DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 1**

Topic :- TRIGONOMETRIC FUNCTIONS

1. The most general value of θ which satisfies both the equations $\tan\theta = -1$ and $\cos\theta = 1/\sqrt{2}$ will be
   a) $n\pi + \frac{7\pi}{4}$ b) $n\pi + (-1)^n \frac{7\pi}{4}$ c) $2n\pi + \frac{7\pi}{4}$ d) None of these
2. If $\sin x + \sin^2 x = 1$, then the value of $\cos^{12} x + 3\cos^{10} x + 3\cos^8 x + \cos^6 x - 1$ is equal to
   a) 2 b) 1 c) 0 d) -1
3. The side of a triangle are $3x + 4y, 4x + 3y$ and $5x + 5y$ units, where $x, y > 0$. The triangle is
   a) Right angled b) Equilateral c) Obtuse angled d) None of these
4. If the sides of a triangle are $x^2 + x + 1, x^2 - 1, 2x + 1$, where $x > 1$, then the largest angle is
   a) 120° b) 60° c) 40° d) 30°
5. If p_1, p_2, p_3 are altitudes of a triangle ABC from the vertices A, B, C and Δ, the area of the triangle, then $p_1^{-1} + p_2^{-1} - p_3^{-1}$ is equal to
   a) $\frac{s-a}{\Delta}$ b) $\frac{s-b}{\Delta}$ c) $\frac{s-c}{\Delta}$ d) $\frac{s}{\Delta}$
6. In a ΔABC if $a = 26, b = 30$ and $\cos C = \frac{63}{65}$, then $r_2 =$
   a) 84 b) 45 c) 48 d) 24
7. The value of $\cos 1° \cos 2° \cos 3° \ldots \cos 100°$ is equal to
   a) 1 b) -1 c) 0 d) None of these
8. The value of $\sin\frac{\pi}{2} + \sin\frac{2\pi}{7} + \sin\frac{3\pi}{7}$ is
   a) $\cot\frac{\pi}{14}$ b) $\frac{1}{2}\cot\frac{\pi}{14}$ c) $\tan\frac{\pi}{14}$ d) $\frac{1}{2}\tan\frac{\pi}{14}$
9. The value of x for the maximum value of $\sqrt{3}\cos x + \sin x$, is
   a) 30° b) 45° c) 60° d) 90°
10. $\sin^2 17.5° + \sin^2 72.5°$ is equal to
    a) $\cos^2 90°$ b) $\tan^2 45°$ c) $\cos^2 30°$ d) $\sin^2 45°$
11. If in ΔABC, $a\sin A = b\sin B$, then the triangle is
    a) Isosceles b) Right angled c) Equilateral d) None of these
12. $\sin^2\theta = \frac{4xy}{(x+y)^2}$ is true if and only if
    a) $x + y \neq 0$ b) $x = y, x \neq 0, y \neq 0$ c) $x = y$ d) $x \neq 0, y \neq 0$
13. If $\cos\theta = \frac{1}{2}\left(x + \frac{1}{x}\right)$, then $\frac{1}{2}\left(x^2 + \frac{1}{x^2}\right)$ is equal to
    a) $\sin 2\theta$ b) $\cos 2\theta$ c) $\tan 2\theta$ d) None of these
14. $\text{sech}^{-1}(\sin\theta)$ is equal to
    a) $\log\tan\frac{\theta}{2}$ b) $\log\sin\frac{\theta}{2}$ c) $\log\cos\frac{\theta}{2}$ d) $\log\cot\frac{\theta}{2}$
15. The number of solutions of the equation $2^{\cos x} = |\sin x|$ in $[-2\pi, 2\pi]$, is
    a) 1 b) 2 c) 3 d) 4
16. If the equation $\cos(\lambda\sin\theta) = \sin(\lambda\cos\theta)$ has a solution in $[0, 2\pi]$, then the smallest positive value of λ is
    a) $\frac{\pi}{\sqrt{2}}$ b) $\sqrt{2}\pi$ c) $\frac{\pi}{2}$ d) $\frac{\pi}{2\sqrt{2}}$
17. In the ambiguous case, given a, b and A. The difference between the two values of C is
    a) $2\sqrt{a^2 - b^2}$ b) $\sqrt{a^2 - b^2\sin^2 A}$ c) $2\sqrt{a^2 - b^2\sin^2 A}$ d) $\sqrt{a^2 - b^2}$

18. If $\tan\alpha = (1+2^{-x})^{-1}, \tan\beta = (1+2^{x+1})^{-1}$, then $\alpha+\beta$ equals
    a) $\pi/6$ b) $\pi/4$ c) $\pi/3$ d) $\pi/2$
19. The maximum value of $f(x) = \sin x(1+\cos x)$ is
    a) $\frac{3\sqrt{3}}{4}$ b) $\frac{3\sqrt{3}}{2}$ c) $3\sqrt{3}$ d) $\sqrt{3}$
20. The value of $\cos\frac{\pi}{11}+\cos\frac{3\pi}{11}+\cos\frac{5\pi}{11}+\cos\frac{7\pi}{11}+\cos\frac{9\pi}{11}$, is
    a) 0 b) $\frac{-1}{2}$ c) $\frac{1}{2}$ d) 1