

3

ERIC GAMBRATH (2015736)

3a ii

$$V = r \times I$$

$$= .25 \Omega \times .2 \text{ mA}$$

$$= .25 \times .2 \times 10^{-3}$$

$$= \underline{5 \times 10^{-5} \text{ V}}$$

3a iii) Voltage is the relation
- Ship of electric potential
energy per unit charge -
 $V = R \times I$

It is measured in

Volts

3a iii

$$I = \frac{Q}{T}$$

$$T = \frac{Q}{I}$$

$$= \frac{1.1 \text{ mc}}{.2 \text{ mA}}$$

$$= \underline{5.5 \text{ s}}$$

3b i) Total Resistance

= Total Parallel Resistance

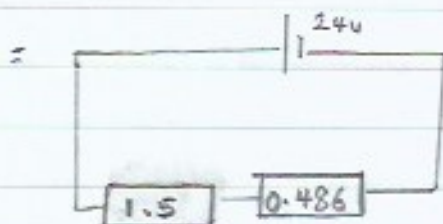
$$= \frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{R_T} = \frac{1}{.82} + \frac{1}{1.35} + \frac{1}{10.5}$$

$$= \frac{1}{R_T} = \frac{50}{41} + \frac{20}{27} + \frac{2}{21}$$

$$\frac{1}{R_T} = \frac{15928}{7749}$$

$$\frac{R_T}{1} = \frac{7749}{15928} = \underline{0.486}$$



$$R_T = R_1 + R_2$$

$$= 15 \Omega + 0.486$$

$$R_T = \underline{1.99 \Omega}$$

3 ii

Battery Current

$$I = \frac{V}{R}$$

$$= \frac{24}{1.99} = \underline{12.060 \text{ A}}$$

iii

PD across 1.5 ohm resistor

$$V = IR$$

$$15 \times 12.060$$

$$= \underline{18.09 \text{ V}}$$