TRIGONOMETRY

TYPE–I

1. In circular measure, the value of the angle 11°15' is

(1) $\frac{\pi^c}{16}$ (2) $\frac{\pi^c}{8}$

(3) $\frac{\pi^c}{4}$ (4) $\frac{\pi^c}{12}$

(SSC CHSL DEO & LDC Exam. 28.10.2012, Ist Sitting)

2. In a triangle ABC, $\angle ABC = 75°$ and $\angle ACB = \frac{\pi^c}{4}$. The circular measure of $\angle BAC$ is

(1) $\frac{5\pi}{12}$ radian (2) $\frac{\pi}{3}$ radian

(3) $\frac{\pi}{6}$ radian (4) $\frac{\pi}{2}$ radian

(SSC Graduate Level Tier-I Exam. 11.11.2012, Ist Sitting)

3. The circular measure of an angle of an isosceles triangle is $\frac{5\pi}{9}$. Circular measure of one of the other angles must be

(1) $\frac{5\pi}{18}$ (2) $\frac{5\pi}{9}$

(3) $\frac{2\pi}{9}$ (4) $\frac{4\pi}{9}$

(SSC FCI Assistant Grade-III Main Exam. 07.04.2013)

4. The degree measure of 1 radian (taking $\pi = \frac{22}{7}$) is

(1) 57°61'22" (approx.)
(2) 57°16'22" (approx.)
(3) 57°22'16" (approx.)
(4) 57°32'16" (approx.)

(SSC Graduate Level Tier-I Exam. 21.04.2013, Ist Sitting)

5. $\left(\frac{3\pi}{5}\right)$ radians is equal to

(1) 100° (2) 120°
(3) 108° (4) 180°

(SSC Graduate Level Tier-I Exam. 19.05.2013)

6. If the sum of two angles is 135° and their difference is $\frac{\pi}{12}$, then the circular measure of the greater angle is

(1) $\frac{2\pi}{3}$ (2) $\frac{3\pi}{5}$

(3) $\frac{5\pi}{12}$ (4) $\frac{\pi}{3}$

(SSC CGL Tier-I Re-Exam. (2013) 20.07.2014 (Ist Sitting)

7. If $0 \le \theta \le \frac{\pi}{2}$ and $\sec^2\theta + \tan^2\theta = 7$, then θ is

(1) $\frac{5\pi}{12}$ radian (2) $\frac{\pi}{3}$ radian

(3) $\frac{\pi}{5}$ radian (4) $\frac{\pi}{6}$ radian

(SSC CAPFs SI, CISF ASI & Delhi Police SI Exam. 22.06.2014 TF No. 999 KP0)

8. If the sum and difference of two angles are $\frac{22}{9}$ radian and 36° respectively, then the value of smaller angle in degree taking the value of π as $\frac{22}{7}$ is :

(1) 52° (2) 60°
(3) 56° (4) 48°

(SSC CGL Tier-I Exam, 16.08.2015 (Ist Sitting) TF No. 3196279)

9. The circular measure of the included angle formed by the hour hand and minute hand of a clock at 3 p.m. will be

(1) $\frac{\pi}{4}$ (2) $\frac{\pi}{3}$

(3) $\frac{5\pi}{12}$ (4) $\frac{\pi}{2}$

(SSC CHSL (10+2) Tier-I (CBE) Exam. 08.09.2016) (Ist Sitting)

10. Which of the following relations is correct for $0 < \theta < 90°$?

(1) $\sin\theta = \sin^2\theta$
(2) $\sin\theta < \sin^2\theta$
(3) $\sin\theta > \sin^2\theta$
(4) $\sin\theta = \text{cosec}\,\theta$

(SSC CGL Tier-I (CBE) Exam. 28.08.2016 (Ist Sitting)

11. If θ is an acute angle and $\sin(\theta + 18°) = \frac{1}{2}$, then the value of θ in circular measure is :

(1) $\frac{\pi}{12}$ radians

(2) $\frac{\pi}{15}$ radians

(3) $\frac{2\pi}{5}$ radians

(4) $\frac{3\pi}{13}$ radians

(SSC CGL Tier-I (CBE) Exam. 08.09.2016 (IIIrd Sitting)

12. What is the measure of central angle of the arc whose length is 11 cm and radius of the circle is 14 cm ?

(1) 45° (2) 60°
(3) 75° (4) 90°

(SSC CHSL (10+2) Tier-I (CBE) Exam. 16.01.2017) (IInd Sitting)

