أسئلة مراجعة الوحدة الخامسة التيار والمقاومة باللغة الانجليزية

موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الثاني عشر المتقدم ⇦ فيزياء ⇦ الفصل الأول ⇦ ملفات متنوعة ⇦ الملف

تاريخ إضافة الملف على موقع المناهج: 2024-12-19 17:26:12

المزيد من مادة فيزياء:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس
	إعداد: محمد مسعد

التواصل الاجتماعي بحسب الصف الثاني عشر المتقدم

صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

المزيد من الملفات بحسب الصف الثاني عشر المتقدم والمادة فيزياء في الفصل الأول

1	أسئلة مراجعة نهائية وفق الهيكل الوزاري باللغتين العربية والانجليزية
2	مراجعة نهائية لوحدة المجالات الكهربائية وقانون جاوس
3	حل أسئلة الامتحان النهائي منهج بريدج القسم الورقي العام 2022-2023
4	مراجعة نهائية لوحدة القوى الكهروستاتيكية
5	المراجعة النهائية لوحدة الجهد الكهربائي

2025

PHYSICS

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Dr mohammed mossad

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CHAPTER 5

التيار والمقاومة

- *Electric Current*
- *Current Density*
- *Resistivity and Resistance*
- *Electromotive Force and Ohm's Law*
- *Resistors in Series*
- *Resistors in Parallel*
- *Energy and Power in Electric Circuits*

- التيار الكهربائي
- كثافة التيار
- المقاومة النوعية والمقاومة
- القوة الدافعة الكهربائية وقانون أوم
- توصيل المقاومات على التوالي
- توصيل المقاومات على التوازي
- الطاقة والقدرة في الدوائر الكهربائية

Which of the following equivalents the unit of the electric current ?

(a) $C.S$

(b) $C^{-1}.S^{-1}$

(c) $C^{-1}.S$

(d) $C.S^{-1}$

5.2×10^{20} electrons pass a specific point of a uniform conductor during T= 120 s, what is the current represented by this charge ?

(a) 0.80 A

(b) 0.69 A

(c) 1.2 A

(d) 3.00

A current of 0.500 A flows in a wire for T= 650 s. How much charge passes through any point in this wire during this time?

(a) 380 C

(b) 150 C

(c) 325 C

(d) 140 C

Determine the current flowing through a conductor at t=2 s if the charge flow is given by $q(t)=5t^2+3t+1$

(a) 15 C

(b) 23 C

(c) 18 C

(d) 20 C

A current flows through a conductor is given by $i(t) = 2t^2 + 5$ A, how much charge passes through a point of this conductor during the interval t=3 s to t=6 s ?

(a) 60 C

(b) 123 C

(c) 141 C

(d) 88 C

Determine the current equation that flowing through a conductor if the charge flow is given by $q(t)=3t^3+4t$

(a) T^3+T

(b) $3T^2+4T$

(c) 9T+4

(d) 3T+4

A charge flows in a conducting wire whose strength changes with time according to the equation $q(t)= 5t^3+7t^2+4$ where the time is measured in seconds, and the charge is measured in Coulomb. How much current does this pass in T= 7s ?

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A current flows in a conducting wire whose strength changes with time according to the equation $i(t) = 3t^2 - 3t$, where the time is measured in seconds, and the current is measured in amperes. How much charge does this current pass in t=3s,t=1s

A nurse wants to administer 80 μg of dexamethasone to the heel of an injured soccer player. If she uses an iontophoresis device that applies a current of 0.14 mA, how long does the administration of the dose take? Assume that the instrument has an application rate of 650 μg/C and that the current flows at a constant rate

A typical rechargeable AA battery is rated at 700 mAh. How long can this battery provide a current of 100 μA ?

How many protons are in the beam traveling close to the speed of light in the Tevatron at Fermilab, which is carrying 11 mA of current around the 6.3 km circumference of the main Tevatron ring?

Two wires carry the same current, but if the area of the second wire is 2 times the area of the first wire, which of the following is true

(a) $J_1=2\ J_2$

(b) $J_1=1/2\ J_2$

(c) $J_1=4\ J_2$

(d) $J_1=1/4\ J_2$

What is the current density in an aluminum wire having a radius of 1.00 mm and carrying a current of 1.00 mA?

What is the drift speed of the electrons carrying this current? The density of aluminum is 2.70 x 103 kg/m3,

and 1 mole of aluminum has a mass of 26.98 g. There is one conduction electron per atom in aluminum.

A current of 0.123 mA flows in a silver wire whose cross-sectional area is 0.923 mm^2

a) Find the density of electrons in the wire, assuming that there is one conduction electron per silver atom.

b) Find the current density in the wire assuming that the current is uniform.

c) Find the electrons' drift speed.

