INTER - EAMCET MATHEMATICS

1. If $\cos\theta - 4\sin\theta = 1$ then $\sin\theta + 4\sin\theta =$
   1) ±1 2) 0 3) ±2 4) ±4
2. $9\cos 2x + 4\sin 2x = 5 \Rightarrow \tan x =$
   1) ±2 2) ±4 3) ±3 4) ±1
3. $\left(\frac{\sqrt{3}+2\cos A}{1-2\sin A}\right)^{-3}+\left(\frac{1+2\sin A}{\sqrt{3}-2\cos A}\right)^{-3} =$
   1) 1 2) $\sqrt{3}$ 3) 0 4) -1
4. $(\sin\alpha + \operatorname{cosec}\alpha)2 + \sec\alpha + \cos\alpha)2 = K+\tan 2\alpha+\cot 2\alpha$ then K =
   1) 9 2) 7 3) 5 4) 3
5. Statement-I : If α,β are complementary angles, $\cos^2\alpha + \cos^2\beta = 0$
   Statement-II : If α,β are complementary angles, $\cos^2\alpha + \sin^2\beta = 1$
   which of the above statements is correct
   1) only I 2) only II
   3) both I and II 4) neither I nor II
6. $\sin 120^o . \cos 150^o - \cos 240^o . \operatorname{sing} 330^o =$
   1) 1 2) -1 3) $\frac{2}{3}$ 4) $\frac{-\left(\sqrt{3}+1\right)}{4}$
7. $\left(\sqrt{1-\sin^2(200)^o}\right).\sec(200)^o =$
   1) -1 2) 0 3) 1 4) 2
8. Sin A. Cos A. Tan A. are in G.P. ten $\tan^6 A + \tan^4 A =$
   1) 0 2) -1 3) 2 4) 1
9. $\frac{\pi}{2} < \alpha < \pi$ *then* $\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}+\sqrt{\frac{1+\cos\alpha}{1-\cos\alpha}} =$
   1) 2 sec α 2) -2 sec α
   3) 2 cosec α 4) -2 cosec α
10. $\log \sin 1^o . \log \sin 2^o . \log \sin 3^o \ldots . \log \sin 179^o$.
    1) 1 2) 0 3) -1 4) 2
11. The cotangents of the angles $\frac{\pi}{3},\frac{\pi}{4},\frac{\pi}{6}$ are in
    1) A.P. 2) G.P. 3) H.P. 4) A.G.P.
12. In ΔABC, C=90° then Tan A + TanB =
    1) $\frac{a^2}{bc}$ 2) $\frac{b^2}{ca}$ 3) $\frac{c^2}{ab}$ 4) $\frac{ab}{c}$
13. $f(x) = x^3-2x^2+3x-5$ then
    $f\left[\sin\left(\frac{5\pi}{2}\right)\right]+f\left[\sin\left(\frac{3\pi}{2}\right)\right] =$
    1) 10 2) -10 3) 14 4) -14
14. In a triangle ABC, 3cosA+2 = 0, then Quadratic equation with roots are sinA, cosA is $9x^2+3(2-\sqrt{5})x+k=0 \Rightarrow K=$
    1) 5 2) $-\sqrt{5}$ 3) $2\sqrt{5}$ 4) $-2\sqrt{5}$
15. $\tan 20^o = K$ *then* $\frac{\tan 250^o + \tan 340^o}{\tan 200^o - \tan 110^o} =$
    1) $\frac{1-K^2}{1+K^2}$ 2) $\frac{1+K^2}{1-K^2}$ 3) $\frac{2K}{1-K^2}$ 4) $\frac{K+1}{K-1}$
16. $\sin x + \sin^2 x = 1$ *then* $\cos^{12}x + 3\cos^{10}x + 3\cos^8 x + \cos^6 x + 2\cos^4 x + \cos^2 x - 2 =$
    1) 0 2) $\cos^2 x$ 3) $\sin^2 x$ 4) $-\sin^2 x$
17. Assertion (A) : In a right angled triangle $\sin^2 A + \sin^2 B + \sec^2 C = 2$
    Reason (R) : If a,b are complementary angles then $\sin^2\alpha + \sin^2\beta = 1$
    1) A.R are true and R is the correct explanation of A.
    2) A,R are true and R is not the correct explanation of A
    3) A is true, R is False
    4) A is False, R is True
18. If TanA, TanB are the roots of the Quadratic equation $x^2-px+q = 0$ then $\sin^2(A+B) =$
    1) $\frac{P^2}{P^2+q^2}$ 2) $\frac{P^2}{(P+q)^2}$
    3) $-\frac{P}{(1-q)^2}$ 4) $-\frac{P^2}{P^2+(1-q)^2}$
19. If $a\sin^2\theta + b\cos^2\theta = C$ then $\tan^2\theta =$
    1) $\frac{b-c}{a-c}$ 2) $\frac{c-b}{a-c}$ 3) $\frac{c-a}{c-b}$ 4) $\frac{a-c}{c-b}$
20. If $\cos(x+y), \cos x, \cos(x+y)$ ar three distinct numbers which are in H.P. then $1+\cos y =$
    1) $\cos^2 x$ 2) $-\cos^2 x$ 3) $\cos^2 x$ 4) $\cos^2 x-2$
21. $\frac{\cos x}{\cos(x-2y)} = \lambda$ then $\tan(x-y)\tan y =$
    1) $\frac{1+\lambda}{1-\lambda}$ 2) $\frac{1-\lambda}{1+\lambda}$ 3) $\frac{\lambda}{1+\lambda}$ 4) $\frac{\lambda}{1-\lambda}$
22. $\cos A . \cos 2A . \cos^4 A \ldots . \cos 2^{n-1} A =$
    1) $\frac{\sin 2^n A}{2^n . \sin A}$ 2) $\frac{2^n \sin 2^n A}{\sin A}$
    3) $\frac{2^n \sin A}{\sin 2^n A}$ 4) $\frac{\sin A}{2n \sin 2^n A}$
23. If a, b be such that $\pi < \alpha - \beta < 3\pi$. If $\sin\alpha+\sin\beta = \frac{-21}{65}$ and $\cos\alpha+\cos\beta = \frac{-27}{65}$ then the value of $\cos\left(\frac{\alpha-\beta}{2}\right)$ is
    1) $\frac{-3}{\sqrt{130}}$ 2) $\frac{3}{\sqrt{130}}$ 3) $\frac{6}{65}$ 4) $\frac{-6}{65}$
24. The value of $\frac{1-\tan^2 15^o}{1+\tan^2 15^o}$ is
    1) 1 2) $\sqrt{3}$ 3) $\frac{\sqrt{3}}{2}$ 4) 2
25. $\sin^2\theta = \frac{4xy}{(x+y)^2}$ is true, if an only if
    1) x - y ≠ 0 2) x = -y
    3) x = y 4) x ≠ 0, y ≠ 0
26. If $\tan\theta = \frac{-4}{3}$ then $\sin\theta =$
    1) $\frac{-4}{3}$ but not $\frac{4}{3}$ 2) $\frac{-4}{3}$ or $\frac{4}{3}$
    3) $\frac{4}{3}$ but not $\frac{-4}{3}$ 4) $\frac{-4}{9}$
27. If $\sin(\alpha+\beta)=1$, $\sin(\alpha+\beta) = \frac{1}{2}$, then $\tan(\alpha+2\beta).\tan(2\alpha+\beta) =$
    1) 1 2) -1 3) 0 4) 2
28. If $y = \sin^2\theta + \operatorname{cosec}^2\theta$; $\theta = 0$ then
    1) y = 0 2) y ≤ 2 3) y ≥ -2 4) y ≥ 2
29. If α is a root of $25\cos^2\theta + 5\cos\theta - 12 = 0$, $\frac{\pi}{2} < \alpha < \pi$ the $\sin 2\alpha$
    1) $\frac{24}{25}$ 2) $\frac{-24}{25}$ 3) $\frac{13}{18}$ 4) $\frac{-13}{18}$
30. If $\sin q = \frac{a-4}{2}$ then
    1) $1 \le a \le 8$ 2) $0 \le a \le 2$
    3) $2 \le a \le 6$ 4) $-2 \le a \le 2$
31. $2\cos^2\beta - 1 = \tan 2A$ then $\cos A \cos B =$
    1) $\frac{1}{2}$ 2) $\pm\frac{1}{\sqrt{2}}$ 3) $\frac{1}{4}$ 4) $\pm\frac{1}{4}$
32. If $\sec^6\theta - \tan^6\theta = a\sec^4\theta + b\sec^2\theta + c$ then a+b+c =
    1) 0 2) -1 3) 3 4) 1
33. If sinθ, cosθ are the roots of the eq. $ax^2-bx+c=0$ then the relation among a, b,c are
    1) $a^2-b^2+2ac=0$ 2) $a^2-b^2-2ac=0$
    3) $a^2-b^2-2ac=0$ 4) $b^2+a^2+2ac=0$
34. $\sin A+\sin B=\sqrt{3}(\cos B - \cos A)$ the $\sin^3 A+\sin^3 B =$
    1) 0 2) 2 3) 1 4) -1
35. $\frac{\tan 80^o - \tan 10^o}{\tan 70^o} =$
    1) 0 2) 1 3) 2 4) 3
36. If $\cos(A-B) = \frac{3}{5}$ and Tan A. Tan B = 2 then which one of the following is true.
    1) $\sin(A+B) = \frac{1}{5}$ 2) $\sin(A+B) = \frac{-1}{5}$
    3) $\cos(A-B) = \frac{1}{5}$ 4) $\cos(A-B) = \frac{-1}{5}$
37. If 'θ' lies in the first quadrant and 5Tan θ = 4 then $\frac{5\sin\theta - 3\cos\theta}{\sin\theta + 2\cos\theta} =$
    1) $\frac{5}{14}$ 2) $\frac{3}{14}$ 3) $\frac{1}{14}$ 4) 0
38. Math the following

