TAIBAH UNIVERSITY جامعة طيبة

مع توضيح وتفاصيل لبعض الاسئلة والحل على السؤال

بعض الدروس لا يوجد لها حل معتمد
ذكرت ذلك ببداية كل شيء هكذا
ومن حلي والبعض ، فأن وجدت خطأ أخبرني

Physics Chapter 4

Assessment v 1

Physics: Lesson 18

لا تنسونا من صالح دعائكم

By : M.Y.A

Question 1

Which electric charge has lines of force drawn away from the charge?

ما هي الشحنة الكهربائية التي لديها خطوط القوة التي يتم سحبها بعيدا عن الشحنة ؟

A. **Positive**

B. Negative

C. Neutral

D. None of the charges

Question 2

Which of the following is the correct statement about the fundamental characteristic of electric charges?

أي من العبارات التالية هي العبارة الصحيحة عن السمة الأساسية للشحن الكهربائية؟

A. Like charges repel and attract each other.

B. Unlike charges repel and like charges attract each other.

C. Like and unlike charges neither attract nor repel.

D. Like charges repel and unlike charges attract each other.

Question 3

_____ is the SI unit for charge?

A. J

B. N

C. W

D. C = coulomb

Question 4

A positively charged object is an object with:

جسم مشحون إيجابيا هو جسم مع:

A. extra electrons

B. lack of electrons نقص الإلكترونات

C. extra neutrons

D. lack of protons

Question 5

Two charges, each with magnitude + 6.50 μC, are separated by a distance of 0.400 cm. Find the force of repulsion between them.

السالب لانه ذكر أنها تنافر

تنافر

A. 3.65×10^{-9} N

B. 9.50×10^{-17} N

C. 2.38×10^{4} N

D. 1.46×10^{-11} N

K = 9.0 X 10 ^ 9 N # r = 0.400 cm

q1= + 6.50 uC # q2 = - 6.50 uC

* = - 6

$$F = \frac{Kq_1q_2}{r^2} = \frac{(9.10^9)(6.50\times10^{-6})(-6.50\times10^{-6})}{(0.400)^2}$$

$$\Rightarrow -2.3765\ N$$

Question 6

What is the electrostatic force between two charges of +6 nC and +1 nC if they are separated by a distance of 2 mm? (Note: 1 nC = 0.001 µC)

الإشارات للقوتين تكون موجبة

A. 6.91×10^{-10} N

B. 1.03×10^{-2} N

C. 1.06×10^{-4} N

D. 1.35×10^{-2} N

Question 7

If two equal charges each of 1 C each are separated in air by a distance of 1 km, what is the magnitude of the force acting between them?

A. 7000 N

B. 8000 N

C. 9000 N

D. 900 N

Question 8

Calculate the distance between two charges of +4 nC and −3 nC if the electrostatic force between them is 0.005 N.

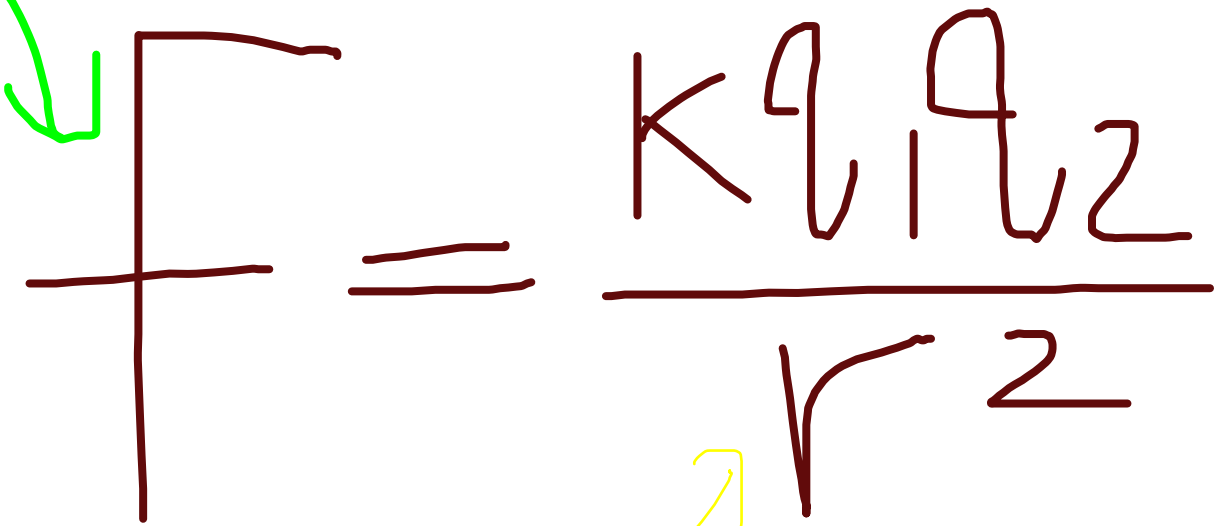
وجدت طريقة لحله هي تعويض الخيارات، بالقانون
والإجابة الصح التي تعطي شيئ مقارب للقوة المعطية N

A. 6.50×10^{-6} m

B. $8.67 \times 10^{+7}$ m

C. 46.0×10^{-3} m

D. 4.6×10^{-3} m



Question 9

An object carries a charge of +120 μC. Calculate the magnitude and direction of the force which it exerts on a second object carrying a charge of −300 μC if the distance between them is 30.0 cm.

