

ENGR 065: HW #2 - 1

I: a) power at $18V = V \cdot I = 18 \cdot 5 \cdot 10^{-3} = 0.09W$

\hookrightarrow current leaving at -ve \Rightarrow $18V$ absorbing power

• power at $5mA = V \cdot I = 7 \cdot 5 \cdot 10^{-3} = 0.035W$

\hookrightarrow current leaving at -ve and -ve value

\Rightarrow $5mA$ delivering power

• power at $7V = V \cdot I = 7 \cdot 5 \cdot 10^{-3} = 0.035W$

\hookrightarrow current entering at +ve \Rightarrow $7V$ absorbing power

• Total power developed $P_{dev} = P_{5mA}$

\hookrightarrow
$$= 0.125W$$

• Total power absorbed $P_{abs} = P_{18V} + P_{7V}$

$P_{abs} = 0.09 + 0.035$

$$= 0.125W$$

b) $18V, -7 = 0 \Rightarrow V_r = 11V$

• Power at $18V = V \cdot I = 18 \cdot 5 \cdot 10^{-3} = 0.09W$

\hookrightarrow current leaving at +ve \Rightarrow $18V$ delivering power

• Power at $5mA = V_r \cdot I = 11 \cdot 5 \cdot 10^{-3} = 0.055W$

\hookrightarrow current leaving at -ve \Rightarrow $5mA$ absorbing power

• Power at $7V = V \cdot I = 7 \cdot 5 \cdot 10^{-3} = 0.035W$

\hookrightarrow current entering at +ve \Rightarrow $7V$ absorbing power

$P_{dev} = P_{18V} = 0.09W$ \leftarrow total power developed

$P_{abs} = P_{5mA} + P_{7V} = 0.055 + 0.035 = P_{abs} = P_{dev}$