DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 3**

Topic :- TRIGONOMETRIC FUNCTIONS

1. In a ΔABC, angles A, B, C are in A.P., then $\lim_{A\to C} \frac{\sqrt{3-4\sin A \sin C}}{|A-C|}$ is equal to
   a) 1 b) 2 c) 3 d) 4
2. For all values of θ, the values of $3-\cos\theta+\cos\left(\theta+\frac{\pi}{3}\right)$ lie in the interval
   a) $[-2,3]$ b) $[-2,1]$ c) $[2,4]$ d) $[1,5]$
3. If $\cos A = m\cos B$ and $\cot\frac{A+B}{2} = \lambda\tan\frac{B-A}{2}$, then λ is
   a) $\frac{m}{m-1}$ b) $\frac{m+1}{m}$ c) $\frac{m+1}{m-1}$ d) None of these
4. The value of $\cos^4\left(\frac{\pi}{8}\right)+\cos^4\left(\frac{3\pi}{8}\right)+\cos^4\left(\frac{5\pi}{8}\right)+\cos^4\left(\frac{7\pi}{8}\right)$ is
   a) 0 b) $\frac{1}{2}$ c) $\frac{3}{2}$ d) 1
5. If $\sin\theta=\frac{12}{13}$, $\left(0<\theta<\frac{\pi}{2}\right)$ and $\cos\phi=-\frac{3}{5}\left(\pi<\phi<\frac{3\pi}{2}\right)$, then $\sin(\theta+\phi)$ will be
   a) $-56/61$b) $-56/65$c) $1/65$d) -56
6. The quadratic equation whose roots are $\sec^2\theta$ and $\mathrm{cosec}^2\,\theta$ can be
   a) $x^2-2x+2=0$ b) $x^2+5x+5=0$ c) $x^2-4x+4=0$ d) None of these
7. If $\sec\theta = m$ and $\tan\theta = n$, then $\frac{1}{m}\left[(m+n)+\frac{1}{(m+n)}\right]$ is
   a) 2 b) $2m$ c) $2n$ d) mn
8. If in a $\Delta\, ABC, \angle C = 90°$, then the maximum value of $\sin A \sin B$ is
   a) $\frac{1}{2}$ b) 1 c) 2 d) None of these
9. In a cyclic quadrilateral $ABCD$, he value of $\cos A+\cos B+\cos C+\cos D$, is
   a) 1 b) 0 c) -1 d) None of these
10. If the angles of a triangle are in the ratio $1:2:3$, the corresponding sides are in the ratio
   a) $2:3:1$ b) $\sqrt{3}:2:1$ c) $2:\sqrt{3}:1$ d) $1:\sqrt{3}:2$
11. If $\sin(\pi\cos\theta)=\cos(\pi\sin\theta)$, then the value of $\cos\left(\theta+\frac{\pi}{4}\right)$ equals
   a) $\frac{1}{\sqrt{2}}$ b) $\frac{1}{2\sqrt{2}}$ c) $-\frac{1}{2\sqrt{2}}$ d) $-\frac{1}{\sqrt{2}}$
12. The most general solution of $2^{1+|\cos x|+\cos^2 x+|\cos^3 x|+\cdots\infty}=4$ is given by
   a) $x=n\pi\pm\frac{\pi}{3}, n\in Z$
   b) $x=2n\,\pi\pm\frac{\pi}{3}, n\in Z$
   c) $x=2n\,\pi\pm\frac{2\pi}{3}, n\in Z$
   d) None of these
13. If $\cos\alpha+\cos\beta=0=\sin\alpha+\sin\beta$, then $\cos 2\,\alpha+\cos 2\,\beta=$
   a) $-2\sin(\alpha+\beta)$ b) $-2\cos(\alpha+\beta)$ c) $2\sin(\alpha+\beta)$ d) $2\cos(\alpha+\beta)$
14. The value of the expression $1-\frac{\sin^2 y}{1+\cos y}+\frac{1+\cos y}{\sin y}-\frac{\sin y}{1-\cos y}$ is equal to
   a) 0 b) 1 c) $\sin y$ d) $\cos y$
15. In a $\Delta ABC, a=2b$ and $A=3B$, the $A=$

a) 90° b) 60° c) 30° d) 45°

16. If in a $\Delta ABC, A=\frac{\pi}{3}$ and AD is the median, then
 a) $2\,AD^2=b^2+c^2+bc$
 b) $4\,AD^2=b^2+c^2+bc$
 c) $6\,AD^2=b^2+c^2+bc$
 d) None of these

17. If $\cos(\theta-\alpha)=a, \cos(\theta-\beta)=b$, then $\sin^2(\alpha-\beta)+2ab\cos(\alpha-\beta)$ is equal to
 a) a^2+b^2 b) a^2-b^2 c) b^2-a^2 d) $-a^2-b^2$

18. If $\cos\frac{x}{2}.\cos\frac{x}{2^2}\ldots.\cos\frac{x}{2^n}=\frac{\sin x}{2^n\sin\frac{x}{2^n}}$, then
$\frac{1}{2}\tan\frac{x}{2}+\frac{1}{2^2}\tan\frac{x}{2^2}+\ldots+\frac{1}{2^n}\tan\frac{x}{2^n}$ is
 a) $\cot x-\cot\frac{x}{2^n}$ b) $\frac{1}{2^n}\cot\left(\frac{x}{2^n}\right)-\cot x$
 c) $\frac{1}{2^n}\tan\left(\frac{1}{2^n}\right)-\tan x$ d) $\frac{1}{2}\cot x-\frac{1}{2^n}\cot\left(\frac{x}{2^n}\right)$

19. In triangles ABC and DEF, $AB=DE$, $AC=EF$ and $\angle A=2\angle E$. Two triangles will have the same area if angle A is equal to
 a) $\pi/3$ b) $\pi/2$ c) $2\pi/3$ d) $5\pi/6$

20. The value of $\sin\left(\frac{\pi}{18}\right)\sin\left(\frac{5\pi}{18}\right)\sin\left(\frac{7\pi}{18}\right)$, is
 a) $1/2$ b) $1/4$ c) $1/8$ d) $1/16$