A. $1.00 \times 10^{+8}$ N

B. 3.60×10^{3} N

C. 4.23×10^{-19} N

D. 6.50×10^{-6} N

Question 10

A balloon with a charge of 4.0 μC is 0.70 m away from a second balloon with the same charge. What is the magnitude of the force?

A. 0.29 N

B. 2.90 N

C. 29 N

D. 0.029 N

ANSWERS

الحل حسب الملف

1. A. positive
2. D. Like charges repel and unlike charges attract each other.
3. D. C
4. B. lack of electrons
5. C. 2.38×10^{4} N
6. D. 1.35×10^{-2} N
7. C. 9000 N
8. D. 4.6×10^{-3} m
9. B. 3.60×10^{3} N
10. A. 0.29 N

لا يوجد له حل معتمد بالملف

Assessment

Physics: Lesson 19

Question 1

_____ is the SI unit for current.

التيار

A. Ω

B. V

C. J

D. A Ampere

Question 2

_____ is the SI unit for voltage. الجهد الكهربائي

A. J

B. V Volt

C. A

D. Ω

Question 3

_____ is the SI unit for resistance. المقاومة

A. V

B. A

C. J

D. Ω Ahm

Question 4

Electric energy can be stored in a:

الطاقة الكهربائية يمكن تخزينها في:

A. switch

B. light bulb

C. Capacitor مكثف

D. resistance

Question 5

When a capacitor is connected to a battery, the plate connected to the _____ terminal becomes _____.

A. positive, negative

B. negative, positive

C. positive, positive

D. positive, neutral

Question 6

Ohm's law states that: ينص قانون أوم على ما يلي:

A. voltage = current − resistance

B. voltage = current + resistance

C. voltage = current ÷ resistance

D. voltage = current × resistance

$$V = I R$$

Question 7

A torch lamp takes a current of 0.3 amperes from a 3 volt battery. What is its resistance?

مصباح الشعلة يأخذ تيار من 0.3 أمبير من بطارية 3 فولت. ما هي مقاومتها؟

$V = 3\ V$

$I = 0.3\ A$

$R = ?\ \Omega$

A. 3 Ω

B. 10 Ω

C. 20 Ω

D. 35 Ω

$$R = \frac{V}{I} = \frac{3}{0.3} = 10$$

Question 8

A heating element on an electric stove operating on 110 V has a resistance of 20.0 Ω. What current does it draw?

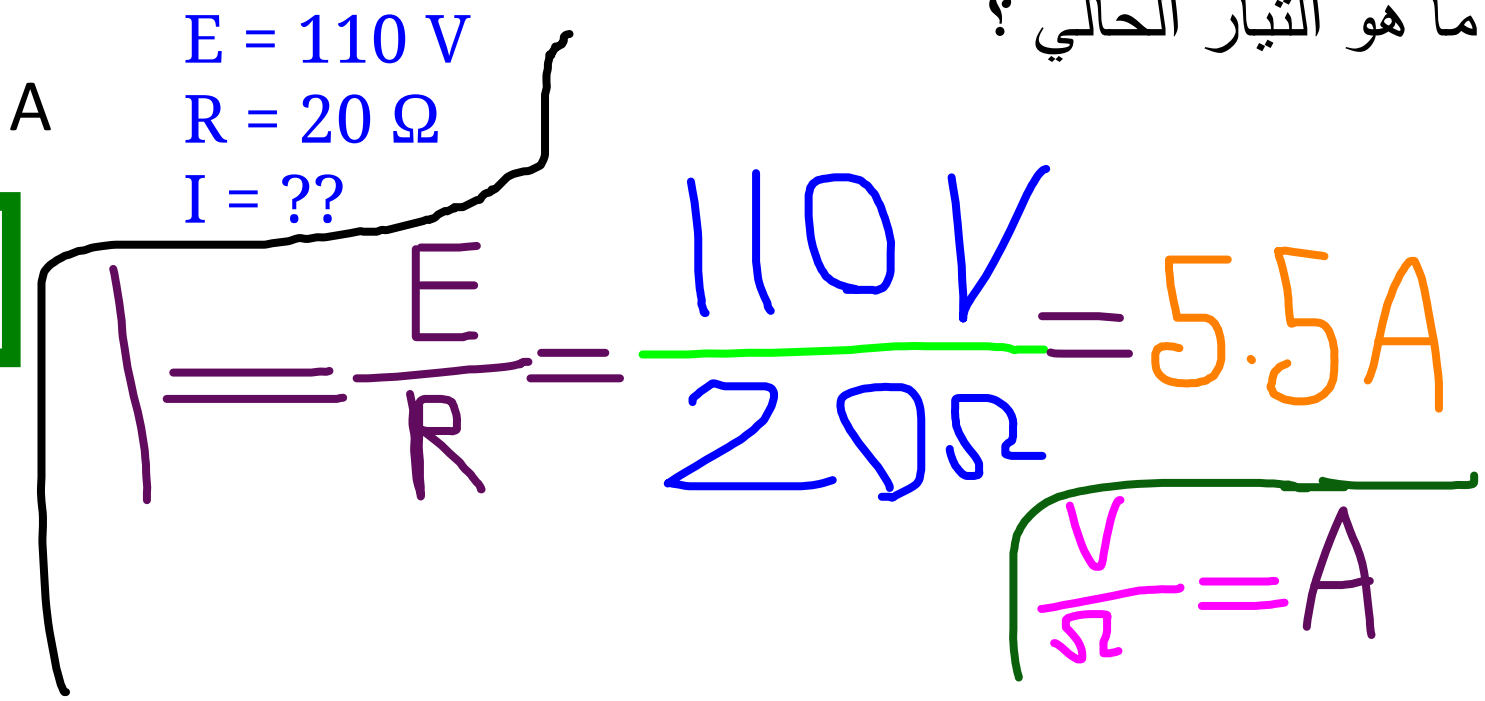
عنصر التدفئة على موقد كهربائي يعمل على 110 فولت لديه مقاومة 20.0 Ω. ما هو التيار الحالي ؟

