theta_4$**

Choose the code among follow:

(a)4-1-2-3

(b) 1-4-3-2

(c) 3-1-2-4

(d) 3-1-4-2

Q4. Consider the following statements about the expression

$\sin^3\theta + 2\sin^2\theta + 3\sin\theta$

1. For any $\theta \in R$, maximum value of this expression is 6.
2. For any $\theta \in R$, value of this expression cannot be zero.

Among above statement which is/are true?

(a) only 1

(b) only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Q5. The reduced form of $\cos^6 x + \sin^6 x + 3\cos^2 x \sin^2 x$ is equal to

(a) 2

(b) 0

(c) $\sin^3 x + \cos^3 x^2$

(d) 1

Q6. If a $\sec\theta + b\tan\theta = 1$ & $a^2\sec^2\theta - b^2\tan^2\theta = 5$, then $a^2b^2 + 4a^2$ is equal to

(a) $9b^2$

(b) $\frac{9}{a^2}$

(c) $\frac{-2}{b}$

(d) 9

Q7. The horizontal distance between two towers is 60 m. The angular elevation of the top of the taller tower as seen from the top of the shorter one is 30°. If the height of the taller tower is 150 m, the height of the shorter one, approximately, is

(a) 116 m

(b) 216 m

(c) 200 m

(d) None of these

Q8. If $4\sin^2\theta - 3 = 0$ and θ is acute, then what is the value of $(\cot^2\theta + \tan^2\theta)$?

(a) 2

(b) 0

(c) 10/3

(d) 6

Q9. $\frac{\cos\theta}{1+\sin\theta} + \frac{\cos\theta}{1-\sin\theta} = 4$ and θ is acute, then what is the value (in degrees) of θ ?

(a) 30

(b) 45

(c) 60

(d) 90

Q10.

If $\frac{1}{\sin\theta+\operatorname{cosec}\theta} = \frac{1}{2}$, then what is the value of $\sin^{100}\theta + \operatorname{cosec}^{100}\theta$?

(a) -1

(b) 0

(c) 1

(d) 2

Q11. What is the value of $\frac{sec\theta}{tan\theta+cot\theta}$?

(a) cos θ
(b) tan θ
(c) sin θ
(d) cot θ

Q12. What is the value of sin 8θ + sin 6θ?

(a) 2 sin 7θ cos 7θ
(b) 2 sin 7θ cos θ
(c) 2 sin θ cos 7θ
(d) 2 sin 4θ cos 3θ

Q13. What is the value of $\frac{cotx}{1-tanx}+\frac{tanx}{1-cotx}$?

(a) sin x cos x + 1
(b) sec x cosec x + 1
(c) tan x cot x + 1
(d) $sec^2x\ cosec^2x + 1$

Q14. Find the value of $\frac{\sqrt{cosec^2A-1}}{cotA+tanA}$?

(a) sin^2 A
(b) cos A sin A
(c) cos^2 A
(d) sec A cosec A

Q15.

If 5sin x = 4,

then the numerical value of $\left(\frac{tanx-cotx}{secx-tanx}\right)\left(\frac{cos^4x-sin^4x}{2\ cos^2\ x-1}\right)$?

(a) 3/5
(b) 5/4
(c) 7/4
(d) 9/5

Q16.

What is the value of

$\frac{the^2 25°}{cosec^2 65°}+\frac{cot^2\ 25°}{sec^2\ 65°}+2\tan20°\ \tan45°\ \tan70°$?

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

Q17.

If $\text{cosec}\ \theta + \text{cosec}^2\theta = 1$, then what is the value of

$(\cot^{12}\theta - 3\cot^{10}\theta + 3\cot^{8}\theta - \cot^{6}\theta)$?

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

Q18. If $a \sin\theta + b \cos\theta = m$, find the value of $1/6*[a \cos\theta - b \sin\theta] = ?$

(a) $\pm\frac{1}{6}\sqrt{\frac{a^2+b^2}{m^2}}$

(b) $\pm\frac{1}{6}\sqrt{a^2-b^2}$

(c) $\frac{1}{6}.\frac{a+b}{m}$

(d) $\pm\frac{1}{6}*\sqrt{a^2+b^2-m^2}$

Q19.

If $\tan\alpha = n\tan\beta$ and $\sin\alpha = m\sin\beta$,

then $[\frac{m^2-1}{n^2-1}]^{1/2} =$

(a) $\cos^{1.5}\alpha$
(b) $\sin\alpha$
(c) $\sin^2\alpha$
(d) $\cos\alpha$

Q20.

If $\sec A = a + \left(\frac{1}{4a}\right)$,

then $\sec A + \tan A =$

(a) $2a$ or $\frac{1}{2a}$

(b) a or $\frac{1}{a}$

(c) $2a$ or $\frac{1}{a}$

(d) a or $\frac{1}{2a}$

Q21. The value of $\left(\frac{\sin A}{1-\cos A} + \frac{1-\cos A}{\sin A}\right)$ is

(a) $2\sec A$

(b) $\frac{1}{2}\cos A$

(c) $\frac{1}{2}\sin A$

(d) $2\text{cosec}\ A$

Q22. If $\frac{1-\cos\theta}{1+\cos\theta} = \frac{A^2}{B^2}$, then $\operatorname{cosec}\theta$ is equal to:

(a) $2\frac{ab}{a^2-b^2}$

(b) $\frac{1}{2}\frac{ab}{a^2+b^2}$

(c) $\frac{1}{2}\left(\frac{A^2+B^2}{AB}\right)$

(d) $\frac{1}{2}\left(\frac{A^2-B^2}{AB}\right)$

Q23. The value of $\frac{\sec\theta(1-\sin\theta)(\sin\theta+\cos\theta)(\sec\theta+\tan\theta)}{[\sin(1+\tan\theta)+\cos\theta(1+\cot\theta)]\sin\theta\cos\theta}$ is equal to

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

Q24. $(\sec\theta - \tan\theta)^2(\sin\theta + 1)^2 \div \cos^2\theta = ?$

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

Q25.

If $3(\tan^2\theta - \sin^2\theta) = \sin^2\theta, 0° < \theta < 90°,$

then the value of $(\tan^4\theta + \sec^2\theta + \cot^2\theta)$ is :

(a) 40/9
(b) 35/9
(c) 61/9
(d) None of these