

- If  $\sin A = \frac{1}{\sqrt{10}}$  and  $\sin B = \frac{1}{\sqrt{5}}$ , where  $A$  and  $B$  are positive acute angles, then  $A+B =$  [MP PET 1986]
  - $\pi$
  - $\pi/2$
  - $\pi/3$
  - $\pi/4$
- If  $\tan A = 2\tan B + \cot B$ , then  $2\tan(A-B) =$ 
  - $\tan B$
  - $2\tan B$
  - $\cot B$
  - $2\cot B$
- If  $\sin A + \sin B = C$ ,  $\cos A + \cos B = D$ , then the value of  $\sin(A+B) =$  [MP PET 1986]
  - $CD$
  - $\frac{CD}{C^2+D^2}$
  - $\frac{C^2+D^2}{2CD}$
  - $\frac{2CD}{C^2+D^2}$
- If  $\sin A = \sin B$  and  $\cos A = \cos B$ , then [EAMCET 1994]
  - $\sin \frac{A-B}{2} = 0$
  - $\sin \frac{A+B}{2} = 0$
  - $\cos \frac{A-B}{2} = 0$
  - $\cos(A+B) = 0$
- $\sin 50^\circ - \sin 70^\circ + \sin 10^\circ =$  [MNR 1979]
  - 1
  - 0
  - 1/2
  - 2
- $\cos^2 48^\circ - \sin^2 12^\circ =$  [MNR 1977]
  - $\frac{\sqrt{5}-1}{4}$
  - $\frac{\sqrt{5}+1}{8}$
  - $\frac{\sqrt{3}-1}{4}$
  - $\frac{\sqrt{3}+1}{2\sqrt{2}}$
- If  $y = (1 + \tan A)(1 - \tan B)$  where  $A - B = \frac{\pi}{4}$ , then  $(y+1)^{y+1}$  is equal to [J & K 2005]
  - 9
  - 4
  - 27
  - 81
- $\sin 75^\circ =$  [MNR 1979]
  - $\frac{2-\sqrt{3}}{2}$
  - $\frac{\sqrt{3}+1}{2\sqrt{2}}$
  - $\frac{\sqrt{3}-1}{-2\sqrt{2}}$
  - $\frac{\sqrt{3}-1}{2\sqrt{2}}$
- If  $\tan \alpha = \frac{m}{m+1}$  and  $\tan \beta = \frac{1}{2m+1}$ , then  $\alpha + \beta =$  [IIT 1978; EAMCET 1992; Roorkee 1998; JMI EEE 2001]
  - $\frac{\pi}{3}$
  - $\frac{\pi}{4}$
  - $\frac{\pi}{6}$
  - None of these
- $\tan 20^\circ + \tan 40^\circ + \sqrt{3} \tan 20^\circ \tan 40^\circ =$ 
  - $\frac{1}{\sqrt{3}}$
  - $\sqrt{3}$
  - $-\frac{1}{\sqrt{3}}$
  - $-\sqrt{3}$
- $\frac{1}{4} [\sqrt{3} \cos 23^\circ - \sin 23^\circ] =$ 
  - $\cos 43^\circ$
  - $\cos 7^\circ$
  - $\cos 53^\circ$
  - None of these
- $\tan 75^\circ - \cot 75^\circ =$  [MNR 1982; Pb. CET 1990, 2000]
  - $2\sqrt{3}$
  - $2 + \sqrt{3}$
  - $2 - \sqrt{3}$
  - None of these
- If  $\tan A = -\frac{1}{2}$  and  $\tan B = -\frac{1}{3}$ , then  $A+B =$  [IIT 1967; MNR 1987; MP PET 1989]
  - $\frac{\pi}{4}$
  - $\frac{3\pi}{4}$
  - $\frac{5\pi}{4}$
  - None of these
- If  $A+B = 225^\circ$ , then  $\frac{\cot A}{1+\cot A} \cdot \frac{\cot B}{1+\cot B} =$  [MNR 1974]
  - 1
  - 1
  - 0
  - 1/2
- If  $\sin A = \frac{4}{5}$  and  $\cos B = -\frac{12}{13}$ , where  $A$  and  $B$  lie in first and third quadrant respectively, then  $\cos(A+B) =$ 
  - $\frac{56}{65}$
  - $-\frac{56}{65}$
  - $\frac{16}{65}$
  - $-\frac{16}{65}$
- If  $A+B = \frac{\pi}{4}$ , then  $(1 + \tan A)(1 + \tan B) =$ 
  - 1
  - 2
  - $\infty$
  - 2
- $\frac{1}{\sin 10^\circ} - \frac{\sqrt{3}}{\cos 10^\circ} =$  [IIT 1974]
  - 0
  - 1
  - 2
  - 4
- If  $\cos(A+B) = \alpha \cos A \cos B + \beta \sin A \sin B$ , then  $(\alpha, \beta) =$  [MP PET 1992]
  - (-1, -1)
  - (-1, 1)
  - (1, -1)
  - (1, 1)
- $\frac{\sin^2 A - \sin^2 B}{\sin A \cos A - \sin B \cos B} =$  [MP PET 1993]
  - $\tan(A-B)$
  - $\tan(A+B)$
  - $\cot(A-B)$
  - $\cot(A+B)$

