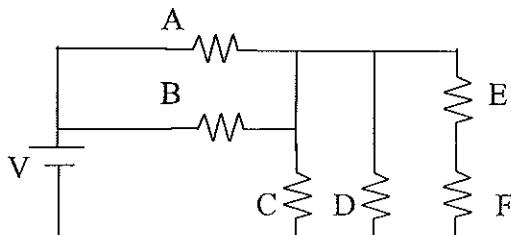


223b

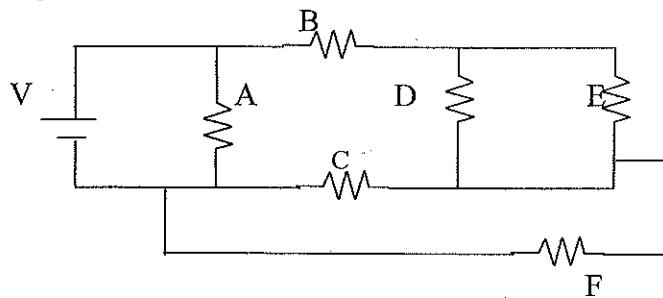
Equivalent Resistance

- Find the equivalent resistance of each circuit.
 - Find the voltage and current of each resistor.
 - Find the power dissipated in resistor A.
1. Resistance A=10Ω, B=6Ω, C=5Ω, D=8Ω, E=6Ω, F=4Ω
 Voltage = 50V



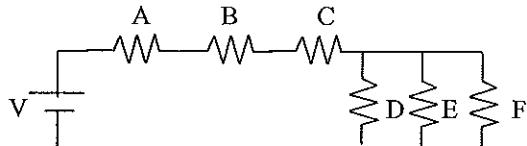
6.1n $\left(\frac{415}{6P} \right)$

2. Resistance A=20Ω, B=8Ω, C=10Ω, D=4Ω, E=2Ω, F=15Ω
 Voltage = 18 V



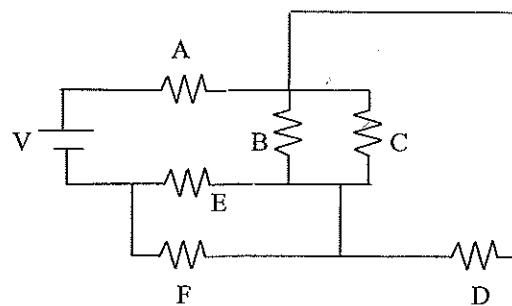
8.68n

3. Resistance A=5Ω, B=8Ω, C=12Ω, D=15Ω, E=15Ω, F=15Ω
 Voltage = 25 V



30n

4. Resistance A=100Ω, B=75Ω, C=25Ω, D=50Ω, E=60Ω, F=30Ω
 Voltage = 24 V



133.64n

Wkst 3B

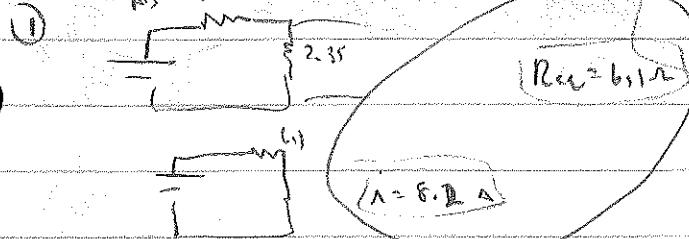
Assume

	A	B	C	D	E	f
V	30.75	30.75	19.3	19.3	11.58	7.72
I	3.075	5.115	3.85	2.91	1.93	1.93

$R_{AB} = 6.12\Omega$

$\Delta V = 10$

$$M = 3.75$$



$$V_D - V_B = V_{AB} = (8.2)(17.7) = 30.75V$$

$$I_A = \frac{30.75}{110} = 3.075A$$

$$I_B = \frac{30.75}{6} = 5.125A$$

$$P = 94.5W$$

$$R_{CD} = 6.12\Omega$$

$$I_C = 5.2A$$

$$P = 94.5W$$

$$V_{CD} = (8.2)(2.7) = 19.27V$$

$$I_C = 3.85A$$

$$I_D = 2.41A$$

$$I_E = 1.93A$$

$$I_F = 1.93A$$

$$V_A = 19.27 - 2.41V$$

$$V_B = 11.58 - 1.93V$$

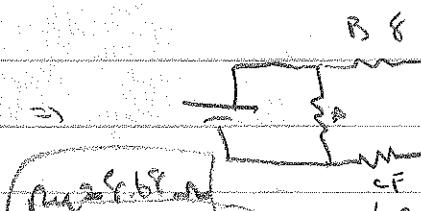
$$V_C = 7.72 - 1.93V$$

$$V_D = 19.27 + 1.93V$$

$$V_E = 11.58 + 1.93V$$

$$V_F = 7.72 + 1.93V$$

(2)



