

PPT 例题

$$P_1 = U_1 I_1 = 2W > 0 \text{ 非关联, 发出}$$

$$P_2 = U_2 I_1 = -6W < 0, \text{ 关联, 发出}$$

$$P_3 = U_3 I_1 = 16W > 0, \text{ 关联, 吸收}$$

$$P_4 = U_4 I_2 = -4W < 0, \text{ 关联, 发出}$$

$$P_5 = U_5 I_3 = -7W < 0, \text{ 关联, 发出}$$

$$P_6 = U_6 I_3 = 3W > 0, \text{ 关联, 吸收}$$

$$\text{总发出: } P_{\text{总1}} = 2W + 6W + 4W + 7W = 19W$$

$$\text{总吸收 } P_{\text{总2}} = 16W + 3W = 19W$$

\therefore 总吸收功率等于总发出功率。

1-1.

(1). (a) 关联, (b) 不关联

(2). ~~U_i 乘和表示元件吸收或发出功率~~ 对 (a) 表示吸收功率, 对 (b) 表示发出功率

(3). 发出功率, 发出功率.

1-2.

对图 (a) 的 N_A : U_i 不关联, U_i 之积对 N_A 表发出功率
 N_B : U_i 关联, U_i 之积表示吸收功率

对图 (b): N_A : U_i 关联, U_i 之积表示对 N_A 表示吸收的功率
 N_B : U_i 不关联, U_i 之积表示对 N_B 的发出功率

1-4.

$$P_A = 80V \times 1.4A = 112W, \text{ 非关联, 发出}$$

$$P_B = 80V \times 0.6A = 48W, \text{关联, 吸收}$$

$$P_C = 20V \times 0.8A = 16W > 0, \text{非关联, 发出}$$

$$P_D = 130V \times 0.5A = 65W, \text{关联, 吸收}$$

$$P_F = 30V \times 0.5A = 15W, \text{非关联, 发出}$$

$$P_E = \text{修正} (130V - 30V) \times 0.3A = 30W, \text{关联, 吸收}$$

$$P_{\text{发出}} = P_A + P_C + P_F = 143W$$

$$P_{\text{吸收}} = P_B + P_D + P_E = 143W$$

$$P_{\text{发出}} = P_{\text{吸收}}$$

∴ 正确

1-5.

(a). 关联 $u = 1 \times 10^4 i$

(b). 非关联: $u = -10i$

(c). 关联 $u = 10V$

(d). 非关联 $u = -5V$

(e). 关联: $i = 10mA$

(f). 非关联: $i = -10mA$

1-9.

(a). $I' = 2A + 6A = 8A$

$$U = 2 \times 8 = 16V$$

$$P_{\text{电阻}} = UI = 16 \times 2 = 32W (\text{释放}) \quad P_{\text{吸收}} = UI = 32W (\text{吸收})$$

$$P_{\text{电阻}} = I^2 R = 128W (\text{吸收})$$

$$P_{\text{电流}} = UI =$$

$$P_{\text{电阻}} = P_{\text{电压}}$$

(b). $I' = 6 - 2$

$$U = 2I' = 8$$

$$P_{\text{电压}} = UI =$$

$$P_{\text{电阻}} = I^2 R$$

$$P_{\text{电流}} = UI$$

$$P_{\text{电压}} + P_{\text{电阻}}$$

(c).

$$I = 4 - 2$$

$$U = 2I =$$

$$P_{\text{电阻}} =$$

$$P_{\text{电压}} =$$

$$P_{\text{吸收}}$$

$$P_{\text{发出}}$$

$$P_{\text{电阻}}$$

$$P_{\text{电压}}$$

(d)

$$P_{\text{电流}} = UI = 16 \times 6 = 96 \text{ W (释放)}$$

$$P_{\text{支吸}} = P_{\text{支路}} - P_{\text{电流}}$$

$$~~P_{\text{电阻}} = P_{\text{支路}} + P_{\text{电流}}~~ \quad \text{平衡}$$

$$(b). I' = 6 - 2 = 4 \text{ A}$$

$$U = 2I' = 8 \text{ V}$$

$$P_{\text{电压}} = UI = 16 \text{ W (吸收)}$$

$$P_{\text{电阻}} = I'^2 R = 32 \text{ W}$$

$$P_{\text{电流}} = UI = 48 \text{ W (释放)}$$

$$P_{\text{电压}} + P_{\text{电阻}} = P_{\text{电流}} \quad \text{平衡}$$

(c).

$$I = 4 - 2 = 2 \text{ A}$$

$$U = 2I = 6 \text{ V}$$

$$P_{\text{电阻}} = I^2 R = 12 \text{ W (吸收)}$$

$$~~P_{\text{电压}} = 2 \times 6 = 12 \text{ W (吸收)}~~$$

$$P_{\text{支吸}} = 6 \times 2 = 12 \text{ W (吸收)}$$

$$P_{\text{支发}} = 4 \times 6 = 24 \text{ W (发出)}$$

$$P_{\text{支发}} = P_{\text{电阻}} + P_{\text{支吸}}$$

平衡

$$(d). U = 2 \times 4 = 8 \text{ V}$$

$$P_{\text{电阻}} = 2^2 \times 4 = 16 \text{ W}$$

$$P_{\text{支路}} = 5 \times 8 = 40 \text{ W (吸收)}$$

$$P_{\text{支}} = 3 \times 8 = 24 \text{ W (吸收)}$$

$$\therefore P_{\text{支路}} = P_{\text{电阻}} + P_{\text{支}} \quad \therefore \text{平衡}$$