20. If  $\cos(\alpha + \beta) = \frac{4}{5}$ ,  $\sin(\alpha - \beta) = \frac{5}{13}$  and  $\alpha, \beta$  lie between 0 and  $\frac{\pi}{4}$ , then  $\tan 2\alpha =$   
[IIT 1979; EAMCET 2002]
- (a)  $\frac{16}{63}$  (b)  $\frac{56}{33}$   
(c)  $\frac{28}{33}$  (d) None of these
21. If  $\cos \theta = \frac{8}{17}$  and  $\theta$  lies in the 1<sup>st</sup> quadrant, then the value of  $\cos(30^\circ + \theta) + \cos(45^\circ - \theta) + \cos(120^\circ - \theta)$  is
- (a)  $\frac{23}{17} \left( \frac{\sqrt{3}-1}{2} + \frac{1}{\sqrt{2}} \right)$  (b)  $\frac{23}{17} \left( \frac{\sqrt{3}+1}{2} + \frac{1}{\sqrt{2}} \right)$   
(c)  $\frac{23}{17} \left( \frac{\sqrt{3}-1}{2} - \frac{1}{\sqrt{2}} \right)$  (d)  $\frac{23}{17} \left( \frac{\sqrt{3}+1}{2} - \frac{1}{\sqrt{2}} \right)$
22. If  $\tan x + \tan\left(\frac{\pi}{3} + x\right) + \tan\left(\frac{2\pi}{3} + x\right) = 3$ , then
- (a)  $\tan x = 1$  (b)  $\tan 2x = 1$   
(c)  $\tan 3x = 1$  (d) None of these
23. The value of  $\sin 47^\circ + \sin 61^\circ - \sin 11^\circ - \sin 25^\circ =$   
[MP PET 2001; EAMCET 2003]
- (a)  $\sin 36^\circ$  (b)  $\cos 36^\circ$   
(c)  $\sin 7^\circ$  (d)  $\cos 7^\circ$
24. If  $\sin(\theta + \alpha) = a$  and  $\sin(\theta + \beta) = b$ , then  $\cos 2(\alpha - \beta) - 4ab \cos(\alpha - \beta)$  is equal to
- (a)  $1 - a^2 - b^2$  (b)  $1 - 2a^2 - 2b^2$   
(c)  $2 + a^2 + b^2$  (d)  $2 - a^2 - b^2$
25. The expression  $\cos^2(A - B) + \cos^2 B - 2 \cos(A - B) \cos A \cos B$  is
- (a) Dependent on B (b) Dependent on A and B  
(c) Dependent on A (d) Independent of A and B
26. The value of  $\cos 15^\circ - \sin 15^\circ$  is equal to  
[MNR 1975; MP PET 1994, 2002]
- (a)  $\frac{1}{\sqrt{2}}$  (b)  $\frac{1}{2}$   
(c)  $-\frac{1}{\sqrt{2}}$  (d) 0
27. If  $\tan \alpha, \tan \beta$  are the roots of the equation  $x^2 + px + q = 0$  ( $p \neq 0$ ), then
- (a)  $\sin^2(\alpha + \beta) + p \sin(\alpha + \beta) \cos(\alpha + \beta) + q \cos^2(\alpha + \beta) = q$   
(b)  $\tan(\alpha + \beta) = \frac{p}{q-1}$   
(c)  $\cos(\alpha + \beta) = 1 - q$
- (d)  $\sin(\alpha + \beta) = -p$
28.  $\tan 5x \tan 3x \tan 2x =$  [EAMCET 1991]
- (a)  $\tan 5x - \tan 3x - \tan 2x$  (b)  $\frac{\sin 5x - \sin 3x - \sin 2x}{\cos 5x - \cos 3x - \cos 2x}$   
(c) 0 (d) None of these
29. If  $\tan \alpha$  equals the integral solution of the inequality  $4x^2 - 16x + 15 < 0$  and  $\cos \beta$  equals to the slope of the bisector of first quadrant, then  $\sin(\alpha + \beta) \sin(\alpha - \beta)$  is equal to  
[Kerala (Engg.) 1993]
- (a)  $\frac{3}{5}$  (b)  $-\frac{3}{5}$   
(c)  $\frac{2}{\sqrt{5}}$  (d)  $\frac{4}{5}$
30.  $\tan \frac{2\pi}{5} - \tan \frac{\pi}{15} - \sqrt{3} \tan \frac{2\pi}{5} \tan \frac{\pi}{15}$  is equal to
- (a)  $-\sqrt{3}$  (b)  $\frac{1}{\sqrt{3}}$   
(c) 1 (d)  $\sqrt{3}$
31. The value of  $\cos 12^\circ + \cos 84^\circ + \cos 156^\circ + \cos 132^\circ$  is  
[Kerala (Engg.) 1993]
- (a)  $\frac{1}{2}$  (b) 1  
(c)  $-\frac{1}{2}$  (d)  $\frac{1}{8}$
32. The value of  $\cos 52^\circ + \cos 68^\circ + \cos 172^\circ$  is  
[MP PET 1997; Pb. CET 1995, 99]
- (a) 0 (b) 1  
(c) 2 (d)  $\frac{3}{2}$
33.  $\frac{\cos 17^\circ + \sin 17^\circ}{\cos 17^\circ - \sin 17^\circ} =$  [MP PET 1998]
- (a)  $\tan 62^\circ$  (b)  $\tan 56^\circ$   
(c)  $\tan 54^\circ$  (d)  $\tan 73^\circ$
34.  $\frac{\cos 9^\circ + \sin 9^\circ}{\cos 9^\circ - \sin 9^\circ} =$  [EAMCET 1992; Kerala (Engg.) 2005]
- (a)  $\tan 54^\circ$  (b)  $\tan 36^\circ$   
(c)  $\tan 18^\circ$  (d) None of these
35.  $\frac{\sin 70^\circ + \cos 40^\circ}{\cos 70^\circ + \sin 40^\circ} =$  [CET 1986; MP PET 1999]
- (a) 1 (b)  $\frac{1}{\sqrt{3}}$   
(c)  $\sqrt{3}$  (d)  $\frac{1}{2}$