$R_{EF} = 13.33\Omega$

	A	B	C	D	E	F
V	18	9.39	7.04	1.56	1.56	7.04
I	0.9	1.174	0.7	0.39	0.39	0.47

$$V_A = 18V$$

$$I_A = 18/12 = 1.5A$$

$$V_{BDEF} = 18$$

$$I_{BDEF} = 18/15.33 = 1.174A$$

$$I_D = 1.174A$$

$$I_E = 1.174A$$

$$I_F = 1.174A$$

$$I_G = 1.174A$$

$$P = 16.2W$$

$$I_B = 1.174A$$

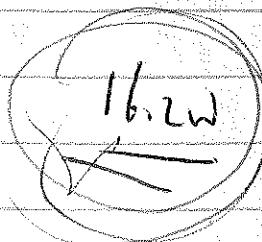
$$V_B = 9.392V$$

$$I_E = 1.174A$$

$$V_E = 1.56V$$

$$I_F = 1.174$$

$$V_F = (1.174)(6) = 7.04V$$



$$V_B = V_E = 1.56V$$

$$I_B = 1.56/12 = 0.39A$$

$$I_E = 1.56/6 = 0.26A$$

$$V_E = V_F = 7.04V$$

$$I_C = 7.04/10 = 0.704A$$

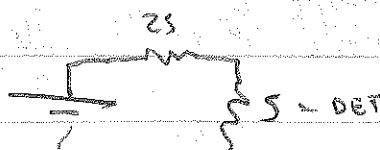
$$I_F = 7.04/15 = 0.47A$$

WHT 3B - Answer

$$\begin{array}{ccccccc} A & B & C & D & E & F \\ \checkmark 4.165 & 6.17 & 10 & 4.165 & 4.165 & 4.165 \\ I & .83 & 1.83 & 1.83 & .278 & .278 & .278 \end{array}$$

$$R_{\text{eq}} = 30 \quad i = .833 \quad P = 3.5 \text{ W}$$

3)



$$R_{\text{eq}} = 30 \Omega$$

$$i = .833 \text{ A}$$

$$V_A = V_B = V_C = 4.165 \text{ V}$$

$$V_D = (.833) 5 = 4.165 \text{ V}$$

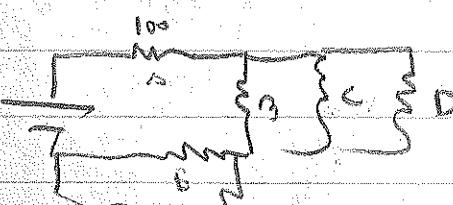
$$V_E = (.833) 12 = 9.996 \text{ V}$$

$$V_{\text{DET}} = (.833) 5 = 4.165 \text{ V}$$

$$V_B = V_E = V_F = 4.165 \text{ V}$$

$$I_D = I_E = I_F = \frac{4.165}{10} = .4165 \text{ A}$$

4.



$$\begin{array}{ccccccc} A & B & C & D & E & F \\ 18 & 2.96 & 2.96 & 2.96 & 3.6 & 3.6 \\ I & .18 & .053 & .098 & .049 & .06 & .12 \end{array}$$

$$R_{\text{eq}} = 133.14 \Omega$$

$$i = .183 \text{ A}$$

$$P = 3.6 \text{ W}$$

$$R_{\text{eq}} = 133.64 \Omega$$

$$i = .183 \text{ A}$$

$$I_A = .183$$

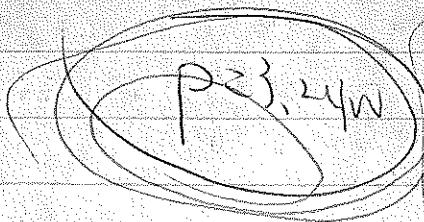
$$V_A = 18 \text{ V}$$

$$I_{B(2M)} = .183$$

$$V_{B(2M)} = (118)(12 \text{ M}) = 248 \text{ V}$$

$$I_{E(F)} = 1.83$$

$$V_E = (118)(12) = 3.6 \text{ V}$$



$$P = 3.24 \text{ W}$$

$$V_B = V_E = V_F = 2.96 \text{ V}$$

$$I_B = 2.96 / 25 = .0328 \text{ A}$$

$$I_E = 2.96 / 50 = .0592 \text{ A}$$

$$I_F = 2.96 / 50 = .0592 \text{ A}$$

$$V_E - V_F = 3.6 \text{ V}$$

$$I_E = 3.6 / 60 = .06 \text{ A}$$

$$I_F = 3.6 / 30 = .12 \text{ A}$$