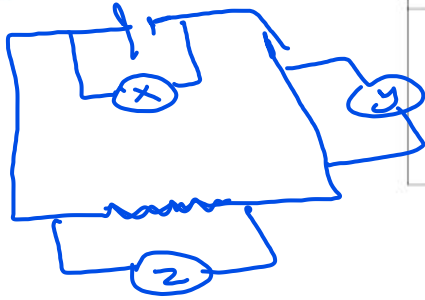




مؤسسة الإمارات
للتعليم المدرسي
EMIRATES SCHOOLS
ESTABLISHMENT



$$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$$

$$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$$

$$\mu_0 = 4\pi \times 10^{-7} \frac{\text{T m}}{\text{A}}$$

نظراً لظهور فرق الجهد في واحد سقيس $V = 0$

Z

☐

Y

A voltmeter appears,
anyone will remain $V = 0$

☒

X & Z

☐

X

☐

$$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r} \quad d\vec{B} = \frac{\mu_0}{4\pi} \frac{I ds \sin\theta}{r^3} = \frac{\mu_0}{4\pi} \frac{I ds \sin\theta}{r^2} \quad \mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$$

ماذا يحدث عندما يزداد فرق الجهد في موصل اسطواني

The current through the conducting cylinder decreases

يقل التيار المار في الموصل الاسطواني

The resistance of the conducting cylinder increases

تزداد مقاومة الموصل الاسطواني

What happens when the potential difference in a cylindrical conductor increases?

The current through the conducting cylinder increases

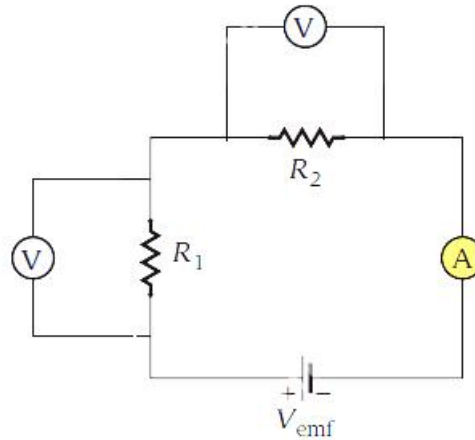
يزداد التيار المار في الموصل الاسطواني

The resistance of the conducting cylinder decreases

تقل مقاومة الموصل الاسطواني

Which of the following circuits, **ammeters and voltmeters** are connected in to function **correctly**?

أي من الدوائر التالية، **الأميترات والفولتميترات** موصولة فيها لتعمل بشكل سليم؟





$R_u = \frac{R_1}{R_3} R_v$	$i(t) = \frac{dq}{dt} = -\left(\frac{q_{\max}}{RC}\right)e^{-t/RC}$	$\vec{F}_B = q\vec{v} \times \vec{B}$
$r = \frac{mv}{ q B}$	$\vec{F}_B = i\vec{L} \times \vec{B}$	$\tau = N\tau_1 = NiAB \sin \theta$
$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$	$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$	$\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$

قراء 3 ال صير = 0 ← صافي مقاومته R

8Ω

☐

12Ω

Ammeter reading = 0,
what is the resistance R?