TYPE–II

1. The minimum value of $2\sin^2\theta + 3\cos^2\theta$ is

(1) 0 (2) 3
(3) 2 (4) 1

(SSC CPO (SI, ASI & Intelligence Officer) Exam 28.08.2011 (Paper-I)

2. If $\text{cosec}\ 39° = x$, the value of $\frac{1}{\text{cosec}^2 51°} + \sin^2 39° + \tan^2 51° - \frac{1}{\sin^2 51° \sec^2 39°}$ is

(1) $\sqrt{x^2 - 1}$ (2) $\sqrt{1 - x^2}$

(3) $x^2 - 1$ (4) $1 - x^2$

(SSC CPO (SI, ASI & Intelligence Officer) Exam. 28.08.2011 (Paper-I)

3. The value of $\tan 4°.\tan 43°.\tan 47°.\tan 86°$ is

(1) 2 (2) 3
(3) 1 (4) 4

(SSC CPO (SI, ASI & Intelligence Officer) Exam. 28.08.2011 (Paper-I) & (SSC CHSL DEO & LDC Exam. 04.12.2011 (IInd Sitting) (North Zone)

4. If $\frac{\tan\theta+\cot\theta}{\tan\theta-\cot\theta}$ = 2, (0 ≤ θ ≤ 90°), then the value of sin θ is

(1) $\frac{2}{\sqrt{3}}$ (2) $\frac{\sqrt{3}}{2}$

(3) $\frac{1}{2}$ (4) 1

(SSC CPO (SI, ASI & Intelligence Officer) Exam. 28.08.2011 (Paper-I)

5. If cos x + cos y = 2, the value of sin x + sin y is

(1) 0 (2) 1

(3) 2 (4) –1

FCI Assistant Grade-III Exam. 25.02.2012 (Paper-I) North Zone (Ist Sitting)

6. The value of tan1°tan2° tan3°..... tan89° is :

(1) 1 (2) 0

(3) $\sqrt{3}$ (4) $\frac{1}{\sqrt{3}}$

(SSC CHSL DEO & LDC Exam. 11.12.2011) (Ist Sitting) (Delhi) & (FCI Assistant Grade-III Exam. 05.02.2012 (Paper-I) East Zone (IInd Sitting) & (SSC GL Tier-I Exam. 21.04.2013) (Ist Sitting) & (SSC CAPFs SI & CISF ASI Exam. 23.06.2013)

7. The measure of the angles of a triangle are in the ratio 2 : 7 : 11. Measures of angles are

(1) 16°, 56°, 88°

(2) 18°, 63°, 99°

(3) 20°, 70°, 90°

(4) 25°, 175°, 105°

(SSC CPO S.I. Exam. 07.09.2003)

8. The angles of a triangle are $(x + 5)°$, $(2x – 3)°$ and $(3x + 4)°$. The value of x is

(1) 30 (2) 31

(3) 29 (4) 28

(FCI Assistant Grade-III Exam. 25.02.2012 (Paper-I) North Zone (Ist Sitting)

9. The value of cot 10° . cot 20° . cot 60° . cot 70° . cot 80° is

(1) 1 (2) –1

(3) $\sqrt{3}$ (4) $\frac{1}{\sqrt{3}}$

(SSC CHSL DEO & LDC Exam. 04.12.2011 (Ist Sitting (North Zone)

10. If θ be an acute angle and 7 $\sin^2\theta$ + 3 $\cos^2\theta$ = 4, then the value of tan θ is

(1) $\sqrt{3}$ (2) $\frac{1}{\sqrt{3}}$

(3) 1 (4) 0

(SSC CHSL DEO & LDC Exam. 04.12.2011 (Ist Sitting (East Zone)

11. The value of $\sin^2 1° + \sin^2 5° + \sin^2 9° + ... + \sin^2 89°$ is

(1) $11\frac{1}{2}$ (2) $11\sqrt{2}$

(3) 11 (4) $\frac{11}{\sqrt{2}}$

(SSC CHSL DEO & LDC Exam. 04.12.2011 (Ist Sitting (East Zone)

12. The numerical value of $\cot 18° \left(\cot 72° \cos^2 22° + \frac{1}{\tan 72° \sec^2 68°}\right)$ is

(1) 1 (2) $\sqrt{2}$

(3) 3 (4) $\frac{1}{\sqrt{3}}$

(SSC CHSL DEO & LDC Exam. 04.12.2011 (Ist Sitting (East Zone)

13. If tan 15° = 2 – $\sqrt{3}$, the value of tan 15° cot 75° + tan 75° cot 15°is

(1) 14 (2) 12

(3) 10 (4) 8

(SSC CHSL DEO & LDC Exam. 04.12.2011 (IInd Sitting (East Zone)