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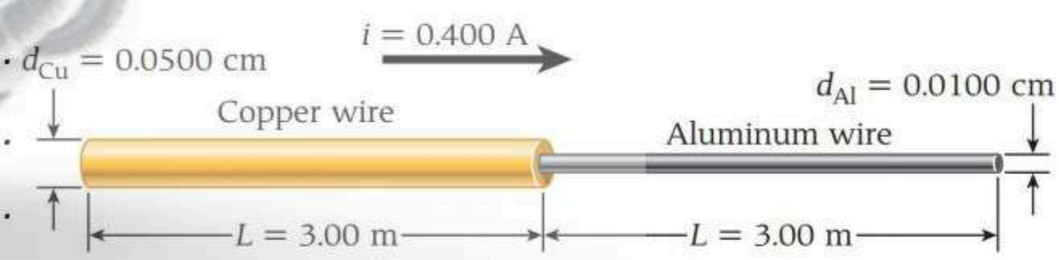
A copper wire has a diameter d_{cu}= 0.0500 cm, is 3.00 m long, and has a charge-carrier density of 8.50×10^{28} electrons/m^3.

As shown in the figure, the copper wire is attached to an equal length of aluminum wire with a diameter d_{AL} = 0.0100 cm and a charge-carrier density of 6.02×10^{28} electrons/m^3.

A current of 0.400 A flows through the copper wire.

a) What is the ratio of the current densities in the two wires, J_{Cu} / J_{Al}

b) What is the ratio of the drift velocities in the two wires, v_{d-Cu} / v_{d-Al}



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Which of the following is true about the conventional current

(a) In the same direction of electrons flow

(b) Has the same direction of the current density

(c) Always from the negative to the positive terminals of the battery

(d) In the opposite direction of the electric ad field that causes the charges flow

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What is the resistance of a copper wire of length l = 10.9 m and diameter d = 1.30 mm ?

The resistivity of copper is 1.72×10^{-8} Ω m

(a) 0.3 Ω

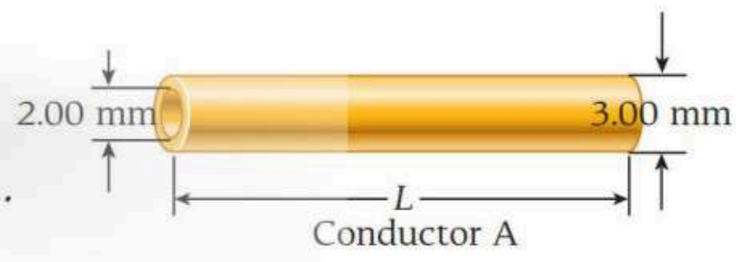
(b) 1.2 Ω

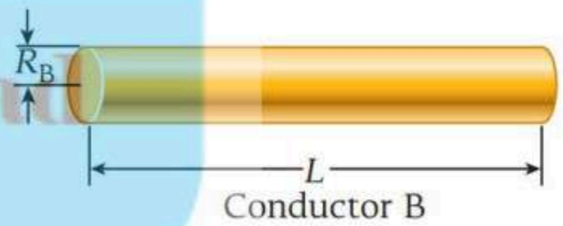
(c) 0.9 Ω

(d) 2.3 Ω

Two conductors are made of the same material and have the same length L.

Conductor A is a hollow tube with inside diameter 2.00 mm and outside diameter 3.00 mm; conductor B is a solid wire with radius R_B. What value of R_B is required for the two conductors to have the same resistance measured between their ends?





Two cylindrical wires, 1 and 2, made of the same material, have the same resistance. If the length of wire 2 is twice that of wire 1, what is the ratio of their cross-sectional areas, A1 and A2 ?

a) A1/A2 = 2

b) A1/A2 = 4

c) A1/A2 = 0.5

d) A1/A2 = 0.25

A rectangular wafer of pure silicon, with resistivity $\rho = 2300\ \Omega\ m$, measures 2.00 cm by 3.00 cm by 0.0100 cm. Find the maximum resistance of this rectangular wafer between any two faces

A copper wire that is 1.00 m long and has a radius of 0.500 mm is stretched to a length of 2.00 m. What is the fractional change in resistance, $\Delta R/R$, as the wire is stretched?

What is $\Delta R/R$ for a wire of the same initial dimensions made out of aluminum

Ohm's Law states that the potential difference across a device is equal to

a) the current flowing through the device times the resistance of the device.

b) the current flowing through the device divided by the resistance of the device.

c) the resistance of the device divided by the current flowing through the device.

d) the current flowing through the device times the cross-sectional area of the device.

e) the current flowing through the device times the length of the device

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A potential difference of 12.0 V is applied across a wire of crosssectional area 4.50 mm^2 and length 1000 km. The current passing through the wire is 3.20 $X10^{-3}$ A.

a) What is the resistance of the wire?

b) What type of wire is this?

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One brand of 12.0 V automotive battery used to be advertised as providing "600 cold-cranking amps." Assuming that this is the current the battery supplies if its terminals are shorted, that is, connected to negligible resistance, determine the internal resistance of the battery. (*IMPORTANT*: Do not attempt such a connection as it could be lethal!)

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A copper wire has radius $r = 0.0250$ cm, is 3.00 m long, has resistivity $\rho = 1.72 \times 10^{-8}\ \Omega$ m, and carries a current of 0.400 A. The wire has a charge-carrier density of $8.50 \cdot 10^{28}$ electrons/m^3.

a) What is the resistance, R, of the wire?