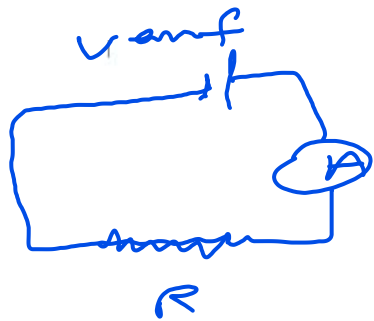
☒

24Ω

☐

4Ω

☐



$$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$$

$$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$$

$$\mu_0 = 4\pi \times 10^{-7} \frac{\text{T m}}{\text{A}}$$

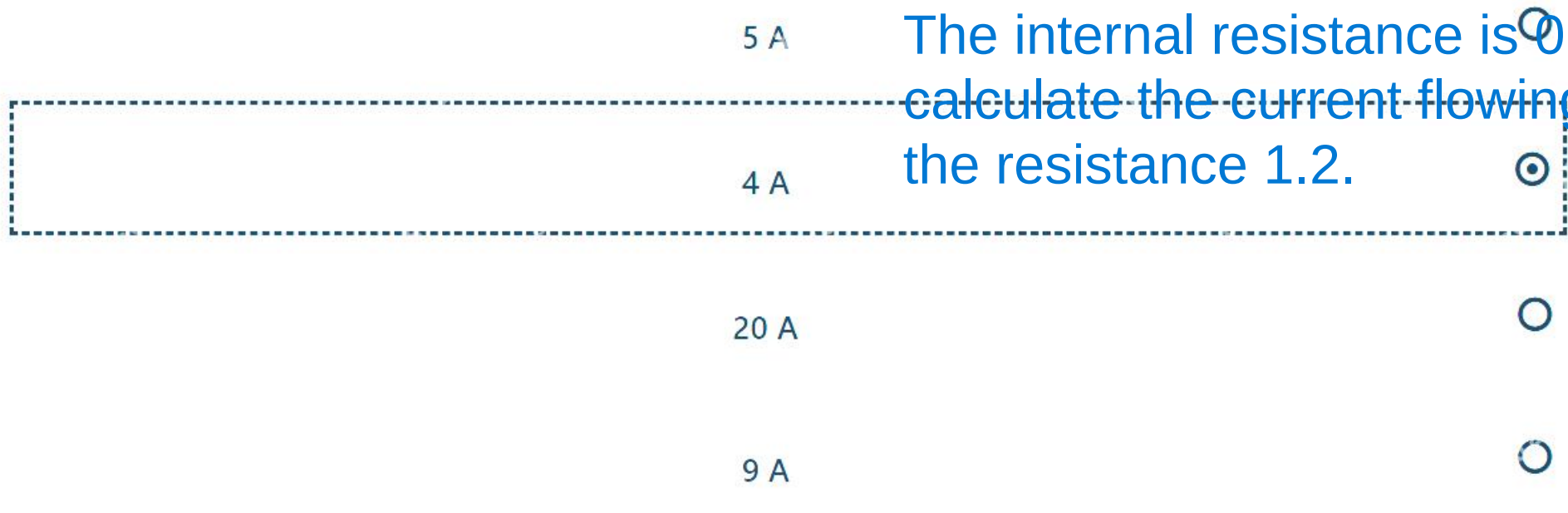
$$\mathcal{E} = 6 \text{ V}$$

$$R = 1.2 \Omega$$

$$r_{\text{int}} = 0.3 \Omega$$

الحسب التيار

The internal resistance is 0.3, calculate the current flowing. and the resistance 1.2.



$$dB = \frac{\mu_0}{4\pi} \frac{I}{r^3} = \frac{\mu_0}{4\pi} \frac{I}{r^2} \quad \mu_0 = 4\pi \times 10^{-7} \text{ T}\cdot\text{m/A}$$

یہ ہاکی صحیح ؟

Element	Direction of Analysis	Potential Change
R	Same as current	$+iR$
R	Opposite to current	$-iR$
V_{emf}	Same as emf	$+V_{\text{emf}}$
V_{emf}	Opposite to emf	$-V_{\text{emf}}$

Element	Direction of Analysis	Potential Change
R	Same as current	$-iR$
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V_{emf}	Same as emf	$+V_{\text{emf}}$
V_{emf}	Opposite to emf	$-V_{\text{emf}}$

Which of the following is true

Element	Direction of Analysis	Potential Change
R	Same as current	$-iR$
R	Opposite to current	$+iR$
V_{emf}	Same as emf	$-V_{\text{emf}}$
V_{emf}	Opposite to emf	$+V_{\text{emf}}$

1000 Ω

$$dE = \frac{1}{4\pi\epsilon_0} \frac{q}{r^3} = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2} \quad dB = \frac{\mu_0}{4\pi} \frac{q}{r^3} = \frac{\mu_0}{4\pi} \frac{q}{r^2} \quad \mu_0 = 4\pi \times 10^{-7} \frac{\text{Vs}}{\text{Am}}$$

إذا كان $\tau = 0.1$ والقدرة $P = 1000$ W
احسب سعة المكثف

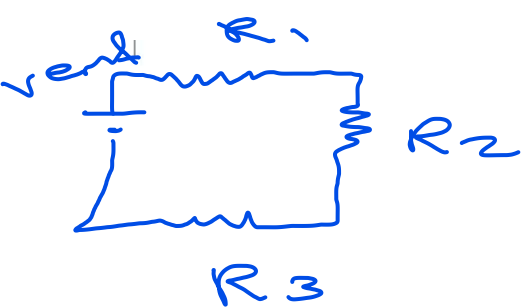
☐ $1.0 \times 10^3 \text{ F}$

If the torque is 0.1 and the resistance is 1000, calculate the capacitance of the capacitor

