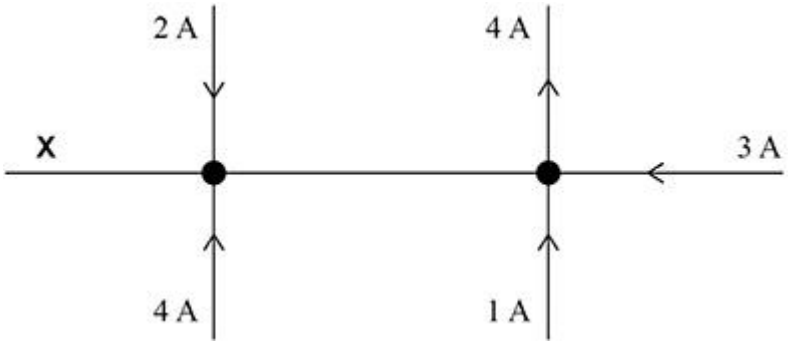
Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Electricity

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

The diagram shows the currents in a set of wires.



What is the magnitude of the current at **X**?

A zero ⬭

B 2 A ⬭

C 3 A ⬭

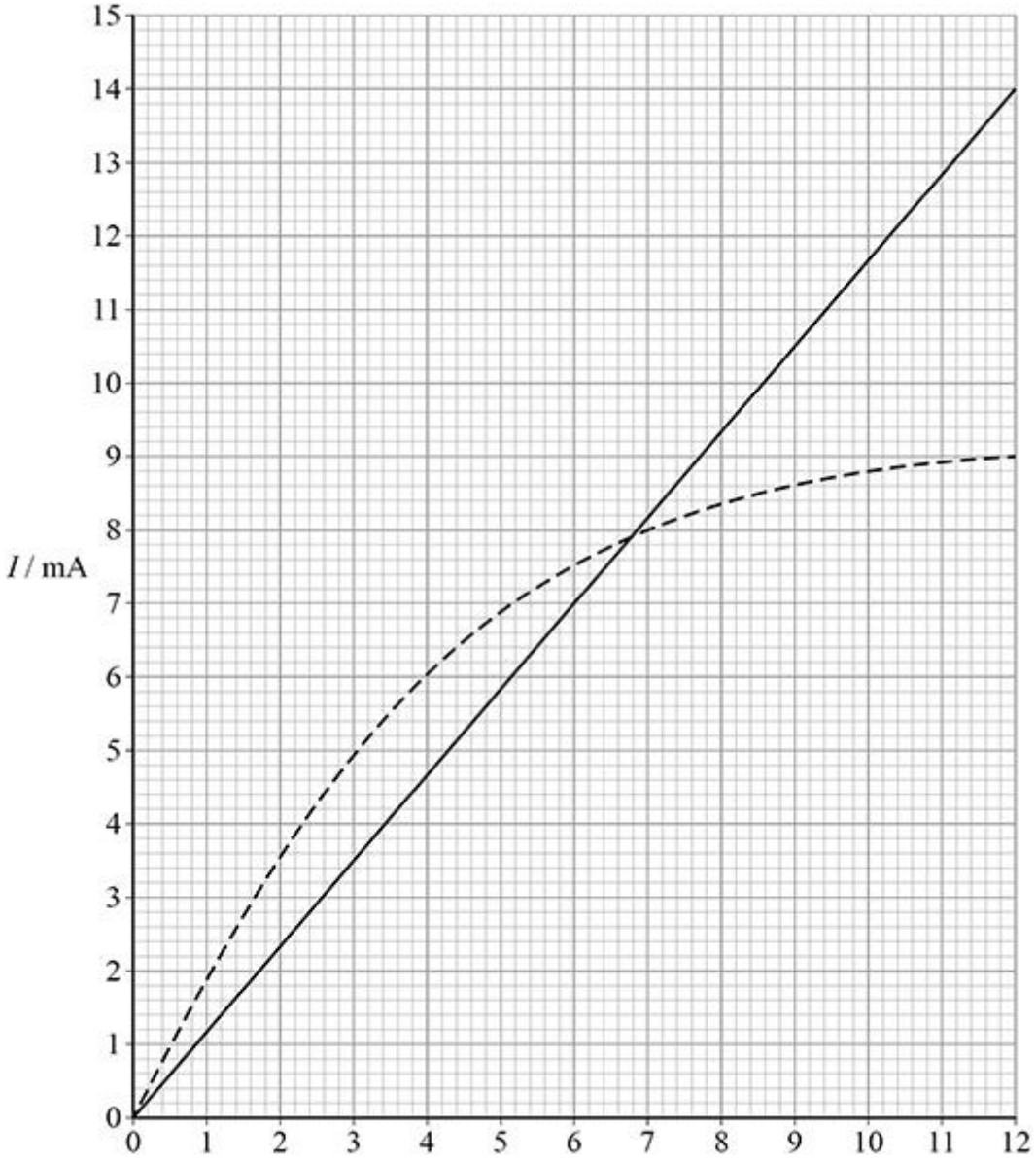
D 6 A ⬭

(Total 1 mark)

Q2.

