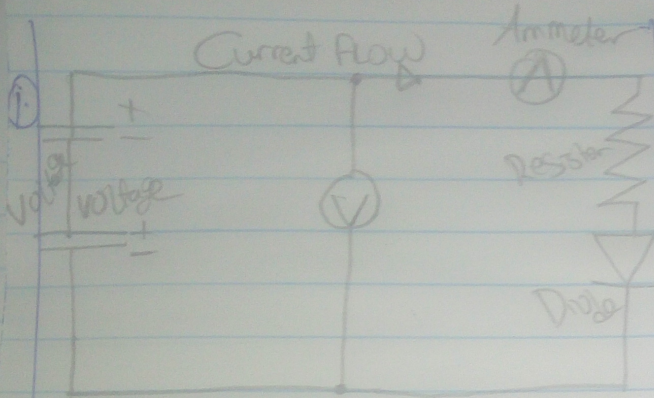


OKREKE SINAKATHI MAC-ANTHONY  
18/ENG02/04 COMPUTER ENGINEERING



$$R_s = 5.46 \Omega$$

~~$$b) I_a = \frac{V_z}{R_s} = \frac{10}{5.5}$$~~

$$10) I_a = \frac{V_z}{R_s} = \frac{10}{500} = 0.02 A$$

$$P = 5W$$

$$I_a = 500mA = 0.5A$$

~~$$V_a = 12V$$~~

$$V_{dc} = \frac{20 \times 2}{1} = 12.73V$$

$$\therefore I_z = I_s - I_a$$

$$= 0.5 - 0.02$$

$$= 0.48A$$

~~$$I_s \times P = V_z \times I_s$$~~

$$V_z = \frac{P}{I_s} = \frac{5}{0.5} = 10V$$

$$V_R = V_s - V_z$$

$$= 12.73 - 10 = 2.73V$$

$$\therefore V_R = I R_s$$

$$\therefore R_s = \frac{V_R}{I} = \frac{2.73}{0.5} = 5.46 \Omega$$

~~$$R_s = 5.46 \Omega$$~~