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b) What is the electric potential difference, ΔV, across the wire?

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c) What is the electric field, E, in the wire?

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Notes

A resistor with $R = 10.0$ is connected across a source of emf with potential difference $V_{emf} = 1.50$ V.
What is the current flowing though the circuit ?

(a) 0.35 A

(b) 0.15 A

(c) 0.44 A

(d) 1.4 A

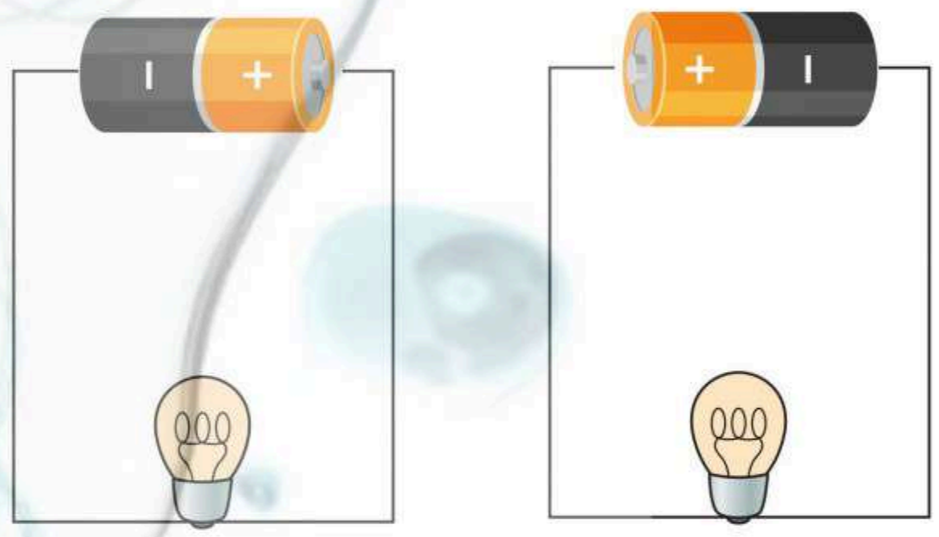
A light bulb is connected to a battery, the bulb starts working, if we reverse the polarity of the battery, how does the brightness of the bulb change ?

(a) The bulb will stop working

(b) The brightness will increase

(c) The brightness will decrease

(d) The brightness will not change



Consider a battery that has $V_T = 12.0$ V when it is not connected to a circuit. When a 10.0-Ω resistor is connected with the battery, the potential difference across the battery's terminals drops to 10.9 V. What is the internal resistance of the battery?

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A battery has a potential difference of 14.50 V when it is not connected in a circuit.

When a 17.91 Ω resistor is connected across the battery, the potential difference of the battery drops to 12.68 V.

What is the internal resistance of the battery?

When a battery is connected to a 100. Ω resistor, the current is 4.00 A.

When the same battery is connected to a 400. Ω resistor, the current is 1.01 A.

Find the emf supplied by the battery and the internal resistance of the battery.

A light bulb is connected to a source of emf. There is a 6.20 V drop across the light bulb and a current of 4.10 A flowing through the light bulb.

a) What is the resistance of the light bulb?

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b) A second light bulb, identical to the first, is connected in series with the first bulb. The potential drop across the bulbs is now 6.29 V, and the current through the bulbs is 2.90 A. Calculate the resistance of each light bulb.

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c) Why are your answers to parts (a) and (b) not the same?