14. If x, y are acute angles, $0 < x + y < 90°$ and sin $(2x – 20°)$ = cos $(2y + 20°)$, then the value of tan $(x + y)$ is :

(1) $\frac{1}{\sqrt{3}}$ (2) $\frac{\sqrt{3}}{2}$

(3) $\sqrt{3}$ (4) 1

(SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (Delhi Zone)

15. If ∠ A and ∠ B are complementary to each other, then the value of $\sec^2$ A + $\sec^2$ B – $\sec^2$ A . $\sec^2$ B is

(1) 1 (2) –1

(3) 2 (4) 0

(SSC Assistant Grade-III Exam. 11.11.2012 (IInd Sitting)

16. $\sin^2 5° + \sin^2 6° + ... + \sin^2 84° + \sin^2 85°$ = ?

(1) $39\frac{1}{2}$ (2) $40\frac{1}{2}$

(3) 40 (4) $39\frac{1}{\sqrt{2}}$

(SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (Delhi Zone)

17. $\sin^2 5° + \sin^2 10° + \sin^2 15° + ... + \sin^2 85° + \sin^2 90°$ is equal to

(1) $7\frac{1}{2}$ (2) $8\frac{1}{2}$

(3) 9 (4) $9\frac{1}{2}$

(SSC CHSL DEO & LDC Exam. 11.12.2011 (Ist Sitting (East Zone) & (SSC CHSL DEO & LDC Exam. 21.10.2012) (IInd Sitting)

18. The value of

$\frac{\sin 39°}{\cos 51°}$ + 2 tan 11° tan 31° tan 45° tan 59° tan 79° – 3 ($\sin^2$ 21° + $\sin^2$ 69°) is :

(1) 2 (2) –1

(3) 1 (4) 0

(SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (East Zone)

19. If $\frac{\cos^2\theta}{\cot^2\theta - \cos^2\theta}$ = 3 and 0° < θ < 90°, then the value of θ is :

(1) 30° (2) 45°

(3) 60° (4) None of these

(SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (East Zone)

20. If A = tan 11° tan 29°, B = 2 cot 61° cot 79°, then :

(1) A = 2B (2) A = – 2B

(3) 2A = B (4) 2A = – B

(SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (East Zone)

21. If sin 17° = $\frac{x}{y}$, then the value of (sec 17° – sin 73°) is

(1) $\frac{y^2}{x\sqrt{y^2-x^2}}$

(2) $\frac{x^2}{y\sqrt{y^2-x^2}}$

(3) $\frac{x^2}{y\sqrt{x^2-y^2}}$

(4) $\frac{y^2}{x\sqrt{x^2-y^2}}$

(FCI Assistant Grade-III Exam. 05.02.2012 (Paper-I) East Zone (IInd Sitting) & (SSC Graduate Level Tier-II Exam. 16.09.2012)

22. If $0° < \theta < 90°$, the value of $\sin\theta + \cos\theta$ is
(1) equal to 1
(2) greater than 1
(3) less than 1
(4) equal to 2
(SSC Graduate Level Tier-II Exam. 16.09.2012)

23. The expression $\frac{\tan 57° + \cot 37°}{\tan 33° + \cot 53°}$ is equal to
(1) tan 33° cot 57°
(2) tan 57° cot 37°
(3) tan 33° cot 53°
(4) tan 53° cot 37°
(SSC Graduate Level Tier-II Exam. 16.09.2012)

24. The value of $\frac{\cot 30° - \cot 75°}{\tan 15° - \tan 60°}$ is :
(1) 0 (2) 1
(3) $\sqrt{3} - 1$ (4) –1
(SSC CHSL DEO & LDC Exam. 21.10.2012 (IInd Sitting)

25. The value of
$\cot\theta.\tan(90° - \theta) - \sec(90° - \theta)\,\text{cosec}\theta + (\sin^2 25° + \sin^2 65°) + \sqrt{3}(\tan 5° \tan 15°. \tan 30°. \tan 75°. \tan 85°)$ is :
(1) 1 (2) –1
(3) 2 (4) 0
(SSC CHSL DEO & LDC Exam. 21.10.2012 (IInd Sitting)

26. If $\sin(3x - 20°) = \cos(3y + 20°)$, then the value of $(x + y)$ is
(1) 20° (2) 30°
(3) 40° (4) 45°
(SSC CHSL DEO & LDC Exam. 28.10.2012 (Ist Sitting)