The graph shows the current–voltage (I–V) characteristics for two components.

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The two components are connected in parallel with a 12 V battery that has negligible internal resistance.

What is the current in the battery?

A 7.9 mA ⬭

B 14.5 mA ⬭

C 15.8 mA ⬭

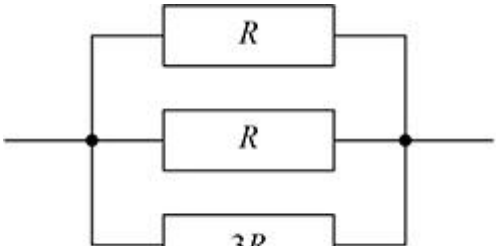
D 23.0 mA ⬭

(Total 1 mark)

Q3.

Resistors of resistance R, R and $3R$ are connected as shown.

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What is the resistance of the arrangement?

A $\frac{3R}{7}$ ○

B $\frac{7R}{3}$ ○

C $\frac{5R}{6}$ ○

D $\frac{6R}{5}$ ○

(Total 1 mark)

Q4.

Measurements are taken to determine the resistivity of a uniform metal wire. The table shows the quantities measured and their percentage uncertainties.

Quantity	Percentage uncertainty
potential difference across wire	0.3%
current in wire	5.0%
diameter of wire	4.0%
length of wire	0.2%

What is the percentage uncertainty in the calculated value for the resistivity of the metal of the wire?

A 1.6% ○

B 9.5% ○

C 13.5% ○

D 21.5% ○

(Total 1 mark)

Q5.

Superconductors are used to

A increase the strength of electricity cables. ○

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B make light dependent resistors. ⬭

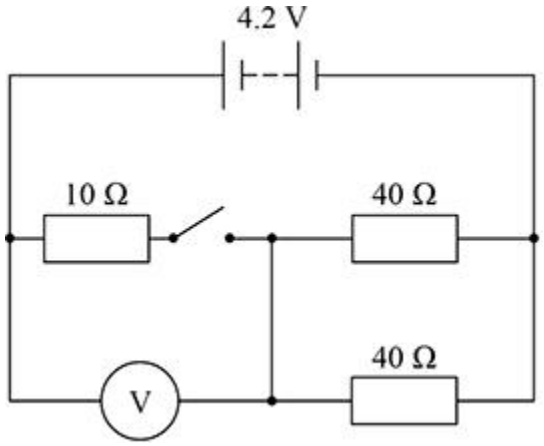
C produce strong magnetic fields. ⬭

D increase the rate of heat energy transfer. ⬭

(Total 1 mark)

Q6.

The battery in this circuit has an emf of 4.2 V and negligible internal resistance.



What are the readings on the voltmeter when the switch is open (off) and when the switch is closed (on)?

	Open	Closed	
A	0 V	2.1 V	⬭
B	4.2 V	2.1 V	⬭
C	0 V	1.4 V	⬭
D	4.2 V	1.4 V	⬭

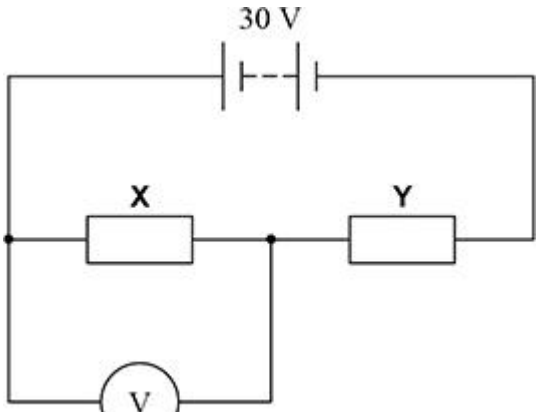
(Total 1 mark)

Q7.

Two resistors **X** and **Y** are connected in series with a power supply of emf 30 V and negligible internal resistance.

The resistors are made from wire of the same material. The wires have the same length. **X** uses wire of diameter d and **Y** uses wire of diameter $2d$.

