INTRODUCTION TO TRIGONOMETRY

OBJECTIVE TYPE QUESTIONS

1. Which of the following numbers can form sides of a right angled triangle?
   A) 13 cm , 27 cm , 15 cm
   B) 4 cm , 5 cm , 9 cm
   C) 2 cm , 17 cm , 9 cm
   D) 10 cm , 6 cm , 8 cm

2. If $\sec\theta + \tan\theta = x$, then $\tan\theta$ is:
   A) $(x^2-1) / 2x$
   B) $(x^2+1) / 2x$
   C) $(x^2-1) / x$
   D) $(x^2+1) / x$

3. If $\sin A = 8/17$, find the value of $\sec A \cos A + \csc A \cos A$.
   A) 23/8
   B) 15/8
   C) 8/15
   D) 6/23

4. $(\sin A - 2\sin^3 A)/ (2\cos^3 A - \cos A) =$
   A) tan A
   B) cot A
   C) sec A
   D) 1

5. If $5\tan\theta = 4$, then value of $(5\sin\theta - 4\cos\theta)/(5\sin\theta + 4\cos\theta)$ is:
   A) 1/6
   B) 5/6
   C) 0
   D) 5/3

6. In $\triangle PQR$, PQ = 12 cm and PR = 13 cm. $\angle Q = 90°$ Find tan P – cot R
   A) –(119/60)
   B) 119/60
   C) 1
   D) 0

7. The value of $\tan 1° \times \tan 2° \times \tan 3° \times \ldots \ldots \times \tan 89°$ is :
   A) ½
   B) 2
   C) 1
   D) 0

8. If tan2A = cot(A-18°), then value of A is:
   A) 27°
   B) 36⁰
   C) 24°
   D) 18°

9. If tan 4θ=cot(θ−10°), where 4θ and(θ−10°) are acute angles then the value of θ in degres is
   A) 16°
   B) 20°
   C) 32°
   D) 40°

10. Which of the following is correct for some θ, such that 0° ≤θ< 90°
    A) $1/\cos\theta < 1$
    B) $\sec\theta = 0$
    C) $1/\sec\theta < 1$
    D) $1/\sec\theta > 1$

FILL IN THE BLANKS

11. If p cotθ = $\sqrt{q^2 - p^2}$ then the value of sinθ is ___.
    (θ being an acute angle)

12. $\frac{\cos A}{\cot A}$ + sinA is equal to _____ .

13. If tanθ = $\frac{x\sin\varphi}{1-x\cos\varphi}$ and, tan φ = $\frac{y\sin\theta}{1-y\cos\theta}$
    then $\frac{x}{y}$ = _____ .

14. The value cot²30°−2cos²60°−$\frac{3}{4}$ sec²45°−4sin²30° is_____ .

15. In triangle ABC , right angled at B , AB=7cm. And AC-BC = 1cm.Then SinC is _____.

ANSWER THE FOLLOWING:

16. sin 3θ = cos (θ-6°) and 3θ and (θ-6°) are acute angles, find value of θ.

17. If tan A = $\frac{4}{3}$, then find value of secA.

18. If tan A= b/a, where a and b are real numbers, Find value of sin²A

19. If cos θ +sin θ=√2cosθ, then find the value of cos θ – sin θ.

20. If 7 sin²θ + cos²θ = 44 then find the value of tan θ.

Questions carrying 2 marks each

21. If $\sqrt{3}\sin\theta - \cos\theta = 0$ and $0° < \theta < 90°$, find value of θ

22. ABC is a right triangle, right angled at C. If $<A = 30°$ & AB = 40 units, find the remaining two sides of Δ ABC.

23. Find the value of x, if $\tan 3x = \sin 45° . \cos 45° + \sin 30°$

24. If $\cot\theta = \sqrt{7}$, show that $\dfrac{cosec^2\,\theta - sec^2\,\theta}{cosec^2\,\theta + sec^2\,\theta} = \dfrac{3}{4}$

25. Prove that $\sin(90° - \theta)\cos(90° - \theta) = \dfrac{tan\theta}{1+cot^2\,(90° - \theta)}$

Questions carrying 3 marks each

26. If $\dfrac{cos\alpha}{cos\beta} = m$ and $\dfrac{cos\alpha}{sin\beta} = n$, show that $(m^2 + n^2)\cos^2\beta = n^2$

27. Find A and B, if $\sin(A + 2B) = \dfrac{\sqrt{3}}{2}$ and $\cos(A + B) = \dfrac{1}{2}$

28. If $7\sin^2\theta + 3\cos^2\theta = 4$, then show that $\tan\theta = \dfrac{1}{3}$

29. Evaluate: $\dfrac{sin15°cos75° + cos\,15°\sin 75°}{tan\,5°\,tan\,30°\,tan\,35°\,tan\,55°\,tan85°}$

30. Prove that $sin^6A + cos^6A = 1 - 3\sin^2A\cos^2A$

Questions carrying 4 marks each

31. Prove that $(\sin A + \sec A)^2 + (\cos A + cosecA)^2 = (1 + \sec A . cosecA)^2$

32. Show that $\dfrac{1}{secx-tanx} - \dfrac{1}{cosx} = \dfrac{1}{cosx} - \dfrac{1}{secx+tanx}$

33. If $a\cos\theta - b\sin\theta = c$, prove that $a\sin\theta + b\cos\theta = \pm\sqrt{a^2 + b^2 - c^2}$

34. If $\sin\theta + \cos\theta = p$ and $\sec\theta + cosec\theta = q$, then show that $q(p^2 - 1) = 2p$

35. Prove that $\tan^2A\sec^2B - \sec^2A\tan^2B = \tan^2A - \tan^2B$