A. 0.18 A

B. 2200 A

C. 5.5 A

D. 90 A



Question 9

A heating element on an electric stove operating on 130 V has a resistance of 20.0 Ω. What current does it draw?

عنصر التدفئة على موقد كهربائي يعمل على 130 V لديه مقاومة 20.0 Ω. ما هو التيار الحالي ؟

$V = 130\ V$

$R = 20\ \Omega$

$I = ??$

A. 110 A

B. 2600 A

C. 0.15 A

D. 6.5 A

$$I = \frac{V}{R} = \frac{130}{20} = 6.5\ A$$

Question 10

A 10.0 m copper wire (resistivity $1.72 \times 10^{-6}\ \Omega$ cm) has a cross-sectional area $9.5 \times 10^{-3}\ cm^2$. Its resistance is:

A. $1.81 \times 10^{-1}\ \Omega$

B. $1.63 \times 10^{-9}\ \Omega$

C. $1.63 \times 10^{-7}\ \Omega$

D. $5.52 \times 10^{+4}\ \Omega$

P = 1. 72 X 10 ^-6 Ω
A = 9.5 X 10 ^-3 cm2
I = 10 m = 1000 cm

غير متأكد من الحل؟!

$$R = \frac{\rho l}{A} = \frac{(1.72 \times 10^{-6}\ \Omega cm)(1000\ cm)}{(9.5 \times 10^{-3}\ cm^2)}$$

$$\Rightarrow 0.181\ \Omega$$

$$= 1.81 \times 10^{-1}$$

لا يوجد له حل معتمد بالملف

Assessment

Physics: Lesson 20

Question 1

In electricity, the kilowatt-hour is a unit of:

A. electric current

B. electric energy

C. electric potential

D. electric power

Question 2

مصباح كهربائي

If a light bulb in a 440-V electric circuit draws 0.5 amperes, its power rating is:

V = 440 V

I = 0.5 A

P = ??

القانون الذي يجمعهم

P = VI

A. 220 W

B. 840 W

C. 40 W

D. 75 W

P = 440 X 0.5

= 220 W

Question 3

The rate of consuming energy is called:

ويسمى معدل الطاقة المستهلكة:

A. voltage

B. current

C. power

D. resistance

Question 4

A soldering iron draws 20.50 A in a 120-V circuit. What is its wattage rating?

Power

V = 120 V
I = 20.5 A
P = ??

القانون الذي يجمعهم
P = VI

P = 120 X 20.5
= 2460 W

A. 5.85 W

B. 99.5 W

C. 0.171 W

D. 2460 W

Question 5

A soldering iron draws 25.50 A in a 120-V circuit. What is its wattage rating?

V = 120 V
I = 25.5 A
P = ??

القانون الذي يجمعهم
P = VI

P = 120 X 25.5
= 3060 W

A. 3060 W

B. 4.71 W

C. 0.213 W

D. 94.5 W

Question 6

A MP3 system draws 30.50 A in a 120-V circuit. What is its wattage rating?

A. 3.93 W

مثلما سبق

B. 3660 W

C. 0.254 W

D. 89.5 W

Question 7

What is the power of a 12-V heater with a resistance of 10Ω?

A. 120 W

B. 2 W

C. 14.4 W

D. 12 W

$V = 12\ V$
$R = 10\ \Omega$
$P = ??$

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

$$\Rightarrow \frac{(12)^2}{10} = 14.4\ W$$

Question 8

An electric heater connected to the 230-V mains supply draws a current of 4A. What is the power of the electric heater?

A. 920 W

B. 57.5 W

C. 230 W

D. 950 W

V = 230 V
I = 4 A
P = ??

القانون الذي يجمعهم
P = VI

P = 230 X 4
= 920 W

Question 9

مدفئة

An electric fire is rated at 550 W. How much would it cost to operate it for 5 h at $0.08/kWh?

P = 550 W
t = 5 H
rate = $0.08/kWh
Cost = ??