- 36.** If  $\cos(A-B) = \frac{3}{5}$  and  $\tan A \tan B = 2$ , then [MP PET 1997]  
 (a)  $\cos A \cos B = \frac{1}{5}$  (b)  $\sin A \sin B = -\frac{2}{5}$   
 (c)  $\cos A \cos B = -\frac{1}{5}$  (d)  $\sin A \sin B = -\frac{1}{5}$
- 37.**  $\tan 100^\circ + \tan 125^\circ + \tan 100^\circ \tan 125^\circ =$  [DCE 1999]  
 (a) 0 (b) 1/2  
 (c) -1 (d) 1
- 38.** If  $\frac{\pi}{2} < \alpha < \pi$ ,  $\pi < \beta < \frac{3\pi}{2}$ ;  $\sin \alpha = \frac{15}{17}$  and  $\tan \beta = \frac{12}{5}$ , then the value of  $\sin(\beta - \alpha)$  is [Roorkee 2000]  
 (a)  $-171/221$  (b)  $-21/221$   
 (c)  $21/221$  (d)  $171/221$
- 39.** If  $\cos x + \cos y + \cos \alpha = 0$  and  $\sin x + \sin y + \sin \alpha = 0$ , then  $\cot\left(\frac{x+y}{2}\right) =$  [Karnataka CET 2001]  
 (a)  $\sin \alpha$  (b)  $\cos \alpha$   
 (c)  $\cot \alpha$  (d)  $\sin\left(\frac{x+y}{2}\right)$
- 40.** If  $\sin \theta + \sin 2\theta + \sin 3\theta = \sin \alpha$  and  $\cos \theta + \cos 2\theta + \cos 3\theta = \cos \alpha$ , then  $\theta$  is equal to [AMU 2001]  
 (a)  $\alpha/2$  (b)  $\alpha$   
 (c)  $2\alpha$  (d)  $\alpha/6$
- 41.**  $\frac{\cos 10^\circ + \sin 10^\circ}{\cos 10^\circ - \sin 10^\circ} =$  [MP PET 2002]  
 (a)  $\tan 55^\circ$  (b)  $\cot 55^\circ$   
 (c)  $-\tan 35^\circ$  (d)  $-\cot 35^\circ$
- 42.** If  $\cos P = \frac{1}{7}$  and  $\cos Q = \frac{13}{14}$ , where  $P$  and  $Q$  both are acute angles. Then the value of  $P - Q$  is [Karnataka CET 2002]  
 (a)  $30^\circ$  (b)  $60^\circ$   
 (c)  $45^\circ$  (d)  $75^\circ$
- 43.**  $\sec 50^\circ + \tan 50^\circ$  is equal to [DCE 2002]  
 (a)  $\tan 20^\circ + \tan 50^\circ$  (b)  $2 \tan 20^\circ + \tan 50^\circ$   
 (c)  $\tan 20^\circ + 2 \tan 50^\circ$  (d)  $2 \tan 20^\circ + 2 \tan 50^\circ$
- 44.** If  $\tan \alpha = (1 + 2^{-x})^{-1}$ ,  $\tan \beta = (1 + 2^{x+1})^{-1}$ , then  $\alpha + \beta$  equals [AMU 2002]  