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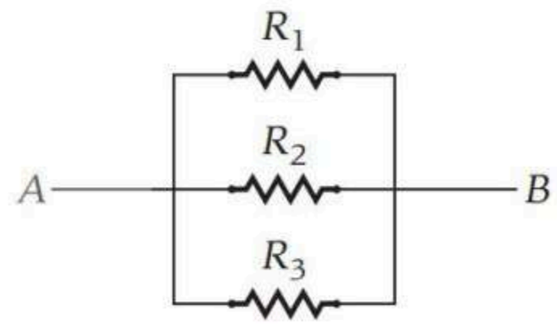
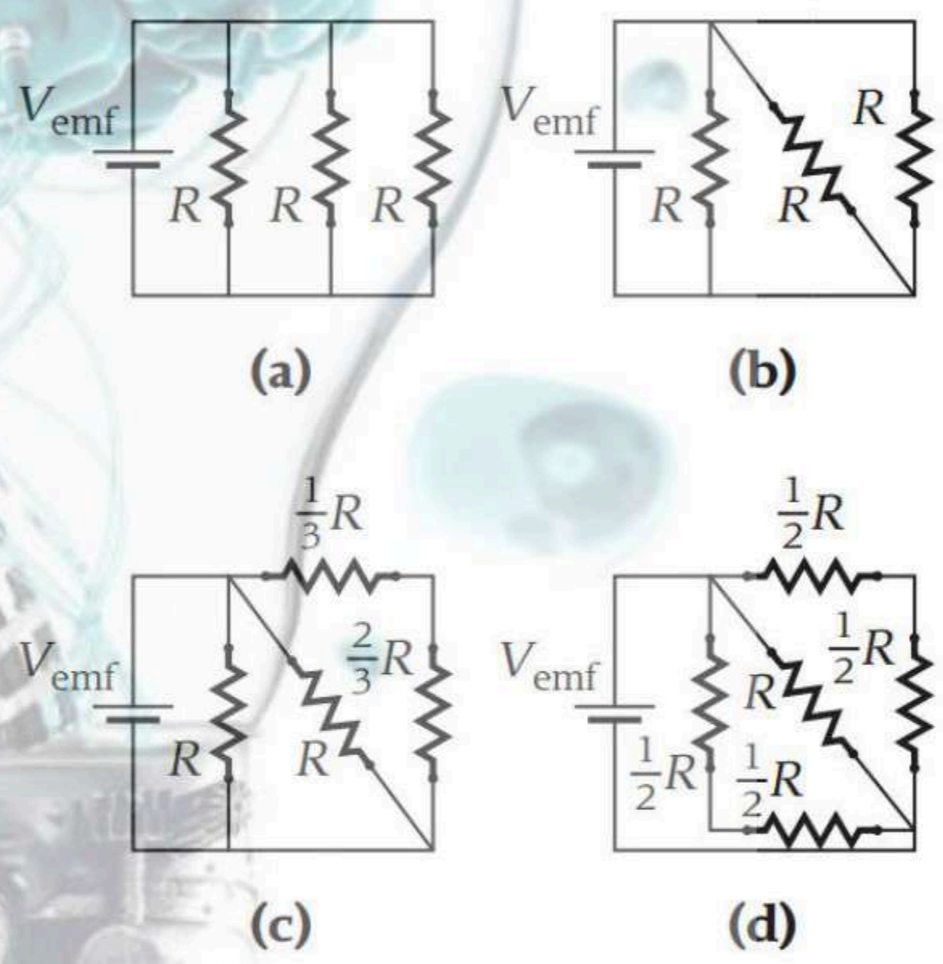
Three identical resistors, R_1, R_2, and R_3, are wired together as shown in the figure.

An electric current is flowing from point *A* to point *B*. The current flowing through R_2....

a) is the same as the current through R1 and R3.
b) is a third of the current through R1 and R3.
c) is twice the sum of the current through R1 and R3.
d) is three times the current through R1 and R3.
e) cannot be determined.



Which combination of resistors has the highest equivalent resistance?



Two resistors R_1 and R_2 are connected and the value of R2=35 Ω

The emf was 120 V and a current of 11 A

Calculate R_1 value

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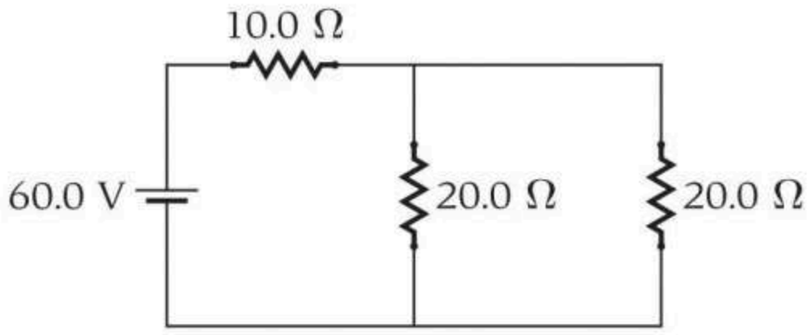
What is the **current** in the 10.0 Ω resistor in the circuit in the figure?

(a) 5 A

(b) 4 A

(c) 3 A

(d) 6 A



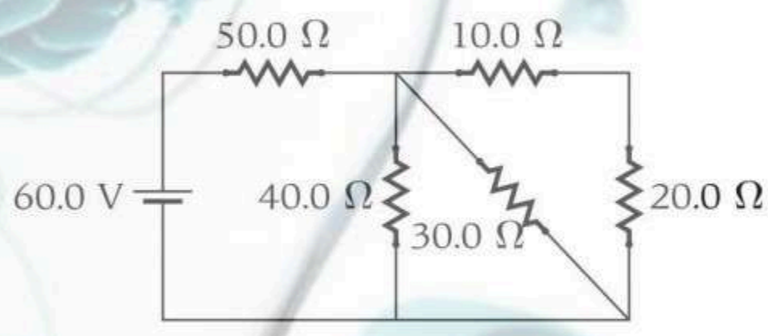
What is the **equivalent resistance of** the five resistors in the circuit in the figure?

