

$$\textcircled{2} I_s = 500 \text{ mA} \quad I_z = 500 \text{ mA} \quad V_z = 20 \text{ V} \quad R_s = ?$$

$$P_z = \frac{\text{Watts}}{\text{voltage}}$$

$$I_z \cdot P_z$$

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

$$V_z = \frac{5000}{500}$$

$$V_z = 10 \text{ V}$$

$$\textcircled{1} R_s \Rightarrow \frac{V_s - V_z}{I_z} = \frac{20 - 10}{500 \text{ mA}} = \frac{10 \times 1000}{500 \text{ mA}} = 20 \Omega$$

11 The current across

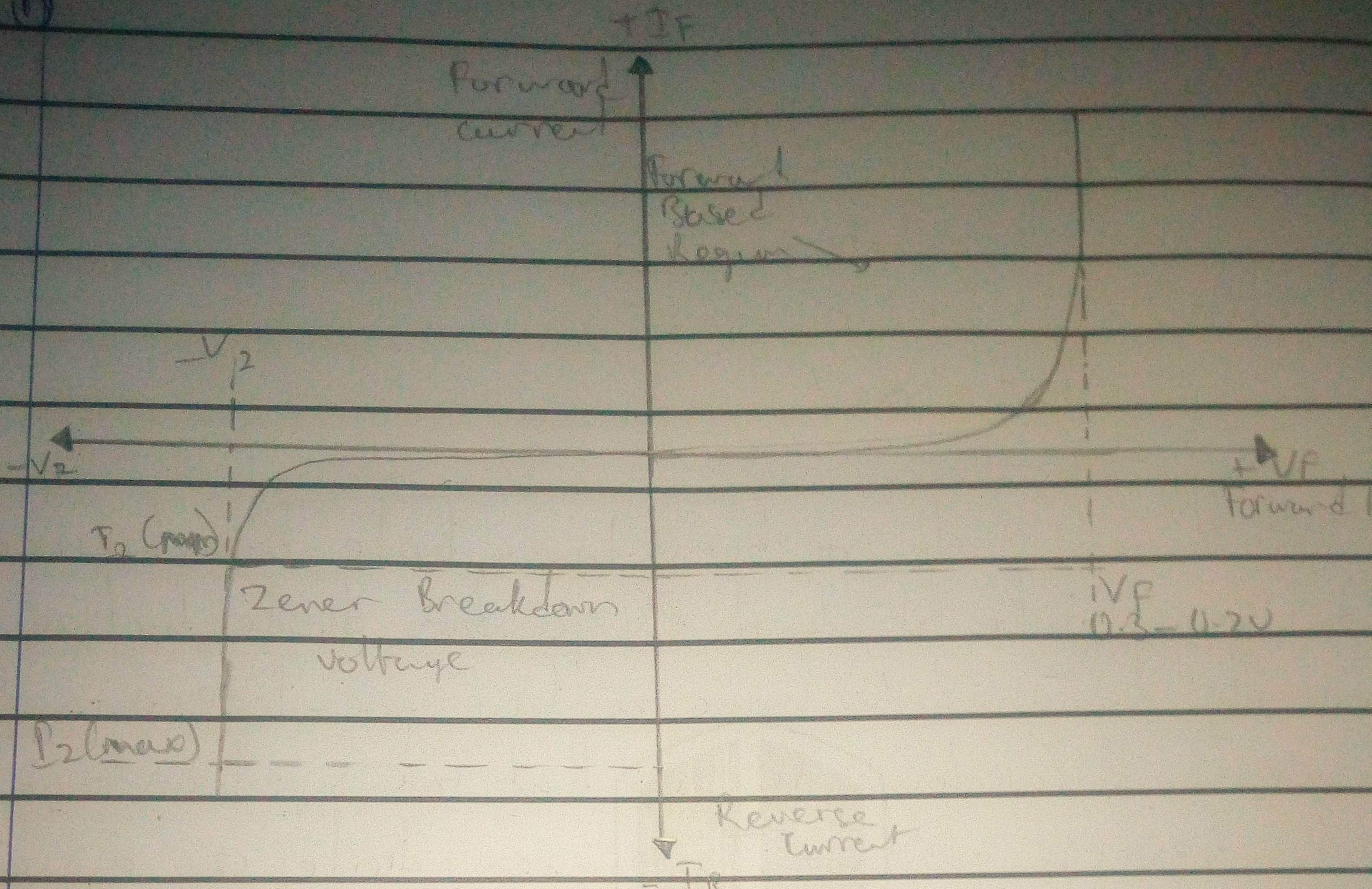
$$I_r = \frac{V_z}{R_r} = \frac{10 \text{ V}}{500 \text{ mA}} = 20 \text{ mA}$$