 (a)  $\pi/6$  (b)  $\pi/4$   
 (c)  $\pi/3$  (d)  $\pi/2$
- 45.** The sum  $S = \sin \theta + \sin 2\theta + \dots + \sin n\theta$ , equals [AMU 2002]  
 (a)  $\sin \frac{1}{2}(n+1)\theta \sin \frac{1}{2}n\theta / \sin \frac{\theta}{2}$   
 (b)  $\cos \frac{1}{2}(n+1)\theta \sin \frac{1}{2}n\theta / \sin \frac{\theta}{2}$   
 (c)  $\sin \frac{1}{2}(n+1)\theta \cos \frac{1}{2}n\theta / \sin \frac{\theta}{2}$   
 (d)  $\cos \frac{1}{2}(n+1)\theta \cos \frac{1}{2}n\theta / \sin \frac{\theta}{2}$
- 46.** The value of  $\cot 70^\circ + 4 \cos 70^\circ$  is [Orissa JEE 2003]  
 (a)  $\frac{1}{\sqrt{3}}$  (b)  $\sqrt{3}$   
 (c)  $2\sqrt{3}$  (d)  $\frac{1}{2}$
- 47.** The expression  $2 \cos \frac{\pi}{13} \cdot \cos \frac{9\pi}{13} + \cos \frac{3\pi}{13} + \cos \frac{5\pi}{13}$  is equal to [UPSEAT 2004]  
 (a) -1 (b) 0  
 (c) 1 (d) None of these
- 48.** If  $\sin \theta = \frac{12}{13}$ , ( $0 < \theta < \frac{\pi}{2}$ ) and  $\cos \phi = -\frac{3}{5}$ , ( $\pi < \phi < \frac{3\pi}{2}$ ). Then  $\sin(\theta + \phi)$  will be [Orissa JEE 2004]  
 (a)  $-\frac{56}{61}$  (b)  $-\frac{56}{65}$   
 (c)  $\frac{1}{65}$  (d) -56
- 49.** If  $\tan A - \tan B = x$  and  $\cot B - \cot A = y$ , then  $\cot(A - B) =$   
 (a)  $\frac{1}{x} + y$  (b)  $\frac{1}{xy}$   
 (c)  $\frac{1}{x} - \frac{1}{y}$  (d)  $\frac{1}{x} + \frac{1}{y}$
- 50.**  $\sin 12^\circ \sin 48^\circ \sin 54^\circ =$  [IIT 1982; Kerala (Engg.) 2001]  
 (a) 1/16 (b) 1/32  
 (c) 1/8 (d) 1/4
- 51.**  $\cos \frac{\pi}{5} \cos \frac{2\pi}{5} \cos \frac{4\pi}{5} \cos \frac{8\pi}{5} =$   
 (a) 1/16 (b) 0  
 (c) -1/8 (d) -1/16
- 52.**  $\frac{\cos 12^\circ - \sin 12^\circ}{\cos 12^\circ + \sin 12^\circ} + \frac{\sin 147^\circ}{\cos 147^\circ} =$  [MP PET 1991]  
 (a) 1 (b) -1  
 (c) 0 (d) None of these
- 53.**  $\tan 20^\circ \tan 40^\circ \tan 60^\circ \tan 80^\circ =$  [IIT 1974]  
 (a) 1 (b) 2  
 (c) 3 (d)  $\sqrt{3}/2$