☒ $1.0 \times 10^{-4} \text{ F}$

☐ $1.0 \times 10^{-1} \text{ F}$

☐ $6.0 \times 10^{-4} \text{ F}$



$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$	$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$	$\mu_0 = 4\pi \times 10^{-7} \frac{\text{T m}}{\text{A}}$
--	--	---

$R_1 = 2\Omega$
 $R_2 = 1\Omega$
 $R_3 = 5\Omega$
 $V_{emf} = 40\text{ V}$

Let's write down

8A

20A

5A

40A

Calculate the
current flowing

هناك سلطتان يصرف فيهما نفس التيار ولكن إذا طأمت مساحة السلك $\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$ فأى خيار صحيح

$r = \frac{mv}{ q B}$ $d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2}$	$\vec{B} = i\vec{L} \times \vec{B}$ $d\vec{B} = \frac{\mu_0}{4\pi} \frac{rds \times \hat{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{rds \times \hat{r}}{r^3}$	$r = N\tau_1 = NiAB \sin\theta$ $\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$
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$J_2 = 3J_1$
☒

Two wires carry the same current, but if the area of the second wire is 3 times the area of the first wire, which of the following is true?

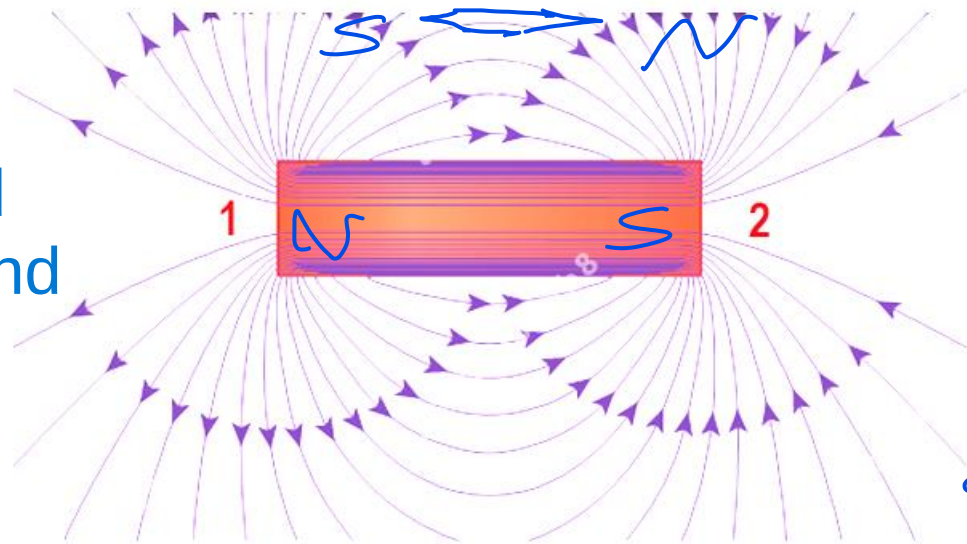
$J_2 = \frac{1}{3} J_1$
☐

$J_2 = \frac{1}{9} J_1$
☐

$J_2 = 9J_1$
☐

$J_2 = \frac{1}{3} J_1$
☐

Determine which direction is north and south for compass and magnetic



حس آبی آگاه
هوالتان
والجنوب للوجه
والصغناطيس

D

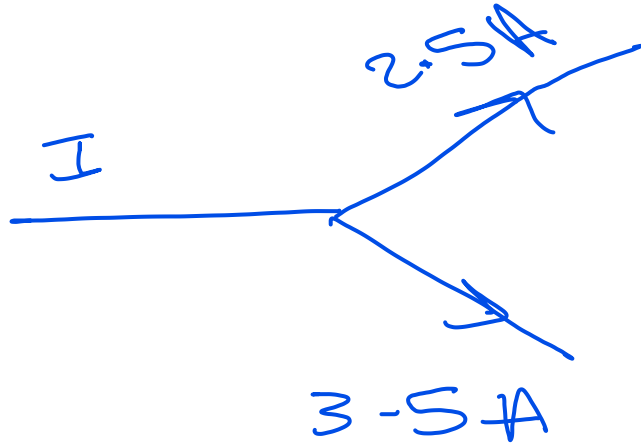
O

B

⊙

$$dE = \frac{1}{4\pi\epsilon_0} \frac{q}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2} \hat{r} \quad dB = \frac{\mu_0}{4\pi} \frac{I \sin\theta}{r^3} = \frac{\mu_0}{4\pi} \frac{I \sin\theta}{r^2} \quad \mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$$