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What is the reading on the voltmeter?

A 10 V ○

B 15 V ○

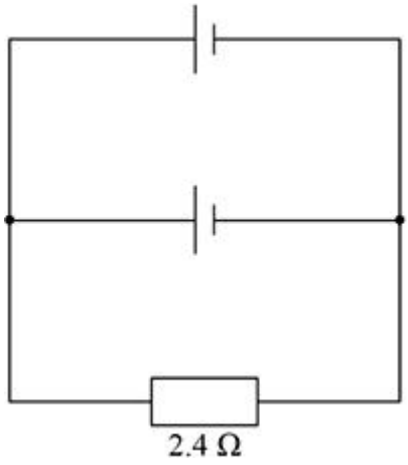
C 20 V ○

D 24 V ○

(Total 1 mark)

Q8.

Two identical batteries each of emf 1.5 V and internal resistance 1.6 Ω are connected in parallel. A 2.4 Ω resistor is connected in parallel with this combination.



What is the current in the 2.4 Ω resistor?

A 0.38 A ○

B 0.47 A ○

C 0.75 A ○

D 0.94 A ○

(Total 1 mark)

Q9.

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The table shows corresponding values of potential difference V and current I for four electrical components **A**, **B**, **C** and **D**.

	A	**B**	**C**	**D**
V / V	I / A	I / A	I / A	I / A
0	0.0	0.0	0.0	0.0
2	0.0	0.3	0.4	0.3
4	0.1	0.6	0.8	0.6
6	0.7	0.9	1.2	0.9
8	1.4	1.2	1.6	1.1
10	2.1	1.5	2.0	1.3
12	2.8	1.8	2.4	1.4

Which component is an ohmic conductor with the greatest resistance?

A ⬭

B ⬭

C ⬭

D ⬭

(Total 1 mark)

Q10.

Which row shows the resistances of an ideal ammeter and an ideal voltmeter?

	Ideal ammeter	**Ideal voltmeter**	
A	infinite	infinite	⬭
B	infinite	zero	⬭
C	zero	infinite	⬭
D	zero	zero	⬭

(Total 1 mark)

Q11.

A filament lamp with resistance 12 Ω is operated at a power of 36 W.

How much charge flows through the filament lamp during 15 minutes?

A 26 C ⬭

B 1.6 kC ⬭

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C 2.7 kC ⬭

D 6.5 kC ⬭

(Total 1 mark)

Q12.

A resistor with resistance R is made from metal wire of resistivity ρ. The length of the wire is L.

What is the diameter of the wire?

A $\sqrt{\frac{2\rho R}{\pi L}}$ ⬭

B $\sqrt{\frac{2\rho L}{\pi R}}$ ⬭

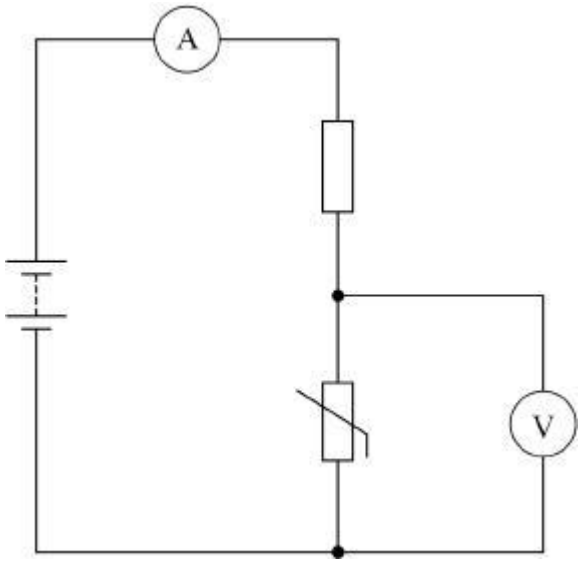
C $2\sqrt{\frac{\rho L}{\pi R}}$ ⬭

D $2\sqrt{\frac{\rho R}{\pi L}}$ ⬭

(Total 1 mark)

Q13.

The diagram shows a temperature-sensing circuit.



The temperature of the thermistor is decreased.

Which row shows the changes to the ammeter reading and the voltmeter reading?