- 54.**  $\cos 20^\circ \cos 40^\circ \cos 80^\circ =$  [MP PET 1989]  
 (a)  $1/2$  (b)  $1/4$   
 (c)  $1/6$  (d)  $1/8$
- 55.**  $\sin 36^\circ \sin 72^\circ \sin 108^\circ \sin 144^\circ =$  [IIT 1965]  
 (a)  $1/4$  (b)  $1/16$   
 (c)  $3/4$  (d)  $5/16$
- 56.** If  $\cos A = m \cos B$ , then [MNR 1990]  
 (a)  $\cot \frac{A+B}{2} = \frac{m+1}{m-1} \tan \frac{B-A}{2}$   
 (b)  $\tan \frac{A+B}{2} = \frac{m+1}{m-1} \cot \frac{B-A}{2}$   
 (c)  $\cot \frac{A+B}{2} = \frac{m+1}{m-1} \tan \frac{A-B}{2}$   
 (d) None of these
- 57.** If  $x = \cos 10^\circ \cos 20^\circ \cos 40^\circ$ , then the value of  $x$  is [Roorkee 1995]  
 (a)  $\frac{1}{4} \tan 10^\circ$  (b)  $\frac{1}{8} \cot 10^\circ$   
 (c)  $\frac{1}{8} \operatorname{cosec} 10^\circ$  (d)  $\frac{1}{8} \sec 10^\circ$
- 58.**  $\sin 12^\circ \sin 24^\circ \sin 48^\circ \sin 84^\circ =$  [EAMCET 1989]  
 (a)  $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ$   
 (b)  $\sin 20^\circ \sin 40^\circ \sin 60^\circ \sin 80^\circ$   
 (c)  $\frac{3}{15}$   
 (d) None of these
- 59.**  $\tan 3A - \tan 2A - \tan A =$  [MNR 1982; Pb. CET 1991]  
 (a)  $\tan 3A \tan 2A \tan A$   
 (b)  $-\tan 3A \tan 2A \tan A$   
 (c)  $\tan A \tan 2A - \tan 2A \tan 3A - \tan 3A \tan A$   
 (d) None of these
- 60.**  $\cos^2\left(\frac{\pi}{4} - \beta\right) - \sin^2\left(\alpha - \frac{\pi}{4}\right) =$   
 (a)  $\sin(\alpha + \beta) \sin(\alpha - \beta)$  (b)  $\frac{\cos(\alpha + \beta) \cos(\alpha - \beta)}{\sin(\alpha + \beta) \cos(\alpha - \beta)}$   
 (c)  $\sin(\alpha - \beta) \cos(\alpha + \beta)$  (d)  $\frac{\sin(\alpha + \beta) \cos(\alpha - \beta)}{\sin(\alpha + \beta) \cos(\alpha - \beta)}$
- 61.**  $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ =$  [Roorkee 1989]  
 (a)  $1/2$  (b)  $2$   
 (c)  $4$  (d)  $8$
- 62.**  $\frac{\sin 3\theta + \sin 5\theta + \sin 7\theta + \sin 9\theta}{\cos 3\theta + \cos 5\theta + \cos 7\theta + \cos 9\theta} =$  [Roorkee 1973]  
 (a)  $\tan 3\theta$  (b)  $\cot 3\theta$   
 (c)  $\tan 6\theta$  (d)  $\cot 6\theta$
- 63.**  $\sin 163^\circ \cos 347^\circ + \sin 73^\circ \sin 167^\circ =$  [MP PET 2000]  
 (a)  $0$  (b)  $1/2$   
 (c)  $1$  (d) None of these