حساب مقدار I و اتجاهها



1.0A left اليسار

6.0A left اليسار

1.0A right اليمين

6.0A right اليمين

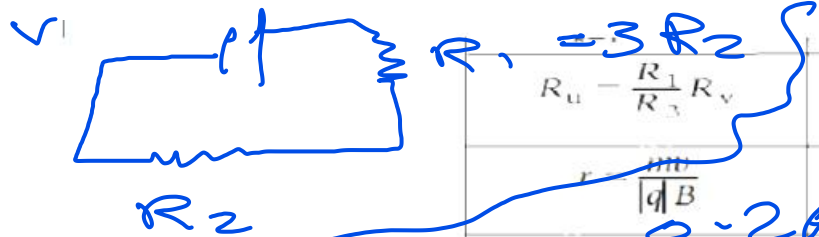
Determine the current magnitude and direction



إذا طين توصيل سلك هو 4S. وكان هناك سلك آخر
 من نفس المادة له نصف الطول وكان نصف قطر
 السلك الثاني في 3 أضعاف السلك الثاني
 فما التوصيل السلك الثاني

8.1S

If the conductivity of the wire is 0.9S, and there
 is another wire of the same material and the
 same length, and the radius of the second wire
 is 3 times that of the first wire, what is the
 conductivity of the second wire



$R_{eq} = \frac{R_1}{R_2} R_2$	$i(t) = \frac{dq}{dt} = -\left(\frac{q_{max}}{RC}\right)e^{-t/RC}$	$V_{emf} = 8V$
$r = \frac{mv}{ q B}$	$\vec{F}_B = i\vec{L} \times \vec{B}$	$R_1 = 3R_2$
$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$	$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^2}$	$\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$

وكان $R_1 = 3R_2$ و $V_{emf} = 8V$ فما هو مقدار R_1

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If $V_{emf} = 8V$ and $R_1 = 3R_2$
and the current is $0.2A$ what
is the resistance of R_1

40.0Ω

10.0Ω

20.0Ω

30.0Ω



$$\left| d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r} \right| \quad \left| d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2} \right| \quad \left| \mu_0 = 4\pi \times 10^{-7} \frac{\text{T m}}{\text{A}} \right|$$

$$P = 640 \text{ W}$$

$$R = 10 \Omega$$

$$\Delta V = ?$$

clear in Arabic

6400 V



6.4V



80 V



64 V



$$z = 5 + 2i$$

$$R_u = \frac{R_v}{R_u} R_v$$

$$i(t) = \frac{dq}{dt} = -\left(\frac{q_{\max}}{RC}\right)e^{-t/RC}$$

$$\vec{F}_B = q\vec{v} \times \vec{B}$$

$$r = \frac{mv}{|q|B}$$

$$\vec{F}_B = i\vec{L} \times \vec{B}$$

$$\tau = N\tau_1 = NiAB\sin\theta$$

$$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$$

$$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$$

$$\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$$

2.55

is 2

cur

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Calculate the current at:

18 mA



9 mA



42 mA



32 mA



$\sum_{k=1}^n i_k = 0$	$i = \frac{dq}{dt} = \left(\frac{V_{emf}}{R} \right) e^{-t/RC}$	$q(t) = q_{max} e^{-t/RC}$
$R_{eq} = \frac{R_1 R_2}{R_1 + R_2}$	$i(t) = \frac{dq}{dt} = \left(\frac{q_{max}}{RC} \right) e^{-t/RC}$	$\vec{E}_B = q\vec{v} \times \vec{B}$
$r = \frac{mv}{ q B}$	$\vec{F}_B = i\vec{L} \times \vec{B}$	$\tau = N\tau_1 = NiAB \sin \theta$
$d\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^3} \vec{r} = \frac{1}{4\pi\epsilon_0} \frac{dq}{r^2} \hat{r}$	$d\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \vec{r}}{r^3} = \frac{\mu_0}{4\pi} \frac{id\vec{s} \times \hat{r}}{r^2}$	$\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$

3-26

ایک معیار ہے

Which of the following is equivalent to

3.6 C

1.0 Milliampere-hour

1.0 مللی أمبير ساعة

1.0 Milliampere-volt

1.0 مللی أمبير فولت