A. $0.02

B. $2.2

C. $22

D. $0.22

طريقة سهلة للحل (من الدكتور محمد حسن)
إن القوة W ونسبة السعر Kw

$$\frac{550}{1000} \times 5 \times 0.08 = 0.22\$$$

Question 10

A TV needs 250 W. It is switched on for 30 minutes. If each kWh costs 8 cents, how much does it cost to run the TV?

A. $2

B. 1 cent

C. 4 cents

D. 2 cents

تبعاً للطريقة التي ذكرت بالسابق

P = 250 W
t = 30 m = 0.5 H
rate = $0.8/kWh
Cost = ??

$$\frac{250}{100} \times 0.5 \times 0.8 = 0.1\$$$

⇒ 1 cent

*Cent that equals 1⁄100 of the basic monetary unit

لا يوجد له حل معتمد بالملف

Assessment

Physics: Lesson 21

Question 1

اعثر على المقاومة المكافئة من الدائرة.

Find the equivalent resistance of the circuit.

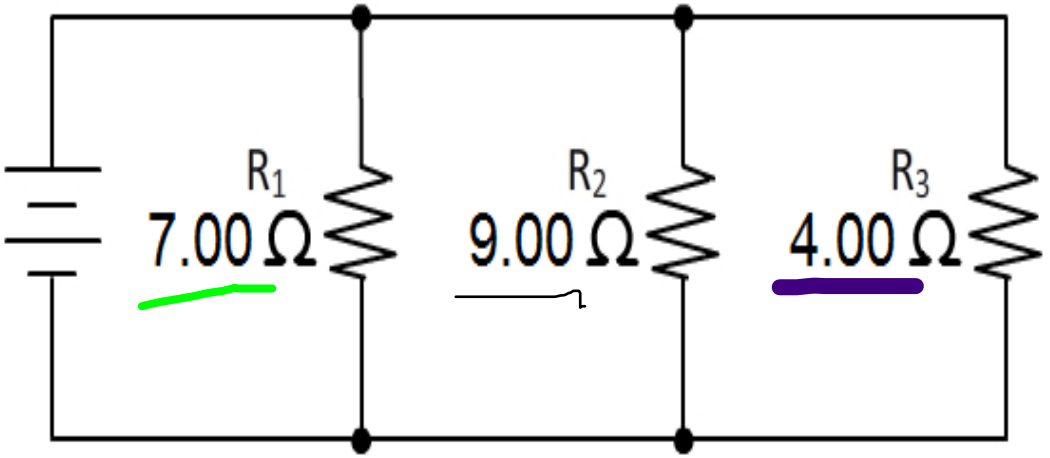
طلب مجموع المقاومة، وهي الرسمة على التوازي

A. 0.5 Ω

B. 20 Ω

C. 1.98 Ω

D. 0.05 Ω



نقلب الكسر، نضغط x^{-1} ع الحاسبة

$$\frac{1}{R} = \frac{1}{7} + \frac{1}{9} + \frac{1}{4} = 0.5 \Rightarrow 1.98\ \Omega$$

Question 2

Find the equivalent resistance of the circuit.

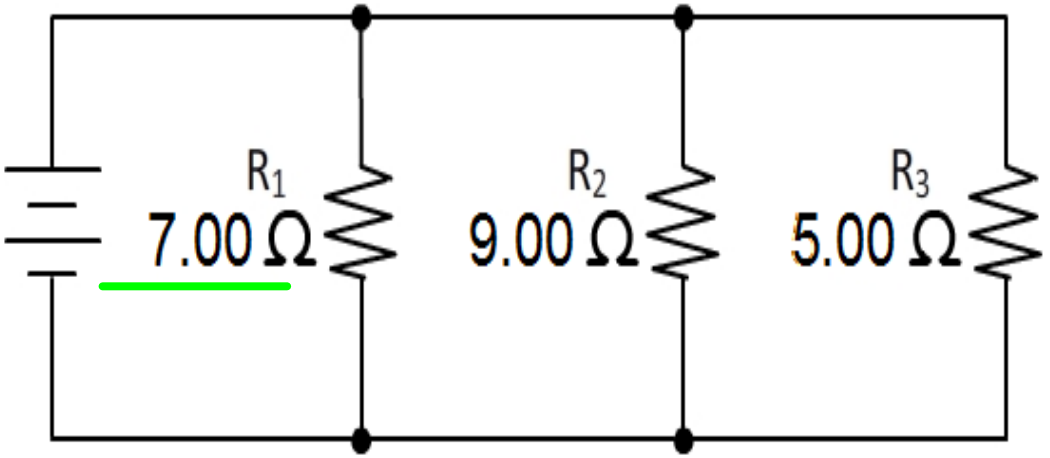
طلب مجموع المقاومة، وهي الرسمة على التوازي

A. 2.2 Ω

B. 21 Ω

C. 0.45 Ω

D. 0.05 Ω



$$\frac{1}{R} = \frac{1}{7} + \frac{1}{9} + \frac{1}{5} = (0.45)^{-1} \Rightarrow 2.2$$

Question 3

Find the equivalent resistance of the circuit.

