



Question 6:

On substituting the value of various T-ratios, we get

$$\begin{aligned} & \left(\sin^2 30^\circ + 4 \cot^2 45^\circ - \sec^2 60^\circ \right) \left(\operatorname{cosec}^2 45^\circ \sec^2 30^\circ \right) \\ &= \left[\left(\frac{1}{2} \right)^2 + 4 \times (1)^2 - (2)^2 \right] \left[(\sqrt{2})^2 \times \left(\frac{2}{\sqrt{3}} \right)^2 \right] \\ &= \left(\frac{1}{4} + 4 - 4 \right) \left(2 \times \frac{4}{3} \right) \\ &= \frac{1}{4} \times \frac{8}{3} = \frac{2}{3} \end{aligned}$$

Question 7:

On substituting the value of various T-ratios, we get

$$\begin{aligned} & \frac{4}{\cot^2 30^\circ} + \frac{1}{\sin^2 30^\circ} - 2 \cos^2 45^\circ - \sin^2 0^\circ \\ &= \frac{4}{(\sqrt{3})^2} + \frac{1}{\left(\frac{1}{2} \right)^2} - 2 \times \left(\frac{1}{\sqrt{2}} \right)^2 - 0 \\ &= \frac{4}{3} + \frac{4}{1} - \frac{2}{2} - 0 \\ &= \frac{8 + 24 - 6 - 0}{6} \\ &= \frac{26}{6} = \frac{13}{3} \end{aligned}$$

Question 8:

On substituting the value of various T-ratios, we get

$$\begin{aligned} & \frac{\tan^2 60^\circ + 4 \cos^2 45^\circ + 3 \operatorname{cosec}^2 60^\circ + 2 \cos^2 90^\circ}{2 \operatorname{cosec} 30^\circ + 3 \sec 60^\circ - \frac{7}{3} \cot^2 30^\circ} \\ &= \frac{(\sqrt{3})^2 + 4 \times \left(\frac{1}{\sqrt{2}} \right)^2 + 3 \times \left(\frac{2}{\sqrt{3}} \right)^2 + 2 \times (0)^2}{2 \times \frac{2}{1} + 3 \times \frac{2}{1} - \frac{7}{3} \times (\sqrt{3})^2} \\ &= \frac{3 + 2 + 4}{4 + 6 - 7} = \frac{9}{3} = 3 \end{aligned}$$

***** END *****

