DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 9**

Topic :- TRIGONOMETRIC FUNCTIONS

1. $cosec\ 15° + \sec 15°$ is equal to
   a) $2\sqrt{2}$ b) $\sqrt{6}$ c) $2\sqrt{6}$ d) $\sqrt{6} + \sqrt{2}$
2. If $\sin A = \frac{4}{5}$ and $\cos B = -\frac{12}{13}$, where A and B lie in first and third quadrant respectively, then $\cos(A + B)$ is equal to
   a) $\frac{56}{65}$ b) $-\frac{56}{65}$ c) $\frac{16}{65}$ d) $-\frac{16}{65}$
3. If $\cot\theta + \tan\theta = m$ and $\sec\theta - \cos\theta = n$, then which of the following is correct?
   a) $m(mn^2)^{1/3} - n(nm^2)^{1/3} = 1$ b) $m(m^2n)^{1/3} - n(mn^2)^{1/3} = 1$
   c) $n(mn^2)^{1/3} - m(nm^2)^{1/3} = 1$ d) $n(m^2n)^{1/3} - m(mn^2)^{1/3} = 1$
4. If in a ΔABC,
   $(\sin A + \sin B + \sin C)(\sin A + \sin B - \sin C) = 3\sin A \sin B$, then
   a) $A = 60°$ b) $B = 60°$ c) $C = 60°$ d) None of these
5. Equation $\cos 2x + 7 = a(2 - \sin x)$ can have a real solution for
   a) All values of a b) $a \in [2, 6]$ c) $a \in (-\infty, 2)$ d) $a \in (0, \infty)$
6. In a ΔABC, $\angle A = \frac{\pi}{2}$, then $\cos^2 B + \cos^2 C$ equals
   a) -2 b) -1 c) 1 d) 0
7. In any ΔABC, $b^2\sin 2C + c^2\sin 2B$
   a) Δ b) 2Δ c) 3Δ d) 4Δ
8. In a triangle the length of the two larger sides are 24 and 22, respectively. If the angles are in AP, then the third side is
   a) $12 + 2\sqrt{13}$ b) $12 - 2\sqrt{13}$ c) $2\sqrt{13} + 2$ d) $2\sqrt{13} - 2$
9. If in a ΔABC,AD,BE and CF are the altitudes and R is the circum-radius, then radius of the circumcircle DEF is
   a) $\frac{R}{2}$ b) $2R$ c) R d) $\frac{3}{2}R$
10. If a,b,c denote the sides of a ΔABC and the equations $ax^2 + bx + c = 0$ and $x^2 + \sqrt{2}x + 1 = 0$ have a common root, then $\angle C =$
    a) 30° b) 45° c) 90° d) 60°
11. If a circle is inscribed in an equilateral triangle of side a, then area of the square inscribed in the circle is
    a) $\frac{a^2}{6}$ b) $\frac{a^2}{3}$ c) $\frac{2a^2}{5}$ d) $\frac{2a^2}{3}$
12. The value of the expression $\cos 1°.\cos 2°.....\cos 179°$ equals
    a) 0 b) 1 c) $1/\sqrt{2}$ d) -1
13. The general solution of the equation $2^{\cos 2x} + 1 = 3.2^{-\sin x}$ is

a) $n\pi$ b) $n\pi - \pi$ c) $n\pi + \pi$ d) None of these

14. If $\sin A - \sqrt{6}\cos A = \sqrt{7}\cos A$, then $\cos A + \sqrt{6}\sin A$ is equal to

a) $\sqrt{6}\sin A$ b) $-\sqrt{7}\sin A$ c) $\sqrt{6}\cos A$ d) $\sqrt{7}\cos A$

15. If $y = \frac{\tan x}{\tan 3x}$, then

a) $y \in [1/3, 3]$ b) $y \notin [1/3, 3]$ c) $y \in [-3, -1/3]$ d) $y \notin [-3, -1/3]$

16. If $\frac{3\pi}{4} < \alpha < \pi$, then $\sqrt{\text{cosec}^2\alpha + 2\cot\alpha}$ is equal to

a) $1 + \cot\alpha$ b) $1 - \cot\alpha$ c) $-1 - \cot\alpha$ d) $-1 + \cot\alpha$

17. The equation $a\sin x + b\cos x = c$, where $|c| > \sqrt{a^2 + b^2}$ has

a) A unique solution
b) Infinite no. of solutions
c) No solution
d) None of these

18. The number of solutions of the equation $\tan\theta + \sec\theta = 2\cos\theta$ lying in the interval $[0, 2\pi]$, is

a) 0 b) 1 c) 2 d) 3

19. The least positive non-integral solution of $\sin\pi(x^2 + x) - \sin\pi x^2 = 0$, is

a) Rational
b) Irrational of the form $\sqrt{p}$
c) Irrational of the form $\frac{\sqrt{p} - 1}{4}$, when p is an odd integer
d) Irrational of the form $\frac{\sqrt{p} + 1}{4}$, where p is an even integer

20. If A and B are acute positive angles satisfying the equations $3\sin^2 A + 2\sin^2 B = 1$ and $3\sin 2A - 2\sin 2B = 0$, then $A + 2B$ is equal to

a) 0 b) $\frac{\pi}{2}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{3}$