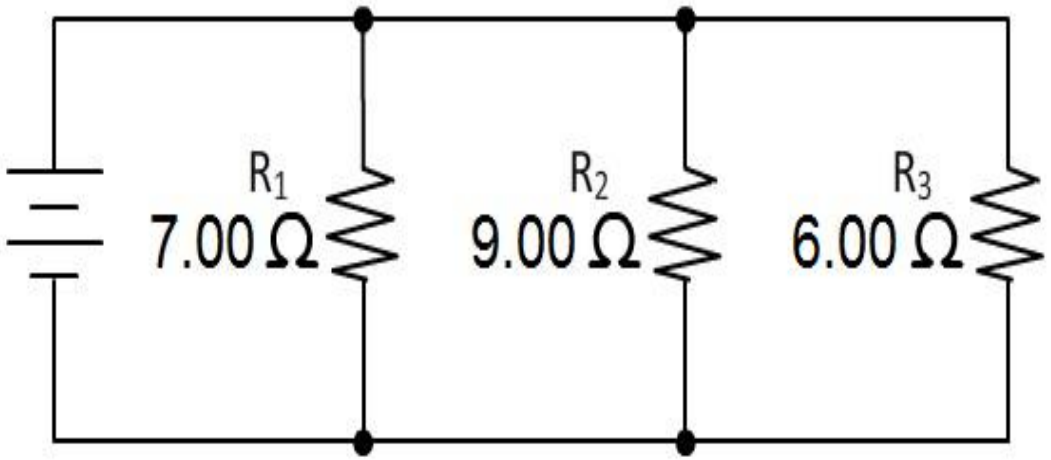
طلب مجموع المقاومة، وهي الرسمة على التوازي

A. 22 Ω

B. 2.37 Ω

C. 0.42 Ω

D. 0.04 Ω

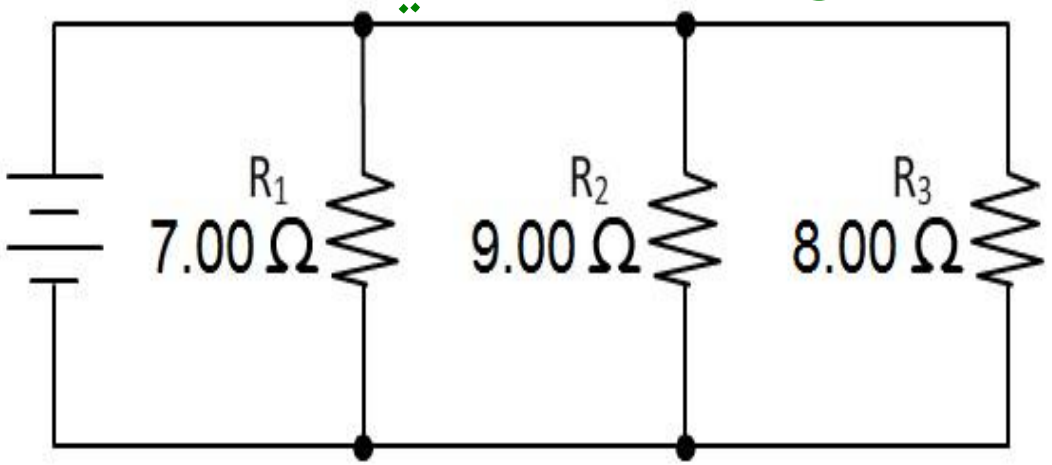


مثل طريقة آخر سؤالين، أهم شيء قلب الكسر بعد اول نتيجة
وكذلك بالسؤالين القادمين

Question 4

Find the equivalent resistance of the circuit.

طلب مجموع المقاومة، وهي الرسمة على التوازي



A. 0.04 Ω

B. 24 Ω

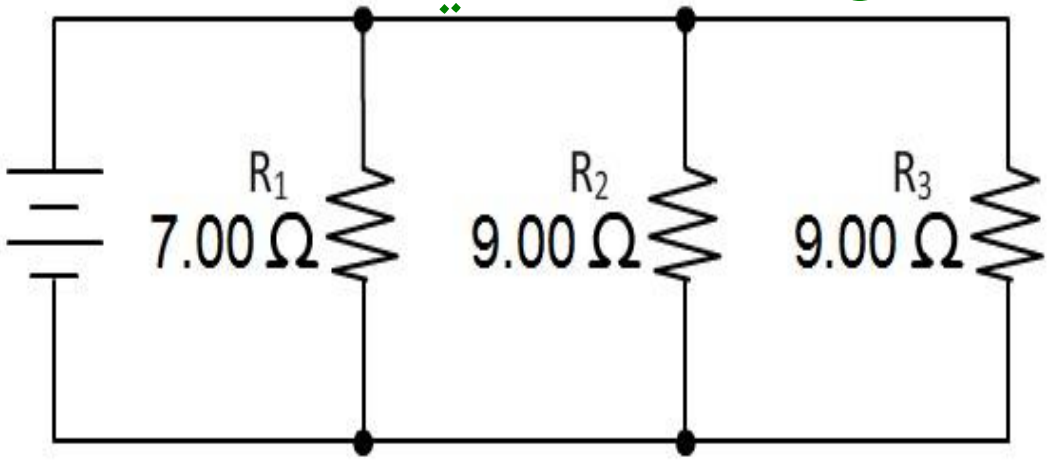
C. 0.38 Ω

D. 2.64 Ω

Question 5

Find the equivalent resistance of the circuit.

