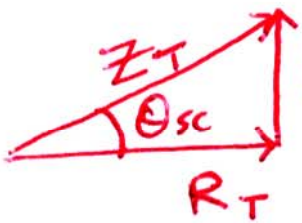
* A better approach for finding transformer X_T and R_T is as follows:

$$Z_T = \frac{V^2}{S_{\text{short circuit}}} \Rightarrow \frac{X_T}{R_T} = 10 = \tan\theta_{sc}$$



$$\therefore \theta_{sc} = \tan^{-1}\frac{X_T}{R_T}$$

$$\therefore X_T = Z_T \sin\theta_{sc} \qquad X_T(n) = nZ_T \sin\theta_{sc}$$

$$R_T = Z_T \cos\theta_{sc} = \frac{X_T}{10}$$