

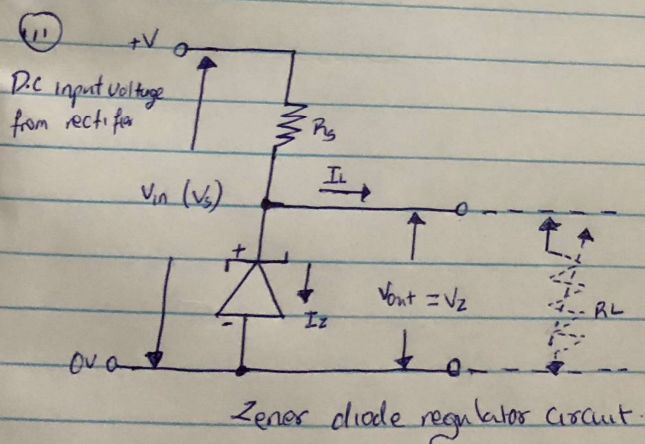
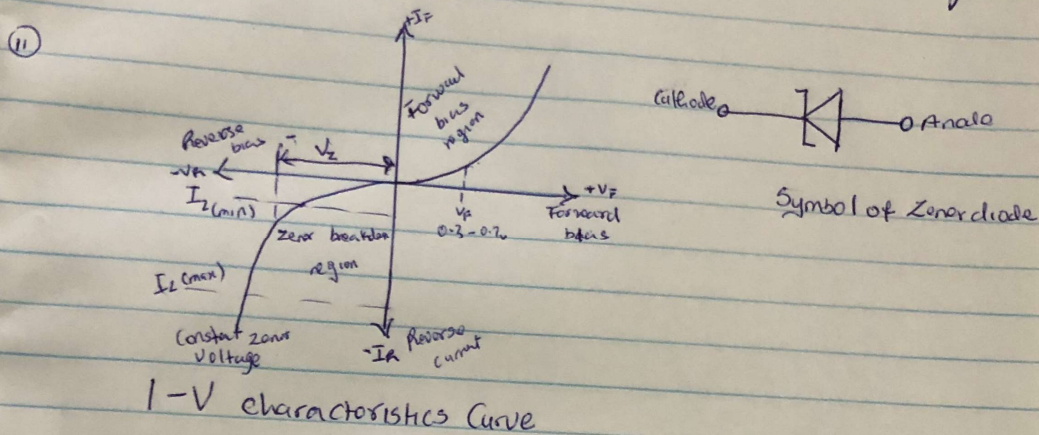
MEZE HANNAH CHIBUEZE

18/ENG05/031

MECHATRONICS ENGINEERING

MEZET HARUNA CHIBUZE
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 MECHANICALS ENGINEERING

(i) A zener diode regulator can be described as a voltage reg. regulator circuit designed using a zener diode to maintain a constant DC output voltage across the load in spite of variations in the input voltage or load current



(2) $V_s = 20V$, $V_z = ?$, max current $I_z = 500mA$, $P_z = 5W$

(1) $P_z = I_z V_z$

$$V_z = \frac{P_z}{I_z} = \frac{5}{500 \times 10^{-3}} = 10V$$

$$R_s = \frac{V_s - V_z}{I_z} = \frac{20 - 10}{500 \times 10^{-3}} = 20 \Omega$$

$$(1) I_L = \frac{V_z}{R_L} = \frac{10}{500} = 20 \text{ mA}$$

$$I_z = I_s - I_L \\ = 500 - 20 = 480 \text{ mA}$$