طلب مجموع المقاومة، وهي الرسمة على التوازي



A. 25 Ω

B. 2.74 Ω

C. 0.37 Ω

D. 0.033 Ω

Question 6

Find the equivalent resistance of the circuit.

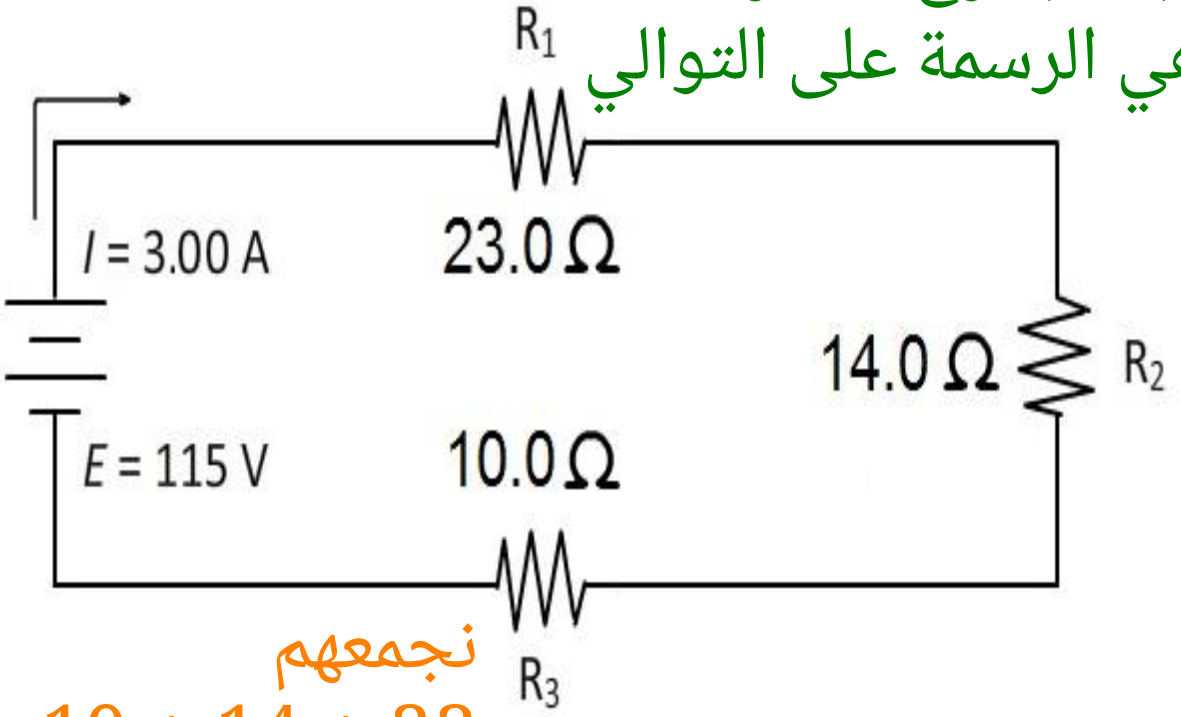
طلب مجموع المقاومة،
وهي الرسمة على التوالي

A. 4.65 Ω

B. 47 Ω

C. 0.21 Ω

D. 0.021 Ω



نجمعهم

= 10 + 14 + 23

Ω 47

Question 7

Find the equivalent resistance of the circuit.

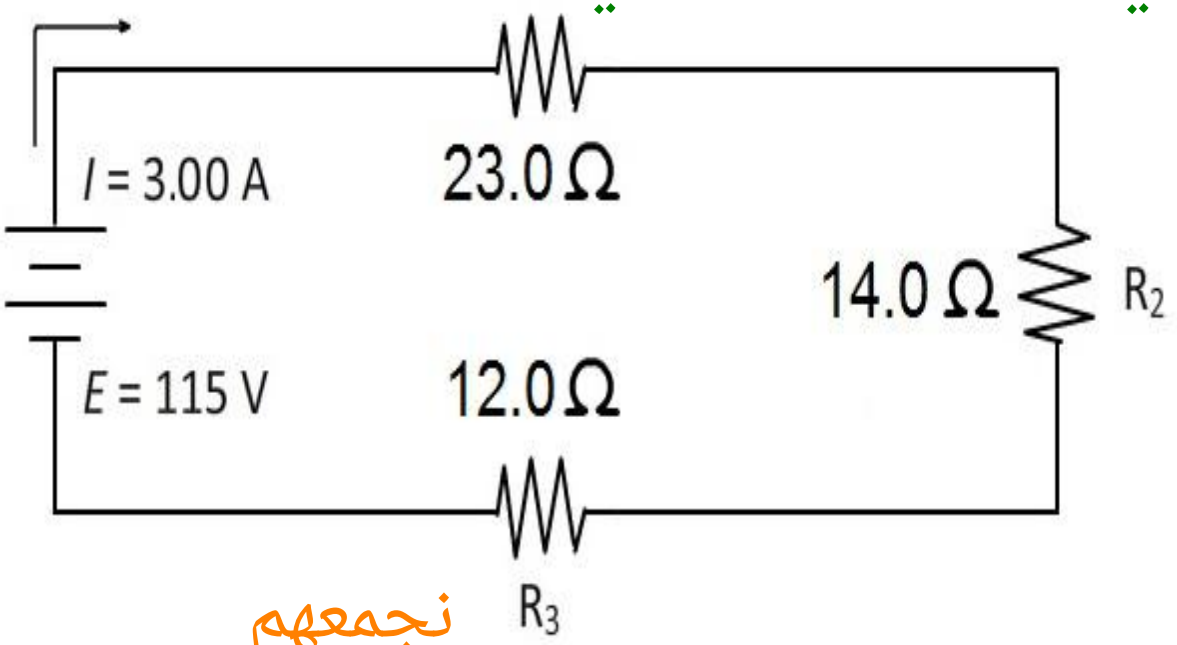
طلب مجموع المقاومة،
وهي الرسمة على التوالي

