Section A 1 mark each

Q.1 $(\sec^2\theta - 1)(1 - \operatorname{cosec}^2\theta) =$

Q.2 $\cot^2\theta - \dfrac{1}{\sin^2\theta} =$

Q.3 Given that $\sin\theta = \dfrac{a}{b}$, then $\cos\theta$ is equal to

(a) $\dfrac{b}{\sqrt{b^2 - a^2}}$ (b) $\dfrac{b}{a}$ (c) $\dfrac{\sqrt{b^2 - a^2}}{a}$ (d) $\dfrac{a}{\sqrt{b^2 - a^2}}$

Q.4 If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

(a) 1 (b) $\dfrac{3}{4}$ (c) $\dfrac{1}{2}$ (d) $\dfrac{1}{4}$

Q.5 Eualuate$(1 + \cot\theta - \cos\theta)(1 + \tan\theta + \sec\theta)$

Q.6 If x = a $\sec\theta\cos\phi$; y = b $\sec\theta\sin\phi$ and z = c $\tan\theta$, then $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} =$

(a) $\dfrac{z^2}{c^2}$ (b) $1 - \dfrac{z^2}{c^2}$ (c) $\dfrac{z^2}{c^2} - 1$ (d) $1 + \dfrac{z^2}{c^2}$

Q.7 If cosA +$\cos^2$ A = 1, then $\sin^2$ A + $\sin^2$A=

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

Section B 2 marks each

Q.8 Prove that $\dfrac{\sec 72^0}{\operatorname{cosec} 18^0} + \dfrac{\sin 59^0}{\cos 31^0} = 2$

Q.9 If sin 2 $\theta = \sqrt{3}$, find θ

Section C 3 marks each

Q.10 Prove that $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$, if $\sin\theta + \cos\theta = \sqrt{2}\cos\theta$

Q.11 Prove that $\dfrac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1} = \sec\theta + \tan\theta$

Section D 4 marks each

Q.12 If $a\cos^3\theta + 3\cos\theta\sin^2\theta = m$ a $\sin^3\theta + 3a\cos^2\theta\sin\theta = n$,

Prove that $(m+n)^{2/3} + (m+n)^{2/3} = 2a^{2/3}$

Q.13 If $\sec\theta = x + \frac{1}{4x}$, prove that $\sec\theta + \tan\theta = 2x$ or $\frac{1}{2x}$

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