	Ammeter reading	Voltmeter reading	
A	increases	increases	⬭
B	increases	decreases	⬭

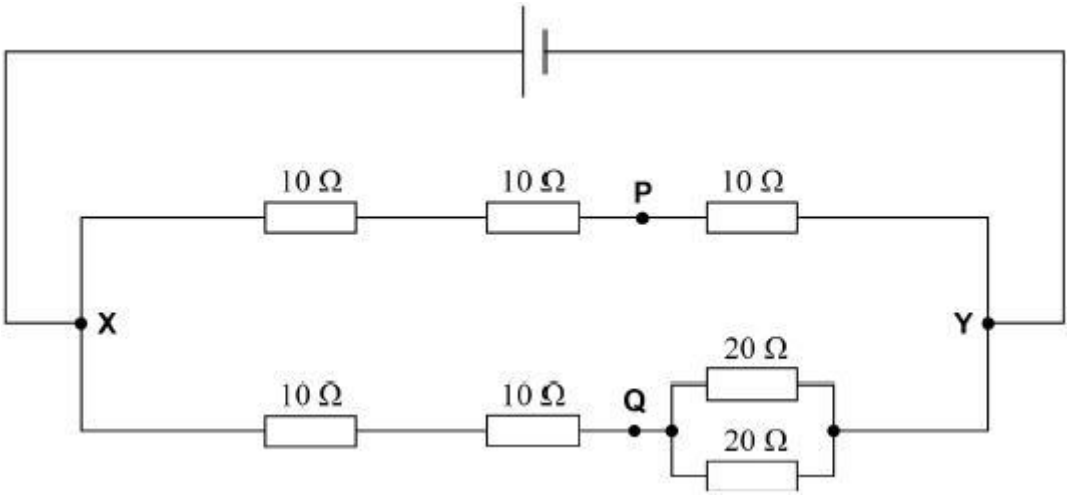
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C	decreases	decreases	⬭
D	decreases	increases	⬭

(Total 1 mark)

Q14.

The potential difference between points **X** and **Y** is *V*.



What is the potential difference between **P** and **Q**?

A zero ⬭

B $\frac{V}{3}$ ⬭

C $\frac{V}{2}$ ⬭

D $\frac{2V}{3}$ ⬭

(Total 1 mark)

Q15.

What quantity is measured in kW h?

A charge ⬭

B current ⬭

C energy ⬭

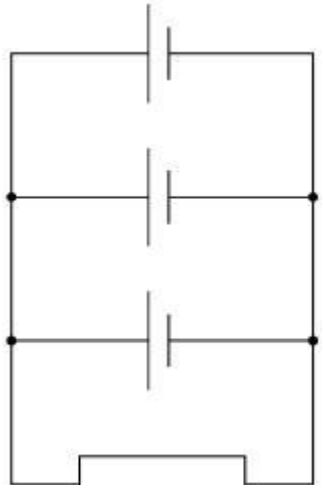
D power ⬭

(Total 1 mark)

Q16.

A resistor of resistance R and three identical cells of emf E and internal resistance r are connected as shown.

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What is the current in the resistor?

A $\frac{3E}{(3R+r)}$ ⬭

B $\frac{9E}{(3R+r)}$ ⬭

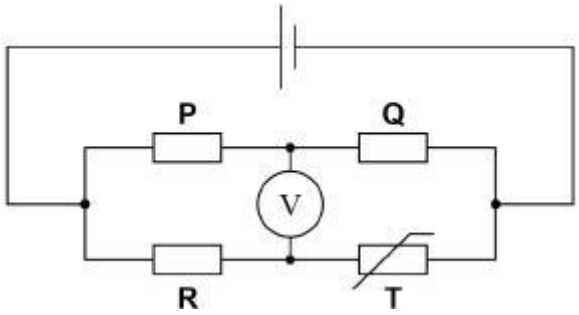
C $\frac{E}{R}$ ⬭

D $\frac{3E}{R}$ ⬭

(Total 1 mark)

Q17.

In the circuit below, the voltmeter reading is zero.



When the temperature of the thermistor **T** is increased, the voltmeter reading changes.

Which change to the circuit will restore the voltmeter to zero?

A a reduction in the emf of the cell ⬭

B a reduction in the resistance of **P** ⬭

C an increase in the resistance of **Q** ⬭

D a reduction in the resistance of **R** ⬭

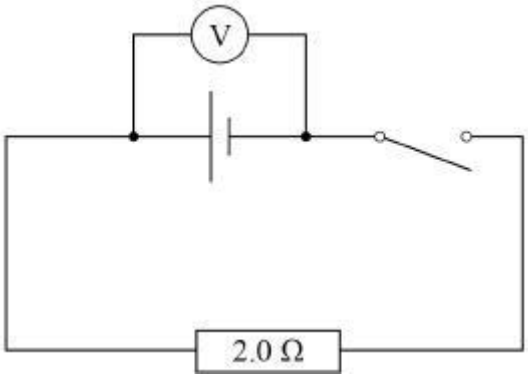
(Total 1 mark)

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Q18.