(a) 58

(b) 43

(c) 61

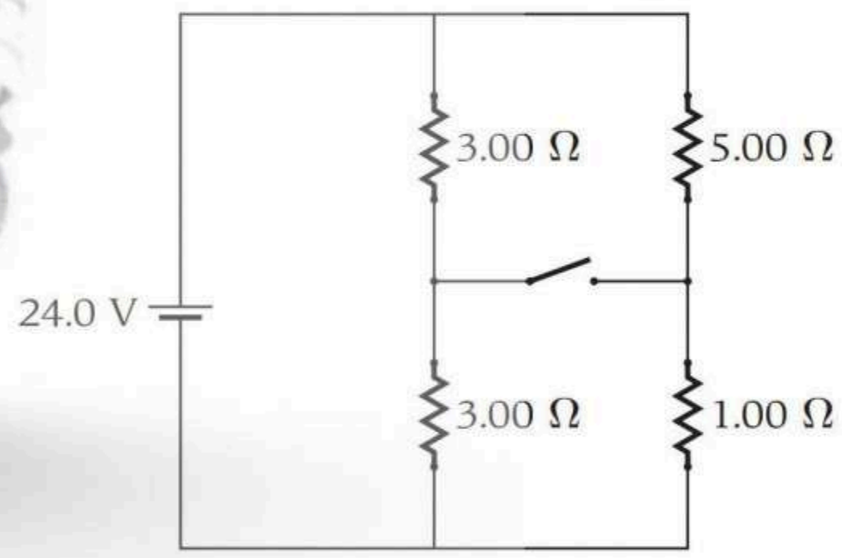
(d) 36



What is the **current in the circuit** shown in the figure when the switch is

(a) open and

(b) closed?

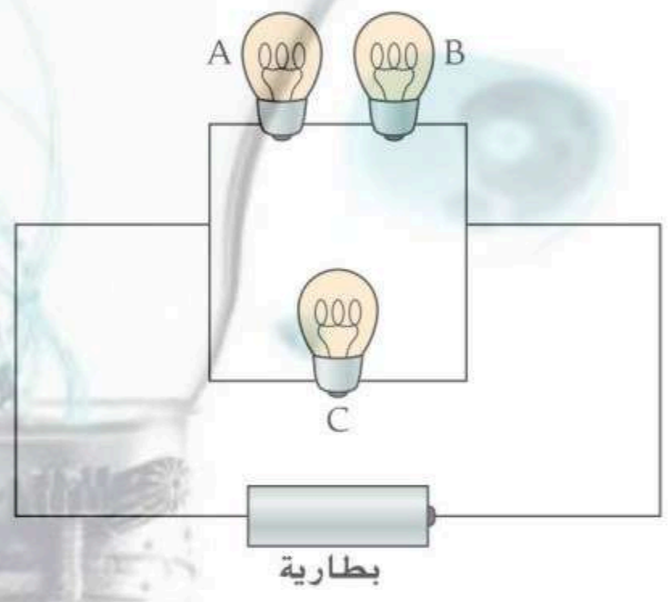


You make a parallel connection between two resistors, resistor A having a very large resistance and resistor B having a very small resistance. The equivalent resistance for this combination will be

a) slightly greater than the resistance of resistor A.
b) slightly less than the resistance of resistor A.

c) slightly greater than the resistance of resistor B.
d) slightly less than the resistance of resistor B.

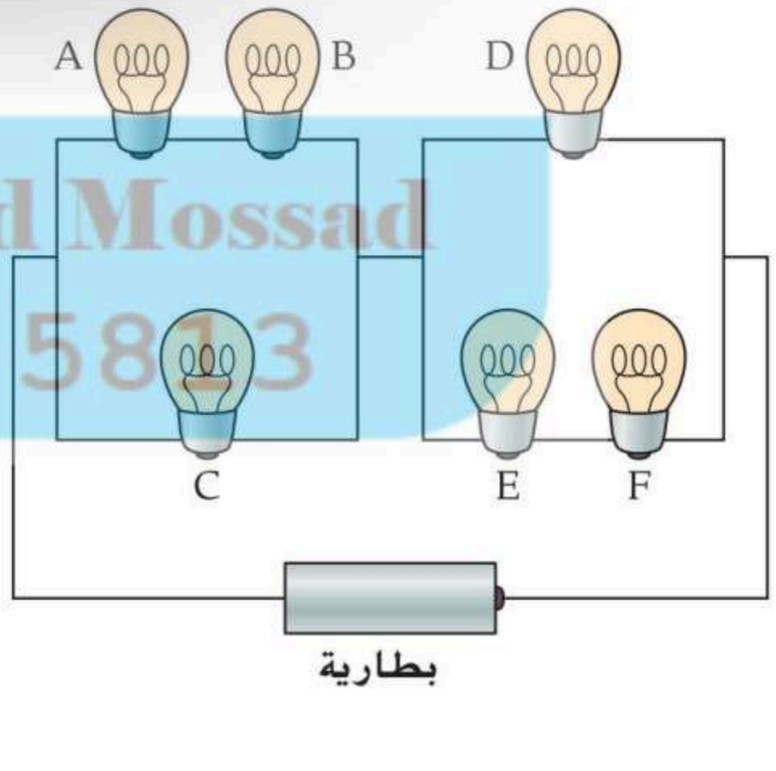
All three light bulbs in the circuit shown in the figure are identical. Which of the three shines the brightest?



a) A
b) B
c) C
d) A and B
e) All three are equally bright.

All of the six light bulbs in the circuit shown in the figure are identical. Which ordering correctly expresses the relative brightness of the bulbs?