List-I	List-II
1) 3 Tan x + 27 cotx ≥	a) 24
2) 5 $\sec^2 x$ + 125 $\cos^2 x$ ≥	b) 18
3) 16 $\operatorname{cosec}^2 x$ + 9 $\sin^2 x$ ≥	c) 50

    1) 1-a, 2-b, 3-c 2) 1-c, 2-a, 3-b
    3) 1-b, 2-c, 3-1 4) 1-c, 2-b, 3-a
39. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$ then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$
    1) 2 2) 0 3) -1 4) 5
40. $\frac{\cos^3 A+\sin^3 A}{\cos A+\sin A}+\frac{\cos^3 A-\sin^3 A}{\cos A-\sin A} =$
    1) 2 2) -2 3) 1 4) -1

ANSWERS :

1. 2	2. 4	3. 1	4. 2	5. 2	6. 2	7.2
8. 1	9. 4	10. 3	11. 3	12. 1	13. 1	14.4
15. 1	16. 2	17. 4	18. 4	19. 2	20. 3	21.4
22. 4	23. 1	24. 2	25. 1	26. 2	27. 4	28.2
29. 3	30. 1	31. 2	32. 3	33. 1	34. 1	35.3
36. 1	37. 3	38. 4	39. 2	40. 4		

Continued on next issue...

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