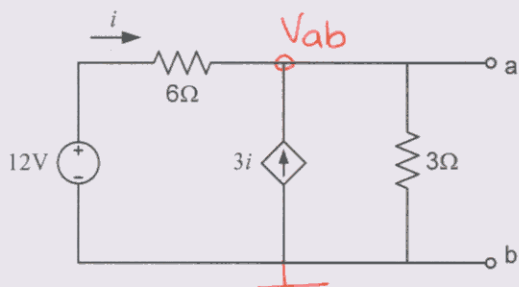


Quiz # 5
EE201-06 (032)

Name KEY
ID# _____

Find the Thevenin equivalent for the following circuit at terminals a, b



Find $V_{ab} = V_{Th}$

$$\frac{V_{ab}-12}{6} - 3i + \frac{V_{ab}}{3} = 0$$

But $i = \frac{12-V_{ab}}{6}$

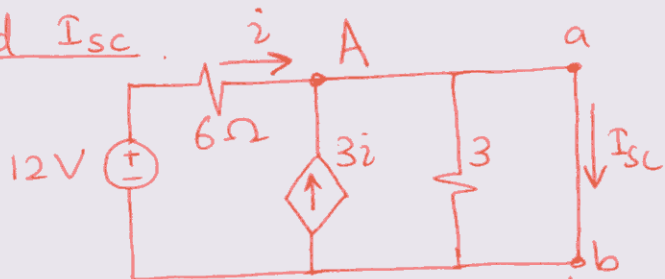
$$\frac{V_{ab}-12}{6} - 3\left(\frac{12-V_{ab}}{6}\right) + \frac{V_{ab}}{3} = 0$$

$$\Rightarrow V_{ab}-12-36+3V_{ab}+2V_{ab}=0$$

$$\Rightarrow 6V_{ab}=48 \Rightarrow V_{ab}=8V$$

$$V_{Th}=8V$$

Find I_{sc}



No current will flow through 3Ω
12V is in parallel with 6Ω

$$\therefore i = \frac{12}{6} = 2A$$

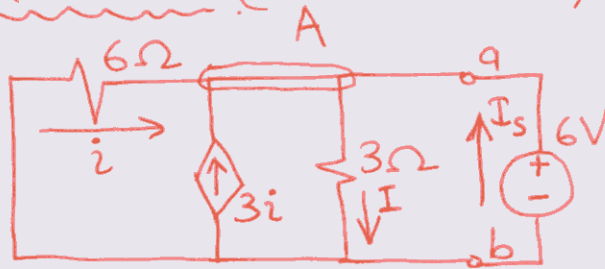
Apply KCL at A

$$i+3i = I_{sc}$$

$$\Rightarrow I_{sc} = 8A$$

$$R_{Th} = \frac{V_{Th}}{I_{sc}} = 1\Omega$$

Find R_{Th} (2nd method)



Connect a 6V source at a, b and find the current I_s
 $i = -\frac{6}{6} = -1A$

Apply KCL at A

$$i+3i+I_s = I$$

$$I_s = I - 4i$$

$$= \frac{6}{3} - 4(-1)$$

$$I_s = 6A$$

$$\therefore R_{Th} = \frac{6}{I_s} = 1\Omega$$