27. If $\cos\theta\,\text{cosec}\,23° = 1$, the value of θ is
(1) 23° (2) 37°
(3) 63° (4) 67°
(SSC CHSL DEO & LDC Exam. 04.11.2012 (IInd Sitting)

28. If $2(\cos^2\theta - \sin^2\theta) = 1$, θ is a positive acute angle, then the value of θ is
(1) 60° (2) 30°
(3) 45° (4) $22\frac{1}{2}°$
(SSC Assistant Grade-III Exam. 11.11.2012 (IInd Sitting)

29. The value of $(\tan 35° \tan 45° \tan 55°)$ is
(1) $\frac{1}{2}$ (2) 2
(3) 0 (4) 1
(SSC Delhi Police S.I. (SI) Exam. 19.08.2012)

30. If $\sec(7\theta + 28°) = \text{cosec}(30° - 3\theta)$ then the value of θ is
(1) 8° (2) 5°
(3) 60° (4) 9°
(SSC Delhi Police S.I. (SI) Exam. 19.08.2012)

31. If $\tan\left(\frac{\pi}{2} - \frac{\theta}{2}\right) = \sqrt{3}$, the value of $\cos\theta$ is :
(1) 0 (2) $\frac{1}{\sqrt{2}}$
(3) $\frac{1}{2}$ (4) 1
(SSC CHSL DEO & LDC Exam. 04.11.2012, Ist Sitting)

32. If $7\sin^2\theta + 3\cos^2\theta = 4$ $(0° \le \theta \le 90°)$, then value of θ is
(1) $\frac{\pi}{2}$ (2) $\frac{\pi}{3}$
(3) $\frac{\pi}{6}$ (4) $\frac{\pi}{4}$
(SSC Graduate Level Tier-I Exam. 11.11.2012, Ist Sitting)

33. If $\sec\theta = x + \frac{1}{4x}$ $(0° < \theta < 90°)$, then $\sec\theta + \tan\theta$ is equal to
(1) $\frac{x}{2}$ (2) $2x$
(3) x (4) $\frac{1}{2x}$
(SSC FCI Assistant Grade-III Main Exam. 07.04.2013)

34. The value of
$\cos 1° \cos 2° \cos 3°.....$
$\cos 177° \cos 178° \cos 179°$ is :
(1) 0 (2) $\frac{1}{2}$
(3) 1 (4) $\frac{1}{\sqrt{2}}$
(SSC Graduate Level Tier-I Exam. 21.04.2013, Ist Sitting)

35. The value of $(\sin^2 25° + \sin^2 65°)$ is :
(1) $\frac{\sqrt{3}}{2}$ (2) 1
(3) 0 (4) $\frac{2}{\sqrt{3}}$
(SSC Graduate Level Tier-I Exam. 21.04.2013, Ist Sitting)

36. If $\sec\theta + \tan\theta = \sqrt{3}$ $(0° \le \theta \le 90°)$, then $\tan 3\theta$ is
(1) undefined (2) $\frac{1}{\sqrt{3}}$
(3) $\frac{1}{\sqrt{2}}$ (4) $\sqrt{3}$
(SSC Graduate Level Tier-I Exam. 21.04.2013 IInd Sitting)

37. If $\sin(60° - \theta) = \cos(\psi - 30°)$, then the value of $\tan(\psi - \theta)$ is (assume that θ and ψ are both positive acute angles with $\theta < 60°$ and $\psi > 30°$).
(1) $\frac{1}{\sqrt{3}}$ (2) 0
(3) $\sqrt{3}$ (4) 1
(SSC Graduate Level Tier-I Exam. 21.04.2013 IInd Sitting)

38. If $a\sin\theta + b\cos\theta = c$ then the value of $a\cos\theta - b\sin\theta$ is :
(1) $\pm\sqrt{-a^2 + b^2 + c^2}$
(2) $\pm\sqrt{a^2 + b^2 - c^2}$
(3) $\pm\sqrt{a^2 - b^2 - c^2}$
(4) $\pm\sqrt{a^2 - b^2 + c^2}$
(SSC Graduate Level Tier-I Exam. 21.04.2013)

39. If $\sin(A - B) = \frac{1}{2}$ and $\cos(A + B) = \frac{1}{2}$ where $A > B > 0$ and $A + B$ is an acute angle, then the value B is
(1) $\frac{\pi}{6}$ (2) $\frac{\pi}{12}$
(3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$
(SSC Graduate Level Tier-I Exam. 21.04.2013)