(*Hint:* The more current flowing through a light bulb, the brighter it is)



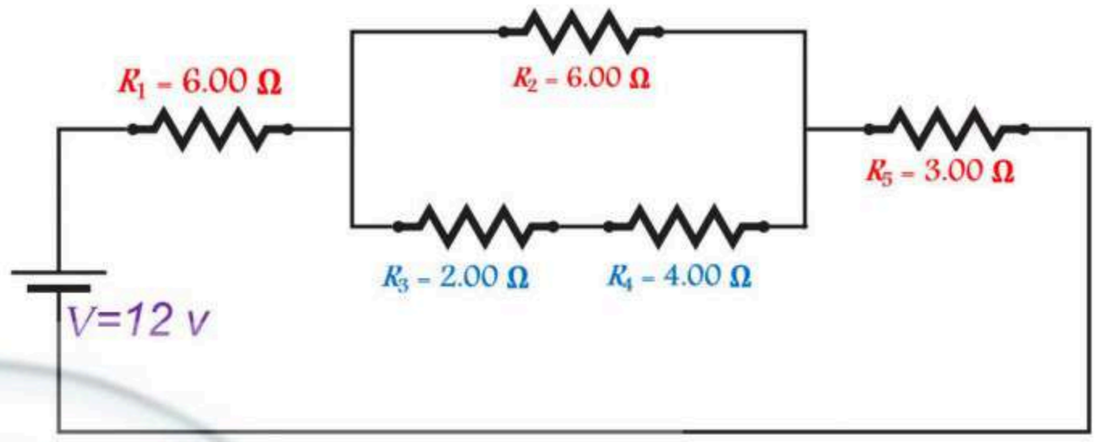
a) A = B > C = D > E = F
b) A = B = E = F > C = D
c) C = D > A = B = E = F
d) A = B = C = D = E = F

For the circuit shown in the figure

a) What is the equivalent resistance for the circuit?

b) What is the current through R_5?

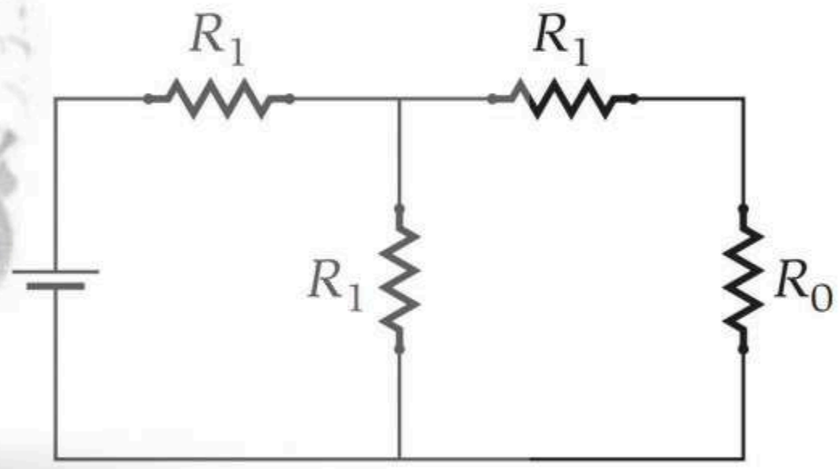
c) What is the potential drop across R_3?



Four resistors are connected in a circuit as shown in the figure.

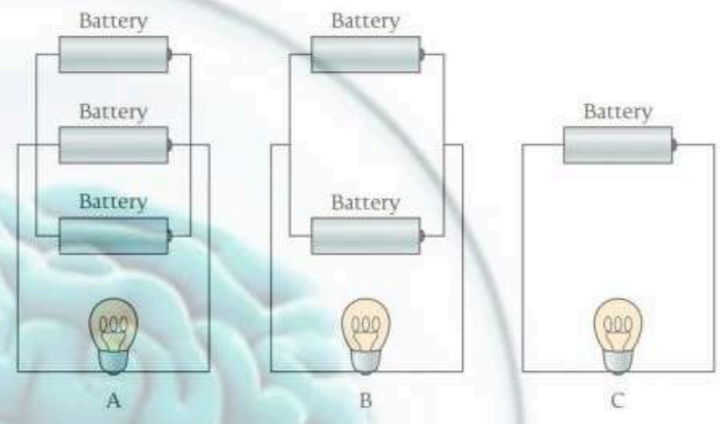
What value of R_1, expressed as a multiple of R_0 ,

will make the equivalent resistance for the circuit equal to R_0?



Identical batteries are connected in three different arrangements to the same light bulb as shown in the figure.

Assume that the batteries have no internal resistance. In which arrangement will the light bulb shine the brightest?