The Zener current

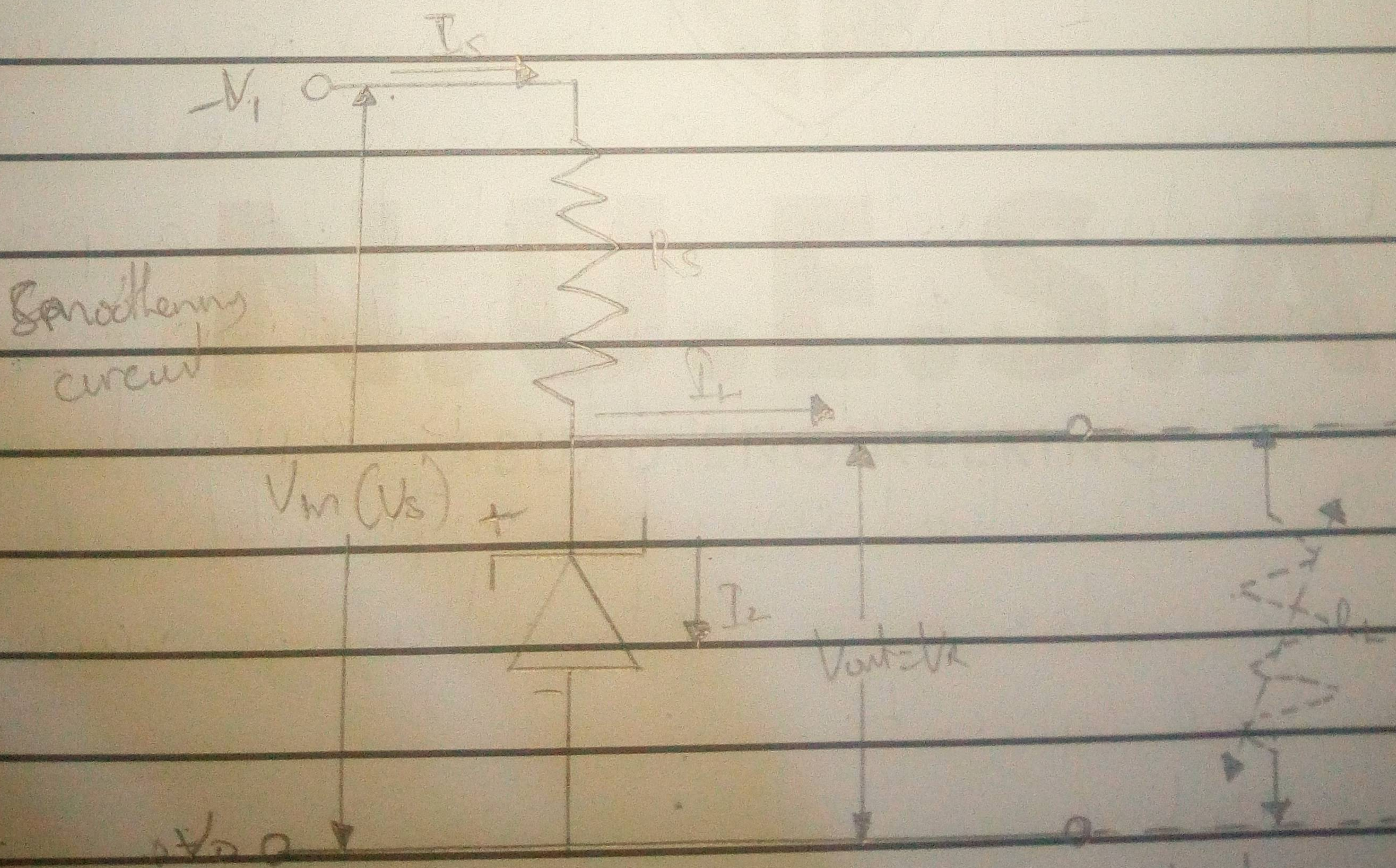
$$I_z = I_s - I_r$$

$$= 500 \text{ mA} - 20 \text{ mA}$$

$$= 480 \text{ mA}$$



ii. The Zener Diode I-V characteristics.



The circuit Diagram For Zener diode.

Olajunwa Oluwale - F.

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Petroleum Engineering

ENGG 222 - Basic Elect

Assignment

① What is Zener diode?

The Zener diode or breakdown diode are basically the same as the standard PN junction diode but are specially designed to have a low pre-determined Reverse Breakdown Voltage that takes advantage of high reverse voltage. The Zener diode is a signal diode consisting of a silicon PN junction. When biased in the forward direction, it behaves as a normal signal diode but when in reverse direction the diode breakdown voltage is reached at a point where a process called Avalanche Breakdown region. The function of a Zener diode regulator is to provide a constant out voltage to a load connected in parallel with it in spite of the ripples in the supply voltage or variations in the load current.