A. 5.04 Ω

B. 0.20 Ω

C. 49 Ω

D. 0.020 Ω



نجمعهم

$= 12 + 14 + 23$

$\Omega\ 49$

Question 8

Find the equivalent resistance of the circuit.

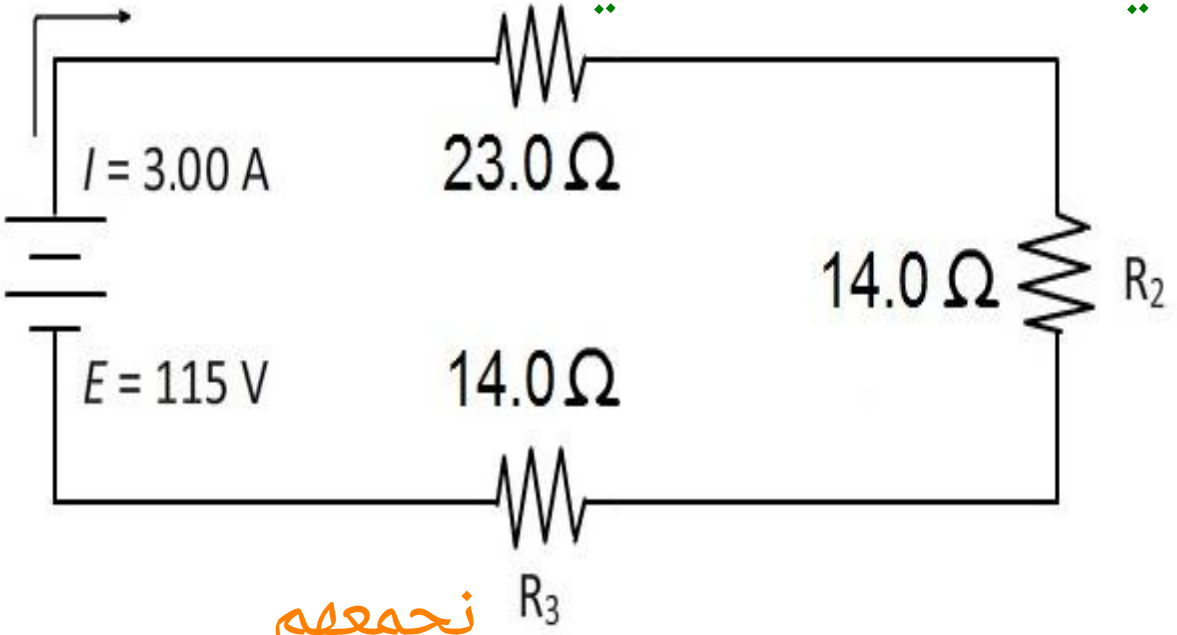
طلب مجموع المقاومة،
وهي الرسمة على التوالي

A. 5.37 Ω

B. 51 Ω

C. 0.19 Ω

D. 0.020 Ω



نجمعهم

= 14 + 14 + 23

Ω 51

Question 9

Find the equivalent resistance of the circuit.

