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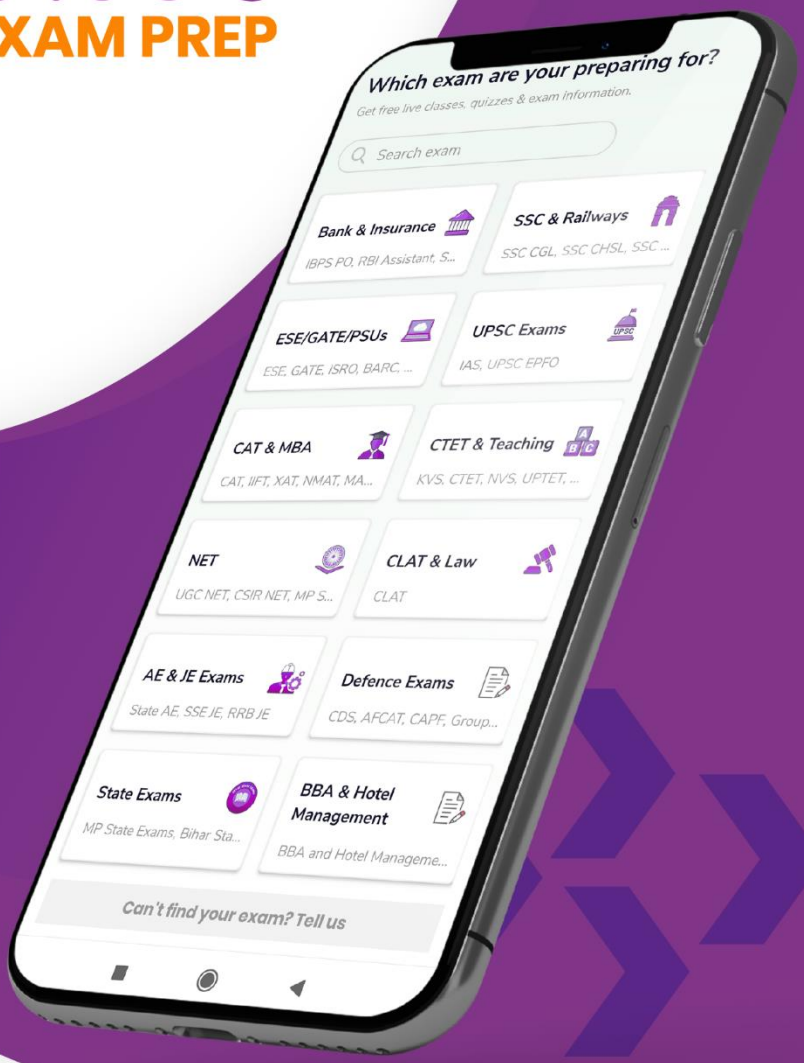

50+ Trigonometry Questions for SSC CGL

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1.If tan (α + β) = a, tan (α − β) = b, then the value of tan 2α is :

A. $\frac{a+b}{1-ab}$

B. $\frac{a+b}{1+ab}$

C. $\frac{a-b}{1-ab}$

D. $\frac{a-b}{1+ab}$

Ans. A

2.If A is an acute angle, the simplified form of $\frac{\cos(\pi-A).\cot\left(\frac{\pi}{2}+A\right)\cos(-A)}{\tan(\pi+A)\tan\left(\frac{3\pi}{2}+A\right)\sin(2\pi-A)}$ is :

A. $\sin^2 A$

B. Cos A

C. $\cos^2 A$

D. Sin A

Ans. B

3.If $\sec A=\frac{5}{4}$, then the value of $\frac{\tan A}{1+\tan^2 A}-\frac{\sin A}{\sec A}$ is:

A. 0

B. 1

C. 2

D. 3

Ans. A

4.If cos θ + $\cos^2$ θ = 1, find the value of $\sqrt{\sin^4\theta+\cos^2\theta}$.

A. $\sqrt{2}\cos\theta$

B. 2 Cos θ

C. 2 Sin θ

D. $\sqrt{2}\sin\theta$

Ans. A

5.If sin A = 4/5, then what is the value of $\sin^2$A ?

