

M R
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فيزياء	استاتيكا
دوائر كهربية	الكثرونيات
ميكانيكا الانشآت	هيدروليكا

مدرس خصوصي

حضورى

اونلاين

بحصل الطالب علي

مقاطع فيديو هات لشرح المقرر بشكل وافى

ملخص للمادة Pdf للمذكرة واطراجة

محاضرات مباشرة علي برنامج زووم

مناقشة الأجزاء الغير مفهومة

تواصل مستمر مع معلم المادة

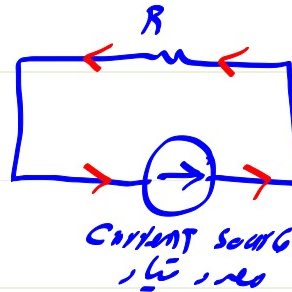
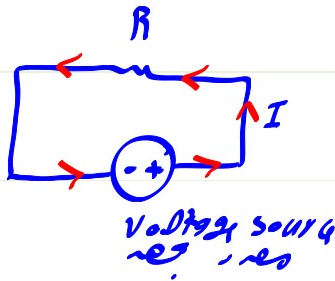


للتواصل

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I, V, R, P



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

$$P = VI = I^2 R = \frac{V^2}{R}$$

$P = \text{absorb}$

$P = \text{supply}$

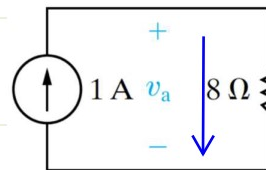
$$\sum P = 0 \Rightarrow \sum P_{\text{sup}} = \sum P_{\text{absorb}}$$

Question 1:

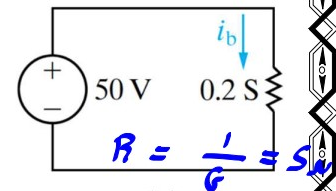
In each circuit, either the value of (v) or (i) is not known.

a) Calculate the values of (v) and (i).

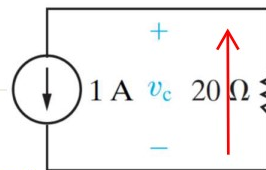
b) Determine the power dissipated in each resistor.



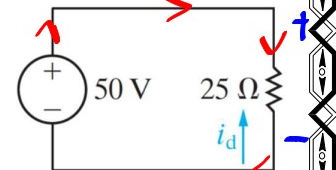
(a)



(b)



(c)



(d)

① $I = 1 \text{ A}, V_a = IR = 1 \times 8 = 8 \text{ V}$

$$V = 50 \text{ V}, I_b = \frac{V}{R} = \frac{50}{5} = 10 \text{ A}$$

$$I = 1 \text{ A}, V_c = -1 \times 20 = -20 \text{ V}$$

$$V = 50 \text{ V}, I_d = -\frac{50}{25} = -2 \text{ A}$$

② $P_{8\Omega} = I \cdot V = I^2 R = \frac{V^2}{R} = 1 \times 8 = 8 \text{ W}$

$$P_{5\Omega} = 10 \times 50 = 500 \text{ W}$$

$$P = -I \cdot V = -1 \times (-20) = 20 \text{ W}$$

$$P = -I \cdot V = -(-2)(50) = 100 \text{ W}$$

Question 2:

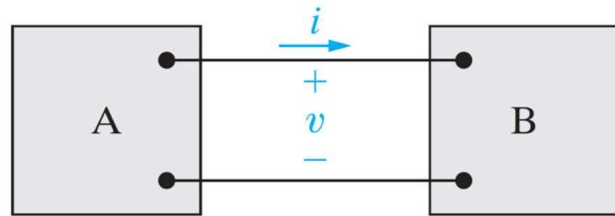
Two electric circuits, represented by boxes A and B, are connected as shown. The reference direction for the current i in the interconnection and the reference polarity for the voltage v across the interconnection are as shown in the figure. For each of the following sets of numerical values, calculate the power in the interconnection and state whether the power is flowing from A to B or vice versa

a) $i = 6 \text{ A}$ $v = 30 \text{ V}$

b) $i = -9 \text{ A}$ $v = 40 \text{ V}$

c) $i = 4 \text{ A}$ $v = -60 \text{ V}$

d) $i = -8 \text{ A}$ $v = -20 \text{ V}$



① $P = 6 \times 30 = 180 \text{ W}$ from A to B

② $P = -9 \times 40 = -360 \text{ W}$ from B to A

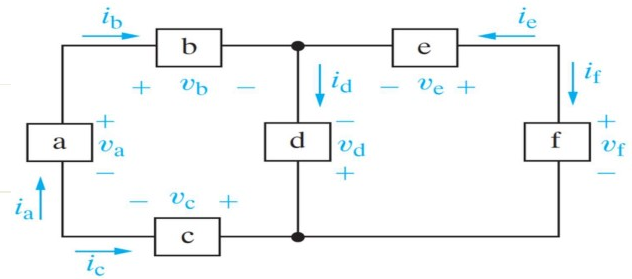
③ $P = 4 \times -60 = -240 \text{ W}$ from B to A

④ $P = -8 \times -20 = 160$ from A to B

Question 3:

The numerical values for the currents and voltages in the circuit are given in the table. Find the total power developed in the circuit.

Element	Voltage (V)	Current (mA)
a	40	-4
b	-24	-4
c	-16	4
d	-80	-1.5
e	40	2.5
f	120	-2.5



$$a) P = -I \cdot V = -(-4) \times 40 = 160 \text{ mW}$$

$$b) P = I \cdot V = -4 \times (-24) = 96 \text{ mW}$$

$$c) P = -I \cdot V = -4 \times -16 = 64 \text{ mW}$$

$$d) P = -I \cdot V = -(-1.5) \times (-80) = -120 \text{ mW}$$

$$e) P = I \cdot V = 2.5 \times 40 = 100 \text{ mW}$$

$$f) P = I \cdot V = -2.5 \times 120 = -300 \text{ mW}$$

$$P_{dev} = 420 \text{ mW} , P_{sup} = 420 \text{ mW}$$

Question 4:

There are approximately 260 million passenger vehicles registered in the United States. Assume that the battery in the average vehicle stores 540 watthours (Wh) of energy. Estimate (in gigawatt-hours) the total energy stored in U.S. passenger vehicles.

$$E = \frac{260 \times 10^6 \times 540}{10^9} = 140.4 \text{ gigaw.h}$$