- 64.** The value of  $\sin 600^\circ \cos 330^\circ + \cos 120^\circ \sin 150^\circ$  is [MP PET 1994]  
 (a)  $-1$  (b)  $1$   
 (c)  $\frac{1}{\sqrt{2}}$  (d)  $\frac{\sqrt{3}}{2}$
- 65.**  $\cos A + \cos(240^\circ + A) + \cos(240^\circ - A) =$  [MP PET 1991]  
 (a)  $\cos A$  (b)  $0$   
 (c)  $\sqrt{3} \sin A$  (d)  $\sqrt{3} \cos A$
- 66.**  $\cos^2\left(\frac{\pi}{6} + \theta\right) - \sin^2\left(\frac{\pi}{6} - \theta\right) =$  [EAMCET 2001]  
 (a)  $\frac{1}{2} \cos 2\theta$  (b)  $0$   
 (c)  $-\frac{1}{2} \cos 2\theta$  (d)  $\frac{1}{2}$
- 67.** If  $b \sin \alpha = a \sin(\alpha + 2\beta)$ , then  $\frac{a+b}{a-b} =$   
 (a)  $\frac{\tan \beta}{\tan(\alpha + \beta)}$  (b)  $\frac{\cot \beta}{\cot(\alpha - \beta)}$   
 (c)  $\frac{-\cot \beta}{\cot(\alpha + \beta)}$  (d)  $\frac{\cot \beta}{\cot(\alpha + \beta)}$
- 68.**  $\frac{\sin(B+A) + \cos(B-A)}{\sin(B-A) + \cos(B+A)} =$  [Roorkee 1970; IIT 1966]  
 (a)  $\frac{\cos B + \sin B}{\cos B - \sin B}$  (b)  $\frac{\cos A + \sin A}{\cos A - \sin A}$   
 (c)  $\frac{\cos A - \sin A}{\cos A + \sin A}$  (d) None of these
- 69.** If  $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$ , then  $\frac{\tan x}{\tan y}$  is equal to  
 (a)  $\frac{b}{a}$  (b)  $\frac{a}{b}$   
 (c)  $ab$  (d) None of these
- 70.** If  $\sin A + \sin 2A = x$  and  $\cos A + \cos 2A = y$ , then  $(x^2 + y^2)(x^2 + y^2 - 3) =$   
 (a)  $2y$  (b)  $y$   
 (c)  $3y$  (d) None of these
- 71.** The expression  $\frac{\cos 6x + 6 \cos 4x + 15 \cos 2x + 10}{\cos 5x + 5 \cos 3x + 10 \cos x}$  is equal to  
 (a)  $\cos 2x$  (b)  $2 \cos x$   
 (c)  $\cos^2 x$  (d)  $1 + \cos x$
- 72.**  $\cos \alpha \cdot \sin(\beta - \gamma) + \cos \beta \cdot \sin(\gamma - \alpha) + \cos \gamma \cdot \sin(\alpha - \beta) =$  [EAMCET 2003]  
 (a)  $0$  (b)  $1/2$   
 (c)  $1$  (d)  $4 \cos \alpha \cos \beta \cos \gamma$
- 73.**  $\sin(\beta + \gamma - \alpha) + \sin(\gamma + \alpha - \beta) + \sin(\alpha + \beta - \gamma) - \sin(\alpha + \beta + \gamma) =$   
 (a)  $2 \sin \alpha \sin \beta \sin \gamma$  (b)  $4 \sin \alpha \sin \beta \sin \gamma$   
 (c)  $\sin \alpha \sin \beta \sin \gamma$  (d) None of these

