> **Following short questions are selected from previous 5 years papers of different boards. Solve these at your own to perform well in annual exams.**

1. Define a radian.

2. Convert $\frac{25}{36}\pi$ radian into the degree.

3. Prove that $cosec\theta + tan\theta sec\theta = cosec\theta sec^2\theta$.

4. Prove that $cos^2\theta - sin^2\theta = \frac{1-tan^2\theta}{1+tan^2\theta}$, where θ is not an integral multiple of $\frac{\pi}{2}$.

5. Find r, when $l = 56$cm and $\theta = 45°$.

6. Convert $\frac{5\pi}{6}$ radian into measure of sexagesimal system.

16. If $sin\theta = -\frac{1}{\sqrt{2}}$, then find the value of $cos\theta$ if θ does not lie in third quadrant.

21. Prove that $sec^2\theta - cosec^2\theta = tan^2\theta - cot^2\theta$.

20. Prove that $\frac{1-sin\theta}{cos\theta} = \frac{cos\theta}{1+sin\theta}$.

7. Prove that $sin(180° + \alpha)sin(90° - \alpha) = sin\alpha cos\alpha$.

8. Prove that $\frac{1-cos\alpha}{sin\alpha} = tan\frac{\alpha}{2}$.

9. Express the product $2cos5\theta sin3\theta$ as a sum or difference.

10. Prove that $\frac{cos11°+sin11°}{cos11°-sin11°} = tan(56°)$.

11. Express $sin7x + sin5x$ as a product.

12. Verify $sin^2\frac{\pi}{6} + sin^2\frac{\pi}{3} + tan^2\frac{\pi}{4} = 2$.

13. Express $sin2x + sin7x$ as a product.

14. Express $sin120° sin46°$ as sum or difference.

15. Verify $sin2\theta = 2sin\theta cos\theta$ for $\theta = 45°$.

17. Show that $tan(\alpha + \beta) = \frac{tan\alpha + tan\beta}{1 - tan\alpha tan\beta}$.

18. Prove that $sin(45° + \alpha) = \frac{1}{\sqrt{2}}(sin\alpha + cos\alpha)$.

19. Show that $cos(\alpha + 45°) = \frac{1}{\sqrt{2}}(cos\alpha - sin\alpha)$.

22. Show that $cos(\alpha + \beta)cos(\alpha - \beta) = cos^\beta - sin^2\alpha$.

23. Prove that $cot\alpha - tan\alpha = 2cot2\alpha$.

24. Prove that $tan(270° - \theta) = cot\theta$.

25. Prove that $\frac{cos8° - sin8°}{cos8° + sin8°} = tan37°$.

26. Draw the graph of $y = cosx$ from $0°$ to $90°$.

27. Find the domain of $tan\theta$.

28. Find the period of $sin3x$.

29. Find the period of $cosec10x$.

30. Find the period of $3cos\frac{x}{5}$.

31. Find the period of $cos2\theta$.

32. Write down domain and range of $sec9x$.

33. Find the smallest angle of the triangle ABC when $a = 37.34$, $b = 3.24$, $c = 35.06$.

34. Find the area of the triangle ABC when $a = 200$, $b = 120$, $\gamma = 150°$.

35. Find r_2 of the triangle ABC, when $a = 34$, $b = 20$, $c = 42$.

36. What do you mean by solution of a triangle?

37. State any two laws of cosines in a triangle.

38. Write down laws of sines.

39. Prove that $r_1 = \frac{\Delta}{s - a}$.

40. Find the area of a triangle ABC in which $b = 21.6$m, $c = 30.2$m and $\alpha = 52°40'$.

41. Find the area of the triangle ABC, where $a = 13$, $b = 14$, $c = 15$.

42. Solve the right triangle ABC in which $\gamma = 90°$, $\alpha = 37°20'$ and $a = 243$.

43. If α, β, γ are the angles of a triangle ABC, then prove that $cos(\frac{\alpha + \beta}{2}) = sin\frac{\gamma}{2}$.

44. Find the smallest angle of the triangle ABC, where $a = 37.34$, $b = 3.24$, $c = 35.06$.

45. Solve the triangle ABC in which $b = 125$, $\gamma = 53°$ and $\alpha = 47°$.

46. Solve the trigonometric equation, $tan^2\theta = \frac{1}{3}$.

47. Show that $r_2 = stan\frac{\beta}{2}$.

48. If α, β, γ are angles of a triangle ABC, then prove that $tan(\alpha + \beta) + tan\gamma = 0$.

49. Prove that $R = \frac{abc}{4\Delta}$.

50. Show that $r_1 = stan\frac{\alpha}{2}$.

51. A vertical pole is 8m high and length of its shadow is 6m. What is the angle of elevation of sun at that moment?

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52. Solve the triangle ABC in which $a = 7$, $b = 3$, $\gamma = 38°13'$.

53. Without using calculator, show that $Cos^{-1}\frac{4}{5} = Cot^{-1}\frac{4}{3}$.

54. Find the value of $Cos^{-1}(1)$ and $Cos^{-1}(\frac{-1}{2})$.

55. Prove that $Tan^{-1}\frac{1}{4} + Tan^{-1}\frac{1}{5} = Tan^{-1}\frac{9}{19}$.

56. Complete the formula $Tan^{-1}A + Tan^{-1}B =:$

57. Evaluate $Cos^{-1}(\frac{\sqrt{3}}{2})$ without using table OR calculator.

58. Solve the equation $sinx = \frac{1}{2}$, where $x \in [0, 2\pi]$.

59. Solve the equation $1 + cosx = 0$.

60. Solve the trigonometric equation $tan\theta = \frac{1}{\sqrt{3}}$.

61. Find the solution of $secx = -2$ which lie in $[0, 2\pi]$.

62. Find the solution of $sinx = -\frac{\sqrt{3}}{2}$ which lie in $[0, 2\pi]$.

63. Find the solution set of the equation $sinx = \frac{1}{2}$.

64. Solve $sec^2\theta = \frac{4}{3}$ in $[0, 2\pi]$.

Best of Luck

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