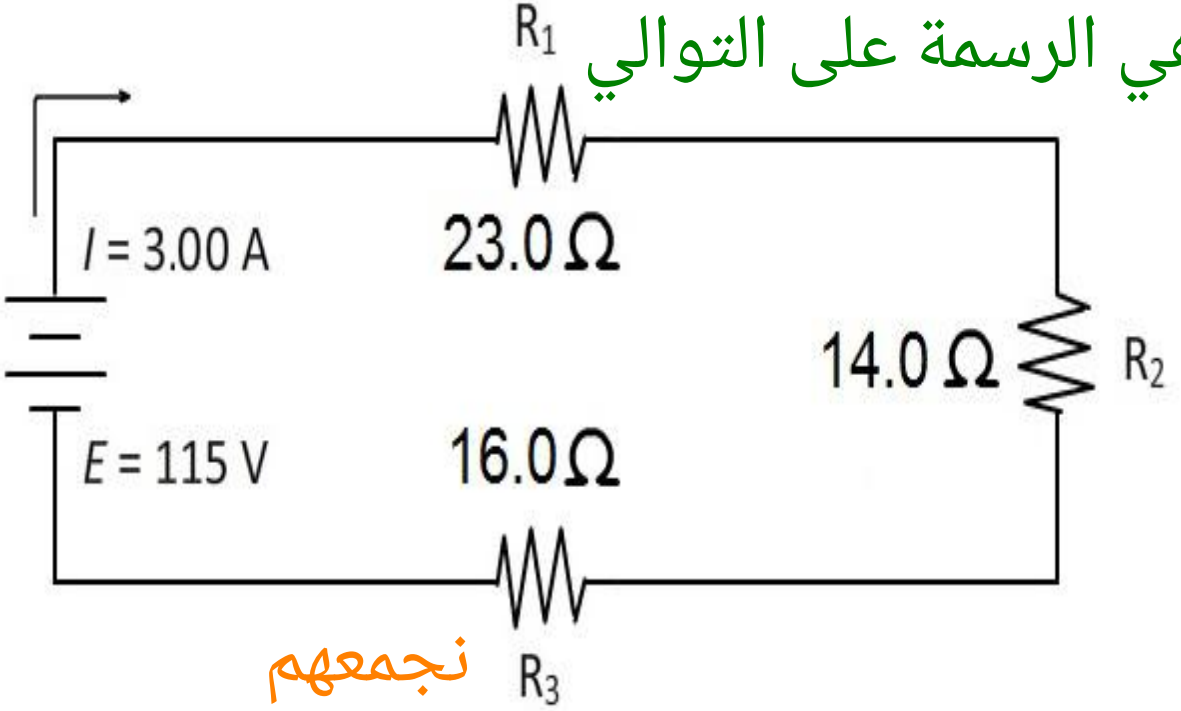
طلب مجموع المقاومة،
وهي الرسمة على التوالي

A. 5.64 Ω

B. 0.019 Ω

C. 0.18 Ω

D. 53 Ω



نجمعهم

= 16 + 14 + 23

Ω 53

Question 10

Find the equivalent resistance of the circuit.

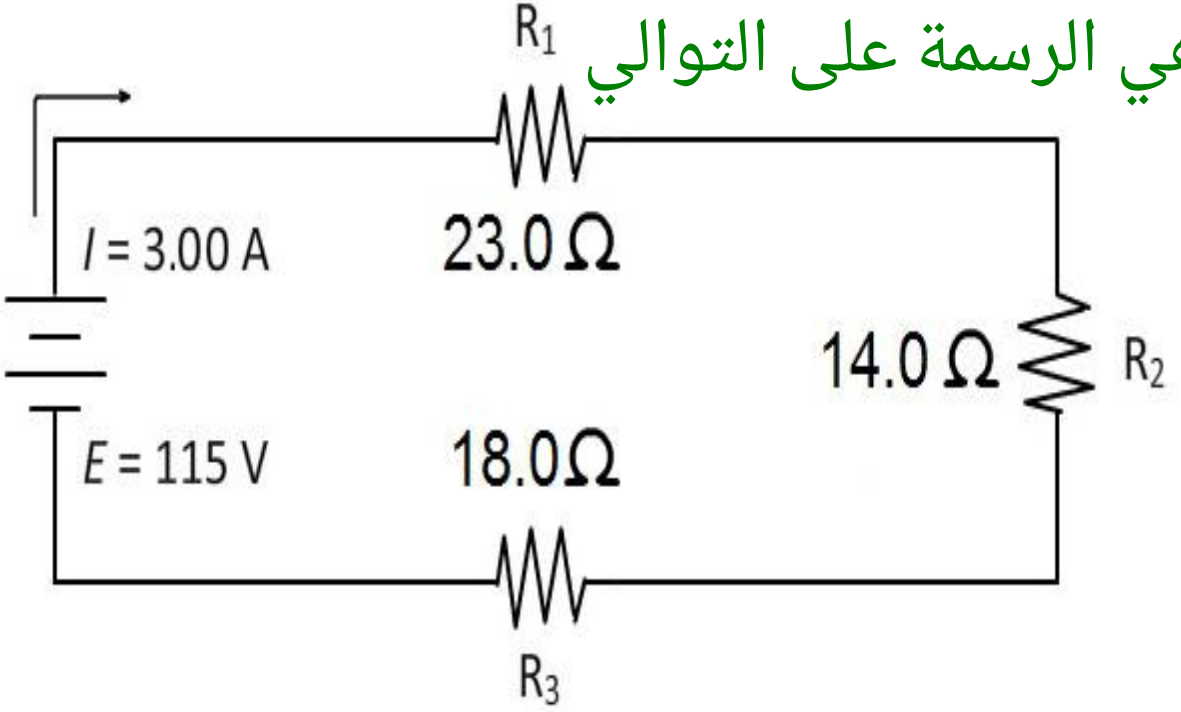
طلب مجموع المقاومة،
وهي الرسمة على التوالي

A. 55 Ω

B. 0.17 Ω

C. 5. 87 Ω

D. 0.018 Ω



لا تنسونا من صالح دعائكم

نجمعهم
55 = 18 + 18 + 23