Assignment 10th

Q.1 Max. value of $\cos^2\theta$ is $\frac{a^2+b^2}{2ab}$ if :— $(a=b,\ a=\frac{b}{2},\ a<b,\ a>b)$

Q2 : If $\cot\theta = \frac{1}{2}$, then $\operatorname{Cosec}(\cos\theta - \sec\theta) =$ ___ $(\frac{3}{4}, -\frac{3}{4}, \frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{2})$

Q3 If $\sin 2\theta = 1$, then $\theta =$ ___ $(30°, 60°, 45°, 90°)$

Q4 : ABC is right isos. Δ, right angled at C, then $\operatorname{Cosec}^2 A - \tan^2 B =$ ___ $(1, -1, 2, -2)$

Q5 Length of shadow of a tower on ground is $\sqrt{3}$ times the height of tower. Then ∠ of elevation of Sun is ___ $(45°, 30°, 60°, 90°)$

Q6 A ladder 10m in length touches a wall at height of 5m. The angle made by ladder with the horizontal is: ___ $(30°, 45°, 90°, 60°)$

Q7: If $\sin\alpha = \frac{1}{2}$, $\cos\beta = \frac{1}{2}$, then find the value of $\alpha+\beta$. OR

If $4x = \operatorname{Cosec}\theta$ and $\frac{4}{x} = \cot\theta$, find value of $4\left(x^2 - \frac{1}{x^2}\right)$

In ΔABC, right angled at B, if $\tan A = 1$, verify that $2\sin A\cos A = 1$ (3)

Q8 : Evaluate : $8\sqrt{3}\operatorname{Cosec}^2 30° \sin 60° \cos 60° \cos^2 45°$ OR

Find x : If : $2\operatorname{Cosec}^2 30° + x\sin^2 60° - \frac{3}{4}\tan^2 30° = 10$ OR

Evaluate : $\frac{\sin 30° + \tan 45° - \operatorname{Cosec} 60°}{\sec 30° + \cos 60° + \cot 45°}$. (3)

Q9 : Prove : $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{Cosec} A + \cot A$ OR

Prove that : $\frac{\tan\theta}{\sec\theta - 1} + \frac{\tan\theta}{\sec\theta + 1} = 2\operatorname{Cosec}\theta$

Q10 Prove that : $\frac{\tan\theta - \cot\theta}{\sin\theta\cos\theta} = \tan^2\theta - \cot^2\theta$ OR

If $\cos\theta + \cos^2\theta = 1$, find $\sin^2\theta + \sin^4\theta$ OR

If $1 + \sin^2\theta = 3\sin\theta\cos\theta$, prove that $\tan\theta = 1$ or $\frac{1}{2}$. OR

If $\sin\theta + \cos\theta = p$ and $\sec\theta + \operatorname{Cosec}\theta = q$, show that $q(p^2-1) = 2p$ (3)

Q11 The angle of elevation of top of a tower from point on the ground, which is 30m away from the foot of tower is 30°. Find height of the tower. (3)

Q12 From a point on the ground, the angles of elevation of bottom & top of transmission tower fixed at top of a 20 high building are 45° & 60°, respectly. Find the height of tower. OR

e angle of elevation of top of a building from the foot of tower s 30°. and the angle of elevation of top of tower from foot of the building is 60°. If the tower is 50m high, then find (5) te height of building.

Q13 There is a flagstaff on a tower of height 20m. At a point on round, the angles of elevation of foot and top of flag are 45° nd 60° respectively. Find height of flag staff. OR

A man standing on deck of a ship, which is 10m above water evel. He observes the angle of elevation of top of hill is 60° and the e angle of depression of base of hill is 30°. Calculate the distance hill from ship and height of hill. (5)

Q14 A vertical tower stands on horizontal plane and is surmounted by vertical flagstaff of height h. At a point on plane, the angles of elevation of the bottom & top of the flagstaff are α, β respectly. Prove that the height of tower is $\left(\frac{h \tan\alpha}{\tan\beta - \tan\alpha}\right)$. OR (5)

A man in a boat rowing away from a lighthouse 100m high takes 2 min to change angle of elevation of lighthouse from 60° to 45°. Find speed of boat. OR

Length of shadow of a tower standing on level ground is found to be 2x metre longer when Sun's altitude is 30° than when it was 45°. Prove that height of tower is $(\sqrt{3}+1)x$ metre.