(a) A

(b) B

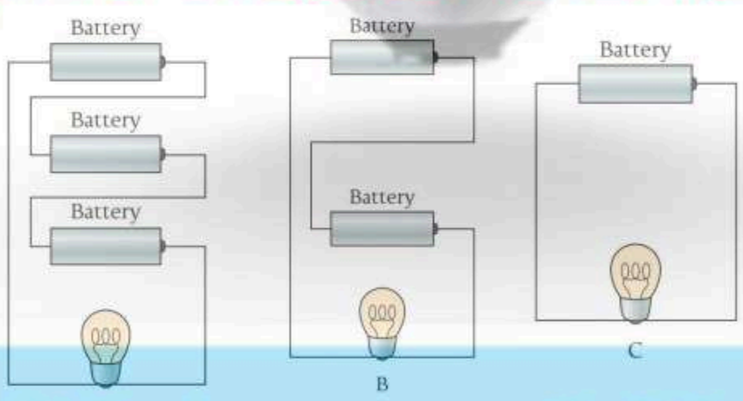
(c) C

(d) The bulb will have the same brightness in all three arrangements

(e) The bulb will not light in any of the arrangements

Identical batteries are connected in three different arrangements to the same light bulb as shown in the figure.

Assume that the batteries have no internal resistance. In which arrangement will the light bulb shine the brightest?



(a) A

(b) B

(c) C

(d) The bulb will have the same brightness in all three arrangements

(e) The bulb will not light in any of the arrangements

A current of 1.6 A is flowing through a cylindrical conductor has a diameter of 1 cm what is the current density in this conductor

(a) 2×10^{4}

(b) 1.6×10^{-3}

(c) 5×10^{3}

(d) 1.99×10^{5}

A current flows through two conductors connected in series, the radius of the first conductor is equal half of the second one $R_1 = 0.5\ R_2$, what is the ratio of their current density J1/J2

(a) J1/J2 = 2

(b) J1/J2 = 4

(c) J1/J2 = 1/2

(d) J1/J2 = 1/4

A potential difference of 12 V is applied across a conductor of 0.5 S conductance

How much current will flow through the conductor

(a) 6 A

(b) 8 A

(c) 11 A

(d) 3 A

Which of the following wires has the largest current flowing through it?

a) a 1 m long copper wire of diameter 1 mm connected to a 10-V battery

b) a 0.5-m long copper wire of diameter 0.5 mm connected to a 5-V battery

c) a 2-m long copper wire of diameter 2 mm connected to a 20-V battery

d) a 1 m long copper wire of diameter 0.5 mm connected to a 5-V battery

e) All of the wires have the same current flowing through them

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Two resistor A,B are connected in parallel, resistor A having a very large resistance and a resistor B having a very small resistance. The equivalent resistance of this combination will be

A) Greater than the resistance of resistor A

B) Less than the resistance of resistor Aannad

C) Greater than the resistance of resistor B

D) Less than the resistance of resistor B

What is the equivalent resistance of two resistors 2 Ω and 5 Ω, connected in parallel

(a) 1.9 Ω

(b) 8 Ω

(c) 1.4 Ω

(d) 3 Ω

Which of the following equivalents the unit of the electric resistance

(a) $A.V^{-1}$

(b) $V.A$

(c) $V.A^{-1}$

(d) $V^{-1}.A^{-1}$

If the current through a resistor is increased by a factor of 2, how does this affect the power that is dissipated?

a) It decreases by a factor of 4.

b) It increases by a factor of 2.

c) It decreases by a factor of 8.

d) It increases by a factor of 4.

