

**NCERT EXEMPLAR SELECTED PROBLEMS :**  
**PROBLEM 7 ON ITF**

40. If  $\cos (\tan^{-1} x + \cot^{-1} \sqrt{3}) = 0$ , then value of  $x$  is \_\_\_\_\_ .

Sol. We have,  $\cos (\tan^{-1} x + \cot^{-1} \sqrt{3}) = 0$

$$\Rightarrow \tan^{-1} x + \cot^{-1} \sqrt{3} = \cos^{-1} 0$$

$$\Rightarrow \tan^{-1} x + \cot^{-1} \sqrt{3} = \frac{\pi}{2}$$

$$\Rightarrow \tan^{-1} x = \frac{\pi}{2} - \cot^{-1} \sqrt{3}$$

$$\Rightarrow \tan^{-1} x = \tan^{-1} \sqrt{3} \quad \left( \because \tan^{-1} x + \cot^{-1} x = \frac{\pi}{2} \right)$$

$$\therefore x = \sqrt{3}$$