74. If  $m \tan(\theta - 30^\circ) = n \tan(\theta + 120^\circ)$ , then  $\frac{m+n}{m-n} =$  [IIT 1966]

- (a)  $2 \cos 2\theta$  (b)  $\cos 2\theta$   
(c)  $2 \sin 2\theta$  (d)  $\sin 2\theta$

75.  $2 \cos x - \cos 3x - \cos 5x =$  [Roorkee 1974]

- (a)  $16 \cos^3 x \sin^2 x$  (b)  $16 \sin^3 x \cos^2 x$   
(c)  $4 \cos^3 x \sin^2 x$  (d)  $4 \sin^3 x \cos^2 x$

76.  $1 + \cos 2x + \cos 4x + \cos 6x =$  [Roorkee 1974]

- (a)  $2 \cos x \cos 2x \cos 3x$  (b)  $4 \sin x \cos 2x \cos 3x$   
(c)  $4 \cos x \cos 2x \cos 3x$  (d) None of these

77. If  $\frac{\sin A - \sin C}{\cos C - \cos A} = \cot B$ , then  $A, B, C$  are in

- (a) A.P. (b) G.P.  
(c) H.P. (d) None of these

78.  $\cos \frac{2\pi}{15} \cos \frac{4\pi}{15} \cos \frac{8\pi}{15} \cos \frac{16\pi}{15} =$  [IIT 1985]

- (a)  $1/2$  (b)  $1/4$   
(c)  $1/8$  (d)  $1/16$

79. The value of  $\cos^2 \frac{\pi}{12} + \cos^2 \frac{\pi}{4} + \cos^2 \frac{5\pi}{12}$  is

[Karnataka CET 2002]

- (a)  $\frac{3}{2}$  (b)  $\frac{2}{3}$   
(c)  $\frac{3 + \sqrt{3}}{2}$  (d)  $\frac{2}{3 + \sqrt{3}}$

80. The value of  $\sin \frac{\pi}{16} \sin \frac{3\pi}{16} \sin \frac{5\pi}{16} \sin \frac{7\pi}{16}$  is [MP PET 2004]

- (a)  $\frac{1}{16}$  (b)  $\frac{\sqrt{2}}{16}$   
(c)  $\frac{1}{8}$  (d)  $\frac{\sqrt{2}}{8}$

81.  $\cos^2 76^\circ + \cos^2 16^\circ - \cos 76^\circ \cos 16^\circ =$  [EAMCET 2002]

- (a)  $-1/4$  (b)  $1/2$   
(c)  $0$  (d)  $3/4$

82.  $\cos \frac{\pi}{7} \cos \frac{2\pi}{7} \cos \frac{4\pi}{7} =$  [MP PET 1998]

- (a)  $0$  (b)  $\frac{1}{2}$   
(c)  $\frac{1}{4}$  (d)  $-\frac{1}{8}$

83. The value of  $\frac{\tan 70^\circ - \tan 20^\circ}{\tan 50^\circ} =$

[Karnataka CET 2003]

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

84.  $\cos^2 \alpha + \cos^2(\alpha + 120^\circ) + \cos^2(\alpha - 120^\circ)$  is equal to

[MP PET 1993]

- (a)  $3/2$  (b) 1  
(c)  $1/2$  (d) 0

85. The value of  $\tan 20^\circ + 2 \tan 50^\circ - \tan 70^\circ$  is equal to

[AMU 2005]

- (a) 1 (b) 0  
(c)  $\tan 50^\circ$  (d) None of these

### Trigonometrical ratios of sum and difference of two and three angles

1	d	2	c	3	d	4	a	5	b
6	b	7	c	8	b	9	b	10	b
11	d	12	a	13	b	14	d	15	d
16	b	17	d	18	c	19	b	20	b
21	a	22	c	23	d	24	b	25	c
26	a	27	a,b	28	a	29	d	30	d
31	c	32	a	33	a	34	a	35	c
36	a	37	d	38	d	39	c	70	a
41	a	42	b	43	c	44	b	45	a
46	b	47	b	48	b	49	d	50	c
51	d	52	c	53	c	54	d	55	d
56	a	57	b	58	a	59	a	60	d
61	c	62	c	63	b	64	a	65	b
66	a	67	c	68	b	69	b	70	a
71	b	72	a	73	b	74	a	75	a
76	c	77	a	78	d	79	a	80	b
81	d	82	d	83	b	84	a	85	b