A. 48/25

B. 26/25

C. 36/25

D. 16/25

Ans. D

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6. $\frac{1+\sin\theta}{\cos\theta}$ is equal to which of the following (where $\theta \neq \frac{\pi}{2}$)?

A. $\frac{\tan\theta-1}{\tan\theta+1}$

B. $\frac{\cos\theta}{1-\sin\theta}$

C. $\frac{\tan\theta+1}{\tan\theta-1}$

D. $\frac{1+\cos\theta}{\sin\theta}$

Ans. B

7.ΔABC is a right-angle triangle at B and tanA = $\frac{3}{4}$, then sin A + sin B + sin C will be equal to:

A. $1\frac{1}{5}$

B. $2\frac{4}{5}$

C. $3\frac{1}{5}$

D. $2\frac{2}{5}$

Ans. D

8.If $\sin^2\theta - 3\sin\theta + 2 = 0$, then find the value of θ ($0° \leq \theta \leq 90°$).

A. 0°

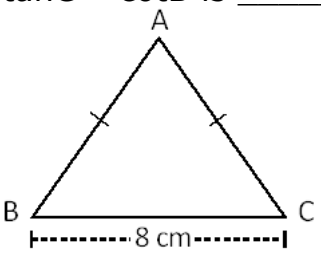
B. 45°

C. 90°

D. 60°

Ans. C

9.In the given figure, ABC is an isosceles triangle with BC = 8 cm and AB = AC =5 cm. The value of tanC – cotB is _____.



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A. $\frac{5}{12}$

B. $-\frac{5}{12}$

C. $\frac{7}{12}$

D. $-\frac{7}{12}$

Ans. D

10.If $b\cos\theta = a$, then $\text{cosec}\theta + \cot\theta =$ _____.

A. $\sqrt{\frac{1}{b-a}}$

B. $\sqrt{\frac{1}{b+a}}$

C. $\sqrt{\frac{b+a}{b-a}}$

D. $\sqrt{\frac{b-a}{b+a}}$

Ans. C

11.If $\text{cosec}\ \theta + \cot\ \theta = 2$, then what is the value of $\text{cosec}\ \theta$?

A. $\frac{3}{2}$

B. $\sqrt{2}$

C. $\frac{5}{4}$

D. $\sqrt{5}$

Ans. C

12.What is the value of $\sin 75° + \sin 15°$?

A. $\frac{3}{\sqrt{2}}$

B. $\frac{1}{\sqrt{2}}$

C. $\sqrt{\frac{3}{2}}$

D. $\frac{\sqrt{3}}{2}$

Ans. C

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13.If $\cos(A-B)=\frac{\sqrt{3}}{2}$, and cos(A + B) = 0, where A and B are positive acute angles and A ≥ B, then the measures of A and B are:
A. 80° and 10°
B. 60° and 30°
C. 70° and 20°
D. 50° and 40°
Ans. B

14.If tanA = 2/3, then find sinA
A. 2/√13
B. 2/3
C. 1/3
D. 3/√13
Ans. A

15.If $\frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}=\frac{3}{2}$, then the value of $\sin^4 q - \cos^4 q$ is:
A. $\frac{11}{12}$
B. $\frac{5}{13}$
C. $\frac{12}{13}$
D. $\frac{5}{12}$
Ans. C

16.The angle of elevation of the top of a tower from the top of a building whose height is 680 m is 45° and the angle of elevation of the top of same tower from the foot of the same building is 60°. What is the height (in m) of the tower?
A. 340(3 + √3)
B. 310(3 – √3)
C. 310(3 + √3)
D. 340(3 - √3)
Ans. A

17.If a cot q + b cosec q = p and b cot q + a cosec q = q then $p^2 - q^2$ is equal to _____.
A. $b^2 - a^2$
B. $a^2 - b^2$
C. b – a
D. $a^2 + b^2$
Ans. A

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18.$(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = ?$
A. $5 + \tan^2 \theta + \cot^2 \theta$
B. $7 + \tan^2 \theta - \cot^2 \theta$
C. $7 + \tan^2 \theta + \cot^2 \theta$
D. $5 + \tan^2 \theta - \cot^2 \theta$
Ans. C