In the circuit, the reading of the voltmeter is V.

When the switch is closed the reading becomes $\frac{V}{3}$.



What is the internal resistance of the cell?

A 0.33 Ω ⬭

B 0.67 Ω ⬭

C 4.0 Ω ⬭

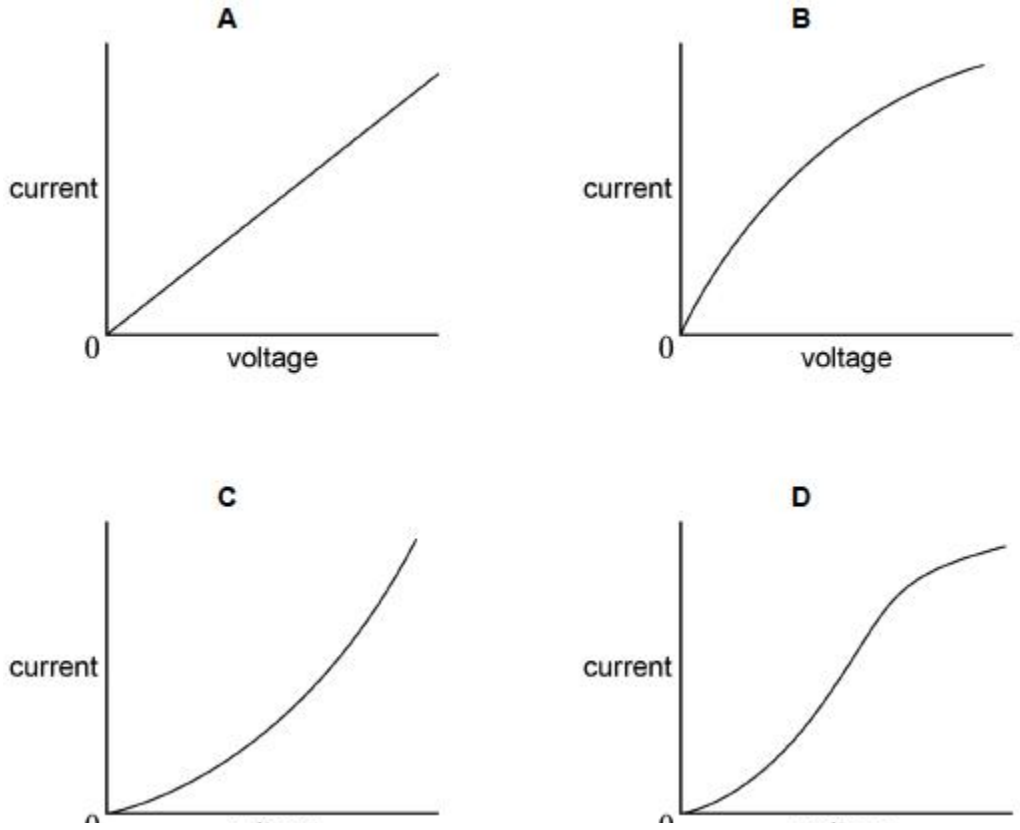
D 6.0 Ω ⬭

(Total 1 mark)

Q19.

Which is the current–voltage characteristic graph for a filament lamp up to its working voltage?

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A ☐

B ☐

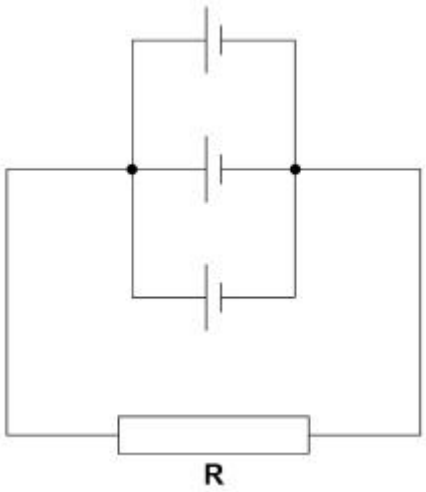
C ☐

D ☐

(Total 1 mark)

Q20.

Three identical cells, each of emf 1.5 V and internal resistance 6.0 Ω, are connected to resistor **R**.
The resistance of **R** is 6.0 Ω.



What is the current in **R**?

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A 0.19 A

B 0.25 A

C 0.56 A

D 0.75 A

(Total 1 mark)

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