# SmartKalike

CBSE Class 10 · Science

## Electricity

10 most probable questions for Boards 2027

**Q1. 1 mark · Multiple choice**

One ampere of current is the flow of:
(A) one coulomb of charge per second
(B) one joule of energy per second
(C) one electron per second
(D) one volt of potential difference per second

**Answer**

(A) one coulomb of charge per second — One ampere is constituted by the flow of one coulomb of charge per second.

**Q2. 2 marks · Short answer**

Define electric current and write the equation relating current to the charge flowing through a conductor in a given time.

**Answer**

Electric current is expressed by the amount of charge flowing through a particular area in unit time. If a net charge Q flows across any cross-section of a conductor in time t, then the current I through the cross-section is I = Q/t.

**Q3. 3 marks · Medium answer**

What is an electric circuit? Explain what happens to the current when the circuit is broken, and state the direction of conventional current in a metallic circuit relative to electron flow.

**Answer**

1. A continuous and closed path through which electric current flows is called an electric circuit.
2. If the circuit is broken anywhere, current stops flowing, so the bulb does not glow.
3. In a metallic circuit, conventional current flows opposite to electron flow; its direction is from the cell's positive terminal to its negative terminal through the circuit.

**Q4. 5 marks · Long answer**

Define the resistance of a conductor and write the equation used to determine it. Define the ohm, then explain what happens to the current at a fixed voltage if the resistance is doubled.

**Answer**

Resistance is the property of a conductor to resist the flow of charges through it. For a given metallic wire at a fixed temperature, resistance is determined by R = V/I, where V is the potential difference across the ends of the conductor and I is the current flowing through it. The SI unit of resistance is the ohm, represented by Ω. A conductor has a resistance of 1 Ω when a potential

difference of 1 V across its ends produces a current of 1 A; hence, 1 Ω = 1 V/1 A. According to Ohm's law, $I = V/R$. At a fixed voltage, current is inversely proportional to resistance. Therefore, if the resistance is doubled, the current becomes half.

**Q5. 1 mark · Very short answer**

Name the metal used almost exclusively for electric-bulb filaments.

**Answer**

Tungsten is used almost exclusively for filaments of electric bulbs, whereas copper and aluminium are generally used for electrical transmission lines.

**Q6. 2 marks · Short answer**

What does a switch do in a circuit? State the direction in which current flows through the components connected to a cell.

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**Q7. 3 marks · Medium answer**

Write the relationship between the equivalent resistance Rp and the individual resistances $R_1$, $R_2$ and $R_3$ when three resistors are connected in parallel. Briefly explain how this relationship follows from the potential difference and current in the branches.

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**Q8. 5 marks · Long answer**

Explain the meaning of one watt-hour and one kilowatt-hour. State the relationship between the kilowatt-hour and joule, and between kilowatt and watt.

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**Q9. 1 mark · Multiple choice**

Three resistors are connected in parallel. If the total current is $I$ and the branch currents are $I_1$, $I_2$ and $I_3$, which relationship is correct?

(A) $I = I_1 = I_2 = I_3$

(B) $I = I_1 + I_2 + I_3$

(C) $I_1 = I_2 + I_3$

(D) $I = I_1 \times I_2 \times I_3$

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**Q10. 2 marks · Short answer**

Define the potential difference between two points in terms of work and charge. What does a potential difference of 1 V mean?

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