19.Find the exact value of cos 120°.
A. 1
B. 0
C. −0.5
D. 0.5
Ans. C

20.From the top of an upright pole $24\sqrt{3}$ feet high, the angle of elevation of the top of an upright tower was 60°. If the foot of the pole was 60 feet away from the foot of the tower, what tall (in feet) was the tower?
A. $84\sqrt{3}$
B. $36\sqrt{3}$
C. $44\sqrt{3}$
D. $60\sqrt{3}$
Ans. A

21.△ABC is a right-angle triangle and a right-angle at B. If cotA = 15/8, then sin A + sin B + sin C will be equal to:
A. 17/40
B. 25/8
C. 40/17
D. 8/25
Ans. C

22.If θ is an acute angle and $\sin\theta + \operatorname{cosec}\theta = 2$, then the value of $\sin^2 \theta + \operatorname{cosec}^2 \theta + 3 \sin^7 \theta \operatorname{cosec}^5 \theta$ is:
A. 4
B. 5
C. 1
D. 2
Ans. B

23.From the top of an upright pole 17.75 m high, the angle of elevation of the top of an upright tower was 60°. If the tower was 57.75 m tall, how far away (in m) from the foot of the pole was the foot of the tower?
A. $40\sqrt{3}$
B. $\frac{151\sqrt{3}}{6}$

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C. $\frac{77}{4}\sqrt{3}$

D. $\frac{40\sqrt{3}}{3}$

Ans. D

24.If $\tan^2\theta + \tan^4\theta = 1$, then:

A. $\cot^2\theta + \cot^4\theta = 1$

B. $\sin^2\theta + \sin^4\theta = 1$

C. $\text{cosec}^2\theta + \sec^4\theta = 1$

D. $\cos^2\theta + \cos^4\theta = 1$

Ans. D

25.If tan 40° = α, then find $\frac{\tan 320^\circ - \tan 310^\circ}{1+\tan 320^\circ.\tan 310^\circ}$.

A. $\frac{1-\alpha^2}{\alpha}$

B. $\frac{1-\alpha^2}{2\alpha}$

C. $\frac{1+\alpha^2}{\alpha}$

D. $\frac{1+\alpha^2}{2\alpha}$

Ans. B

26.If $\sec\theta + \frac{1}{\cos\theta} = 2$, **find the value of** $\sec^{55}\theta + \frac{1}{\sec^{55}\theta}$.

A. 55

B. 2

C. 1

D. 0

Ans. B

27.If $\text{cosec}\theta + \cot\theta = p$, then the value of $\frac{p^2-1}{p^2+1}$

A. $\cos\theta$

B. $\cot\theta$

C. $\text{cosec}\theta$

D. $\sin\theta$

Ans. A

28.Find the value of $\tan 27^\circ \tan 34^\circ + \tan 34^\circ \tan 29^\circ + \tan 29^\circ \tan 27^\circ$.

A. 0

B. $\sqrt{3}$

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C. -1
D. 1
Ans. D

29.What is the value of the expression cos 2A cos 2B + $\sin^2(A - B) - \sin^2(A + B)$?
A. sin (2A − 2B)
B. sin (2A + 2B)
C. cos (2A − 2B)
D. cos (2A + 2B)
Ans. D

30.If $2\sin\theta + 2\sin^2\theta = 2$, then the value of $2\cos^4\theta + 2\cos^2\theta$ is:
A. 4
B. 1
C. 2
D. 0
Ans. C

31.Find the value of $\sec\theta - \tan\theta$, if $\sec\theta + \tan\theta = \sqrt{5}$.
A. $\sqrt{5}$
B. 5
C. $\frac{\sqrt{5}}{5}$
D. $5\frac{1}{5}$
Ans. C

32.If cot A = $\frac{12}{5}$, then the value of sin A = ?
A. $\frac{5}{12}$
B. $\frac{13}{12}$
C. $\frac{5}{13}$
D. $\frac{12}{13}$
Ans. C

33.If $\tan3\theta.\tan7\theta = 1$, where 7θ is an acute angle, then find the value of $\cot15\theta$.
A. $-\sqrt{3}$
B. 1

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C. −1
D. $\sqrt{3}$
Ans. C

34.What is the value of tan 6° × tan 45° × tan 84°?
A. tan 6° + tan 45° + tan 84°
B. 3
C. tan 6° × tan 39°
D. 1
Ans. D