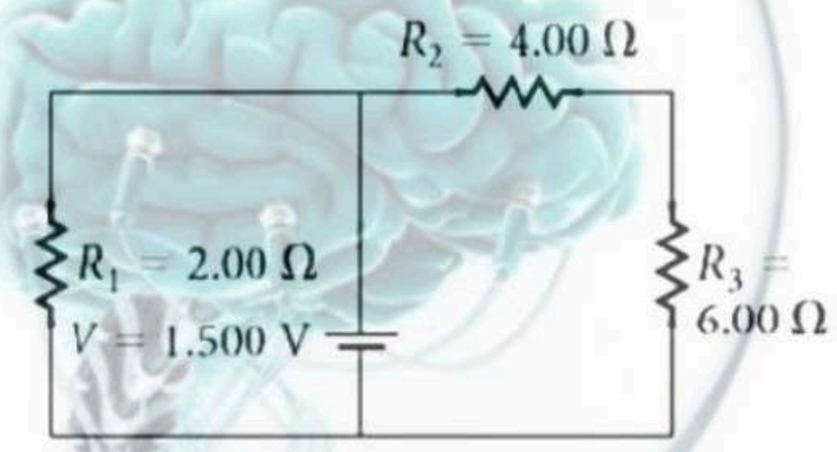
What is the dissipated power in R_1

(a) 1.1

(b) 2.9

(c) 0.3

(d) 3.2



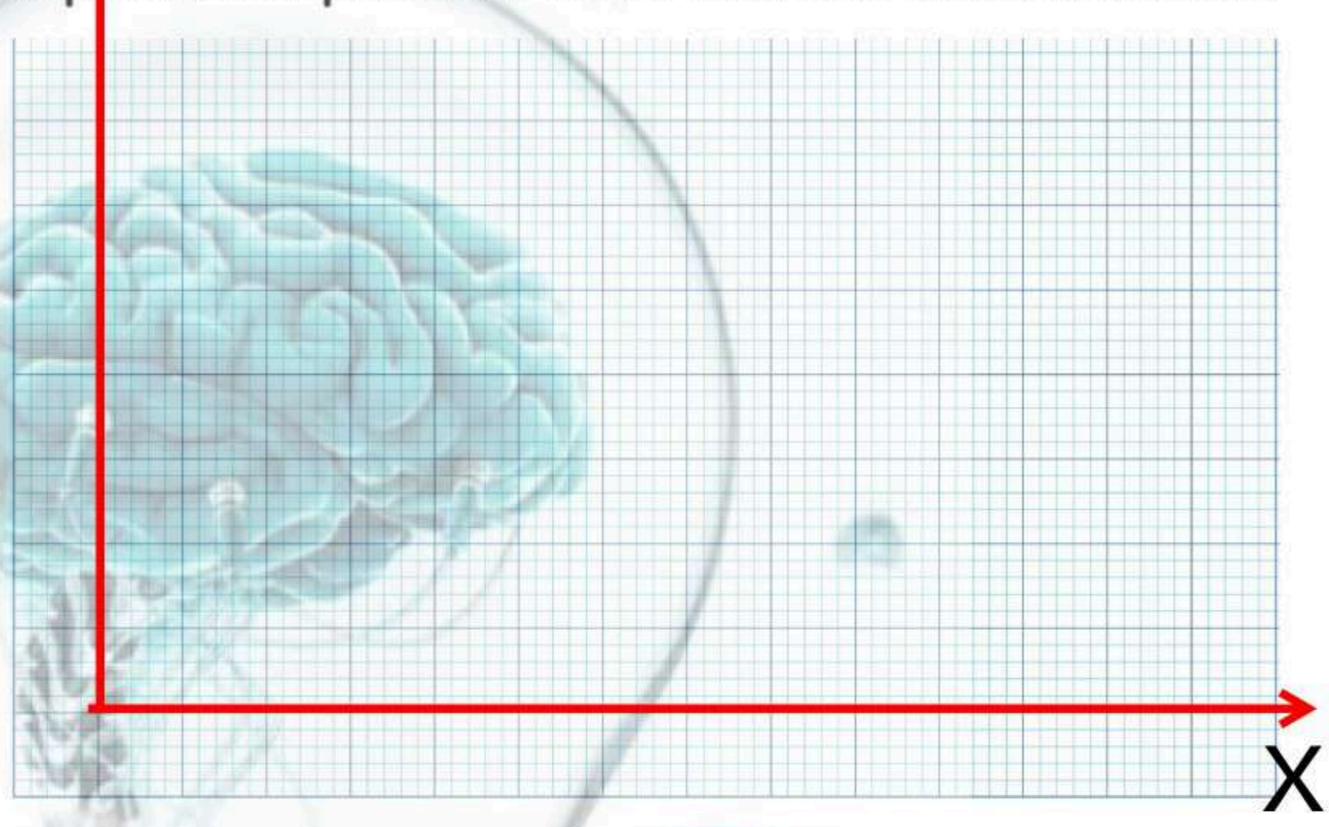
A 100-W light bulb is connected in series to a source of emf with Vemf = 100 V. When the light bulb is lit, the temperature of its tungsten filament is 2520 °C.

A wire is connected to an electrical circuit.

Readings of the potential difference between the ends of the wire and the current passing as shown in the table

(A) Graphically Represent the relationship between potential difference and electric current

Current (A)	Potential Difference (V)
0.03	0.75
0.53	1.5
1.03	2.25
1.53	2.75
2.03	3.5



(b) What is the resistance of wire? Explain your answer

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(c) Calculate the wire resistance graphically

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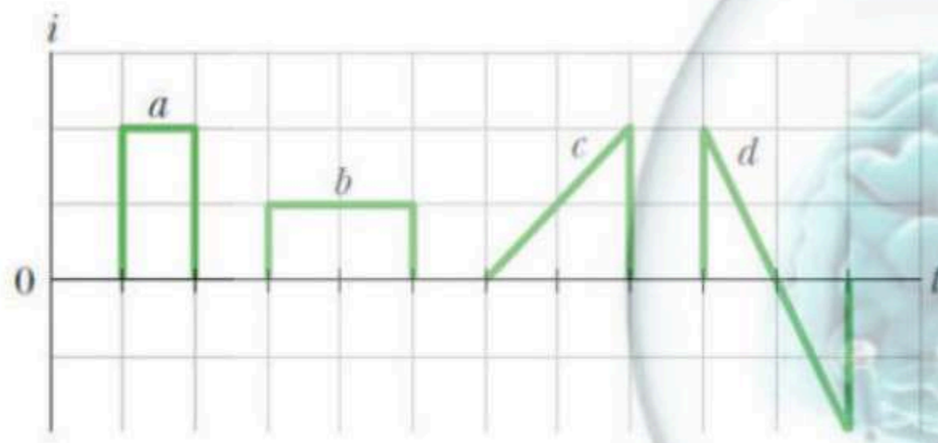
Figure 26-18 shows plots of the current i through a certain cross section of a wire over four different time periods. Rank the periods according to the net charge that passes through the cross section during the period, greatest first.



NOTES