40. Maximum value of (2 sin θ + 3 cos θ) is

(1) 2 (2) $\sqrt{13}$

(3) $\sqrt{15}$ (4) 1

(SSC Graduate Level Tier-I Exam. 21.04.2013)

41. The value of

152 (sin 30° + 2 cos² 45° + 3 sin 30° + 4 cos² 45° + ... + 17 sin 30°+ 18 cos² 45°) is

(1) an integer but not a perfect square

(2) a rational number but not an integer

(3) a perfect square of an integer

(4) irrational

(SSC Graduate Level Tier-I Exam. 21.04.2013)

42. Evaluate : 3 cos 80° cosec 10° + 2 cos 59° cosec 31°

(1) 1 (2) 3

(3) 2 (4) 5

(SSC Graduate Level Tier-I Exam. 19.05.2013)

43. $\sin^2\theta - 3\sin\theta + 2 = 0$ will be true if

(1) $0 \le \theta < 90$ (2) $0 < \theta < 90$

(3) $\theta = 0°$ (4) $\theta = 90°$

(SSC Graduate Level Tier-I Exam. 19.05.2013)

44. If $\tan\alpha = n\tan\beta$ and $\sin\alpha = m\sin\beta$, then $\cos^2\alpha$ is

(1) $\frac{m^2}{n^2+1}$ (2) $\frac{m^2}{n^2}$

(3) $\frac{m^2-1}{n^2-1}$ (4) $\frac{m^2+1}{n^2+1}$

(SSC Graduate Level Tier-I Exam. 19.05.2013 Ist Sitting)

45. If $\tan\theta = \frac{3}{4}$ and θ is acute, then cosec θ

(1) $\frac{4}{5}$ (2) $\frac{5}{3}$

(3) 2 (4) $\frac{1}{2}$

(SSC Graduate Level Tier-I Exam. 19.05.2013 Ist Sitting)

46. If $\text{cosec}\,\theta - \cot\theta = \frac{7}{2}$, the value of cosecθ is :

(1) $\frac{47}{28}$ (2) $\frac{51}{28}$

(3) $\frac{53}{28}$ (4) $\frac{49}{28}$

(SSC CAPFs SI & CISF ASI Exam. 23.06.2013

47. If $x \sin 45° = y \text{ cosec } 30°$, then $\frac{x^4}{y^4}$ is equal to

(1) 4^3 (2) 6^3

(3) 2^3 (4) 8^3

(SSC Graduate Level Tier-II Exam. 29.09.2013

48. If $5\tan\theta = 4$, then $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$ is equal to

(1) $\frac{2}{3}$ (2) $\frac{1}{4}$

(3) $\frac{1}{6}$ (4) $\frac{1}{3}$

(SSC CHSL DEO & LDC Exam. 20.10.2013)

49. $2\,\text{cosec}^2 23°\cot^2 67° - \sin^2 23° - \sin^2 67° - \cot^2 67°$ is equal to

(1) 1 (2) $\sec^2 23°$

(3) $\tan^2 23°$ (4) 0

(SSC CHSL DEO & LDC Exam. 20.10.2013)

50. The equation

$$\cos^2\theta = \frac{(x+y)^2}{4xy}$$

is only possible when

(1) $x = -y$ (2) $x > y$

(3) $x = y$ (4) $x < y$

(SSC CHSL DEO & LDC Exam. 20.10.2013)

TYPE-I

1. (1)	**2.** (2)	**3.** (3)	**4.** (2)
5. (3)	**6.** (3)	**7.** (2)	**8.** (1)
9. (4)	**10.** (3)	**11.** (2)	**12.** (1)

TYPE-II

1. (3)	**2.** (3)	**3.** (3)	**4.** (2)
5. (1)	**6.** (1)	**7.** (2)	**8.** (3)
9. (4)	**10.** (2)	**11.** (1)	**12.** (1)
13. (1)	**14.** (4)	**15.** (4)	**16.** (2)
17. (4)	**18.** (4)	**19.** (3)	**20.** (3)
21. (2)	**22.** (2)	**23.** (2)	**24.** (4)
25. (1)	**26.** (2)	**27.** (4)	**28.** (2)
29. (4)	**30.** (1)	**31**. (3)	**32.** (3)
33. (2)	**34.** (1)	**35.** (2)	**36.** (1)
37. (3)	**38.** (2)	**39.** (2)	**40.** (2)
41. (3)	**42.** (4)	**43.** (4)	**44.** (3)
45. (2)	**46.** (3)	**47.** (1)	**48.** (3)
49. (2)	**50.** (3)		