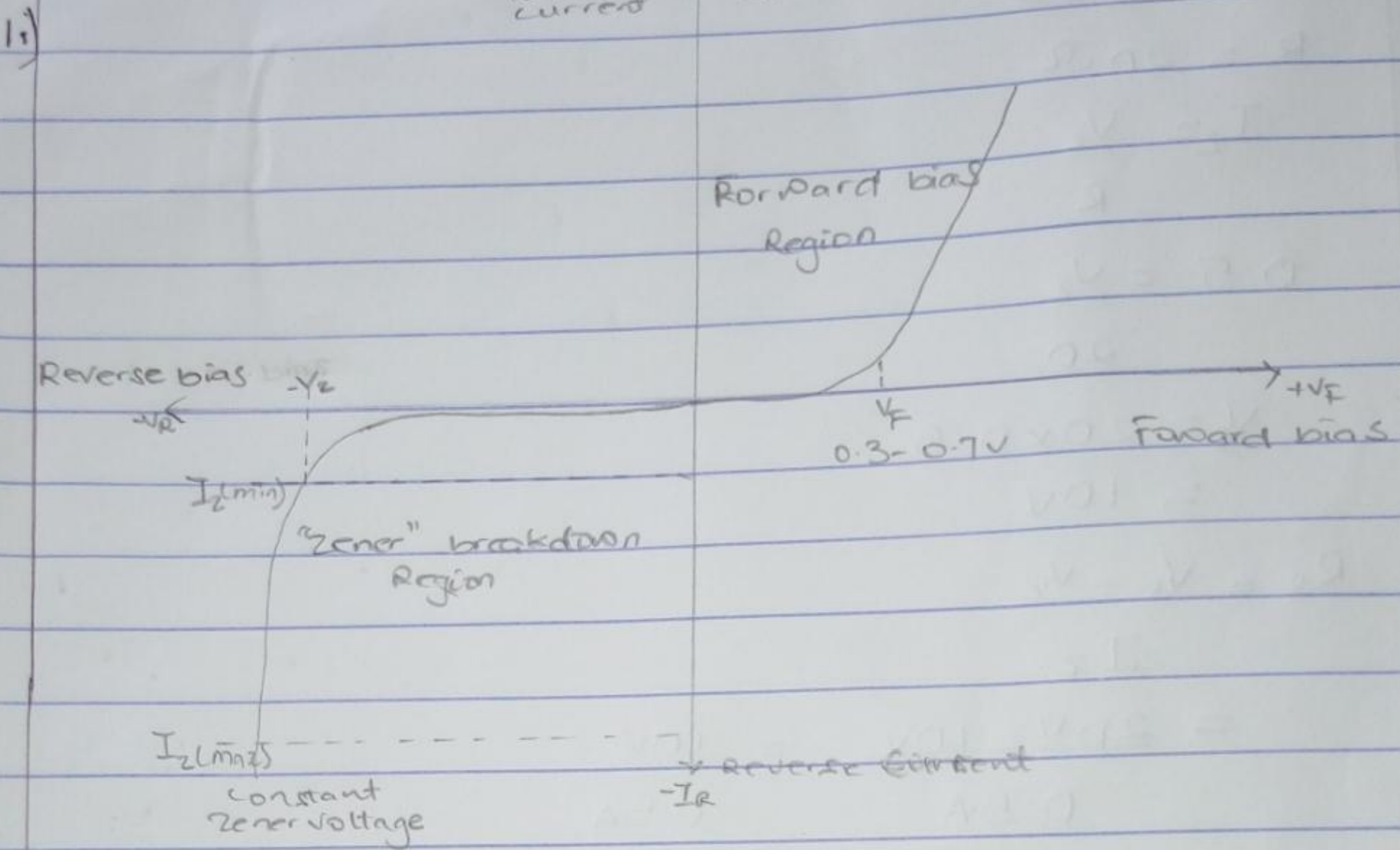


ENG 222 ASSIGNMENT

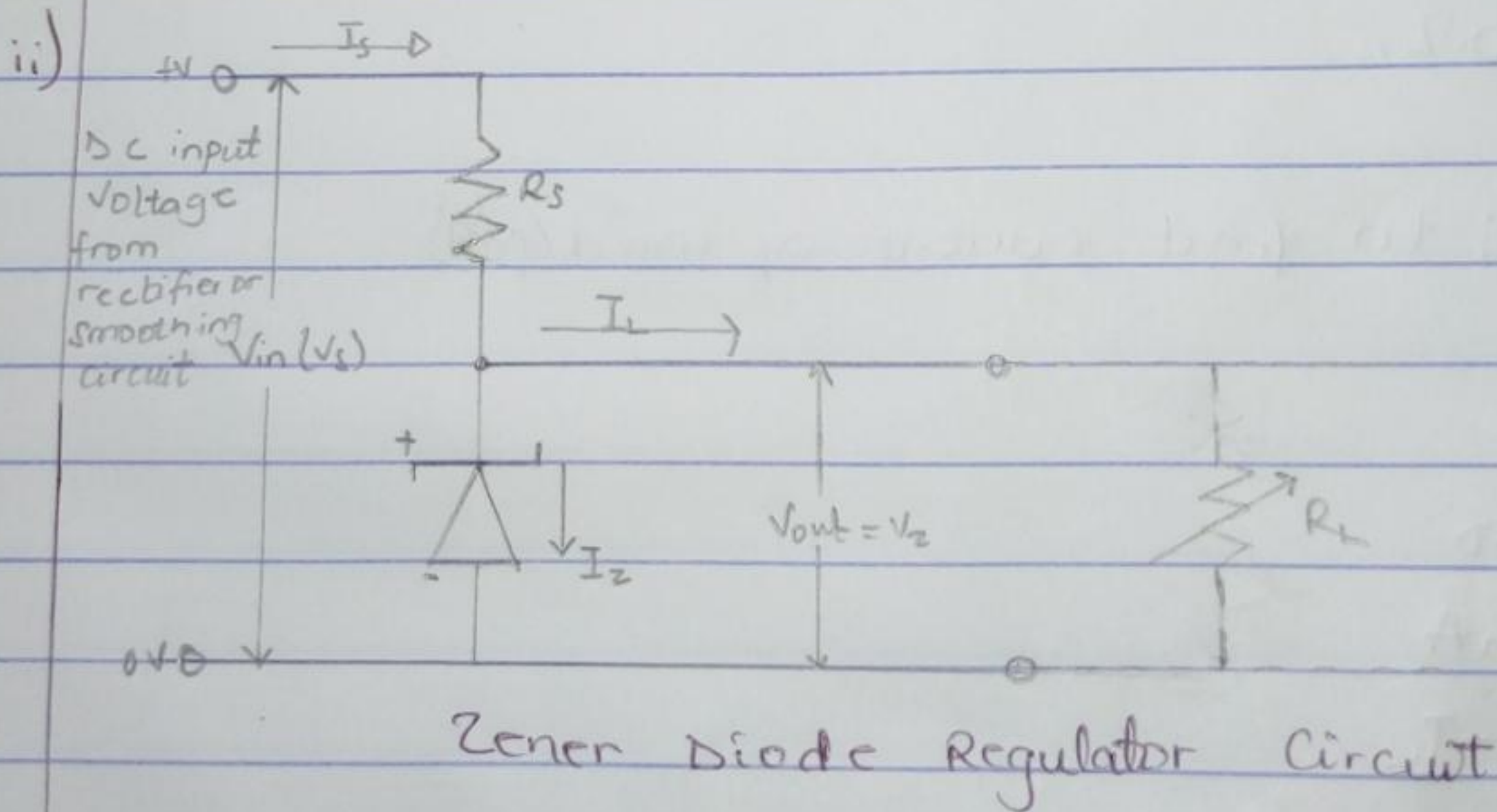
OKPALE ANIOWAWA GIFT-OHEJI

18/MHS01/22

BIOMEDICAL ENGINEERING



Zener Diode I-V Characteristics



Zener Diode Regulator Circuit

2)  $R_S P_{max} = 5W$

$I_{max} = 500mA = 0.5A = I_Z$

$V_S = 20V_{max}$

$R_S = \frac{V_S - V_Z}{I_Z}$

$V_Z = I_Z R$

out  $P_{max} = I^2 R$



$$5W = (0.5)^2 R$$

$$\frac{5}{0.25} = \frac{0.25 \times R}{0.25}$$

$$R = 20 \Omega$$

$$I_z = \frac{V_z}{R}$$

$$0.5 = \frac{V_z}{20}$$

$$V_z = 20 \times 0.5 \\ = 10V$$

$$R_s = \frac{V_s - V_z}{I_z}$$

$$= \frac{20V - 10V}{0.5A} = \frac{10V}{0.5A}$$

$$= 20 \Omega$$

$$R_s = 20 \Omega //$$

ii  $I_L = \frac{V_z}{R_L}$  ; to find current of load (full)

$$= \frac{10}{5000}$$

$$= 2 \text{mA}$$

$$= 2 \text{mA}$$

$$I_z = I_s - I_L$$

$$= 500 \text{mA} - 2 \text{mA}$$

$$= 498 \text{mA}$$