35.If tan (α + β) = √3, tan (α − β) = 1 where (α + β) and (α − β) are acute angles, then what is tan (6α)?
A. −1
B. 0
C. 1
D. $\sqrt{2}-1$
Ans. A

36.If sinθ − cosθ = $\frac{4}{5}$, then find the value of sin θ + cos θ.
A. $\frac{\sqrt{24}}{5}$
B. $\frac{5}{\sqrt{34}}$
C. $\frac{5}{\sqrt{24}}$
D. $\frac{\sqrt{34}}{5}$
Ans. D

37.If $\mathrm{TanA}.\ \mathrm{TanB}+\frac{\cos x}{\cos A\cos B}=1,$ then x = ?
A. A
B. A + B
C. A − B
D. B
Ans. B

38.Evaluate the expression $\frac{\sin^2 63^\circ+\sin^2 27^\circ}{\cos^2 17^\circ+\cos^2 73^\circ}$.
A. 1
B. 0
C. 3

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D. 2
Ans. A

39.If α is an acute angle, tan (4α − 50°) = cot (50° − α), then find the value of α (in degrees).
A. 90°
B. 30°
C. 60°
D. 45°
Ans. B

40.If $\sin^2\theta\cos^2\theta = \frac{2}{9}$, then what will be the value of $\text{cosec}^2\theta + \sec^2\theta$?
A. 7/2
B. 5/2
C. 9/2
D. $9\sqrt{2}$
Ans. C

41.If $\sin\theta = \frac{8}{17}$ where θ is an acute angle, then what is the value of tan θ + cot θ ?
A. $\frac{281}{190}$
B. $\frac{512}{321}$
C. $\frac{289}{120}$
D. $\frac{217}{110}$
Ans. C

42.If $2^{\frac{\cos^2 x - \sec^2 x}{\tan^2 x}} = a + b\cos 2x$, then a, b = ?
A. 3, 1
B. $\frac{-3}{2}, \frac{-1}{2}$
C. $\frac{3}{2}, \frac{1}{2}$
D. −3, −1
Ans. D

43.Evaluate the following.
sin 25° sin 65° − cos 25° cos 65°.

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A. 4
B. 1
C. 0
D. 40
Ans. C

44.If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$; $0° = < (A + B) < 90°$; $A > B$, then the values of A and B are _____, respectively.
A. 45° and 15°
B. 15° and 45°
C. 30° and 30°
D. 60° and 30°
Ans. A

45.Two ships are on the opposite of a light house such that all three of them are collinear. The angles of depression of the two ships from the top of the light house are 30° and 60°. If the ships are $230\sqrt{3}$ m apart, then find the height of the light house (in m).
A. 175.4
B. 165.2
C. 172.5
D. 180.5
Ans. C

46.If $5 \sin^2 A + 3 \cos^2 A = 4$, $0<A<90°$, then what is the value of tan A?
A. 0
B. 3
C. 2
D. 1
Ans. D

47.$\cos^3 60 - \cos^3 240 - \cos^3 360$ = _____.
A. $\frac{-7}{5}$
B. $\frac{-9}{7}$
C. $\frac{-3}{5}$
D. $\frac{-3}{4}$
Ans. D

48.What is the value of sin 28° sin 35° sin 45° sec 62° sec 55°?

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A. 1/2
B. $\sqrt{2}$
C. $\frac{1}{\sqrt{2}}$
D. 2
Ans. C

49.Which of the following will satisfy $a^2 = b^2 + (ab)^2$ for the values a and b ?
A. a = cos x, b = tan x
B. a = sin x, b = cot x
C. a = sin x, b = tan x
D. a = cot x, b = cos x
ns. D

50.θ = 135°; γ = 15°.
What is the value of 2 cos (θ) sin (γ)?
A. $\frac{1-\sqrt{3}}{2}$
B. $\frac{\sqrt{3}-1}{2}$
C. $\sqrt{3}-2$
D. $2-\sqrt{3}$

Ans. A

51.If sec x – cos x = 4, then what will be the value of $\frac{(1+\cos^2 x)}{\cos x}$?
A. 9/4
B. $\sqrt{5}$
C. 1/4
D. $2\sqrt{5}$
Ans. D

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