1.12

$P_1 = 4 \times 2 = 8W$

$P_2 = -8 \times 2 = -16W$

1.17

$P_{36V} = 36 \times (-4) = -144W$

$P_1 = 12(4) = 48W$

$P_2 = 24(2) = 48W$

$P_{DS} = 4(-2) = -8W$

$P_3 = 28(2) = 56W$

2.7

$P_S = I \cdot V = (3+3)(12) = 72W$

2.10

$I_6 + I_2 = I_4 \quad 3m + I_2 = 6m$

$\therefore I_2 = 3mA.$

By KCL $I_1 = I_4 = 6mA.$

2.17

KVL $\quad -9 + V_x + 2V_x = 0.$

$V_x = 3V.$

2.24

The current in clockwise direction is

$$I = \frac{12-4}{4k} = 2mA.$$

$$V_{bd} = 2mA\,(1K) + 4 = 6V$$

2.28

Assuming a-clockwise current KVL $\Rightarrow -\frac{V_x}{2} + 20KI + 40KI + 5 = 0$

$V_x = 40I \quad \therefore -\frac{40KI}{2} + 20KI + 40KI + 5 = 0$

$I = 0.125mA.$

$V_1 = V_x + 5 = 40KI + 5 = 0V$

2.29 Assuming a clockwise current

KVL $-12 + 30kI + 2V_x + V_x = 0$

$V_x = 10kI$

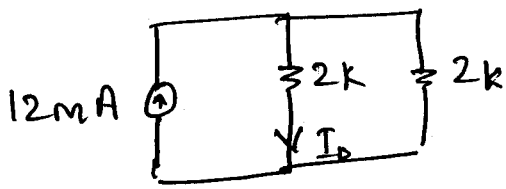
$\therefore \quad -12 + 30kI + 20kI + 10kI = 0$

$$I = 200\mu A.$$

$$P_{30k} = I^2R = (200 \times 10^{-6})^2 \; 30k$$

$$= 1.2mW$$

2.30 Combining the 6k and 3k resistors yields this network.



$$I_o = 12mA \left(\frac{2k}{2k+2k}\right)$$

$$= 6mA.$$

2.35 Applying KCL

$$\frac{V_1}{2k} - 6mA + \frac{I_x}{2} + \frac{V_1}{4k} = 0 \qquad I_x = \frac{V_1}{2k}$$

$\therefore$

$$\frac{V_1}{2k} + \frac{V_1}{4k} + \frac{V_1}{4k} = 6mA$$

$$V_1 = 6V$$

$$I_L = \frac{6}{4k} = 1.5mA.$$