Question Bank: Electric Current and its Effects

Chapter: Electric Current and its Effects
Class: 6 | Science | Oxford Curriculum
Total Questions: 25
Mapped with Bloom's Taxonomy
Competitive Exam Tags: NTSE, NSO, NSTSE

Section A: Remembering & Understanding (1 Mark Each)

1. What is an electric circuit?
   Answer: An electric circuit is a complete path through which electric current can flow.
   Tag: NTSE

2. Define an electric cell.
   Answer: An electric cell is a device that produces a small amount of electricity using chemical reactions.
   Tag: NSO

3. What is the function of a switch in a circuit?
   Answer: A switch opens or closes a circuit to start or stop the flow of current.
   Tag: NSO

4. Name the instrument used to detect electric current in a circuit.
   Answer: A tester or galvanometer.
   Tag: NSTSE

5. What is the filament in an electric bulb made of?
   Answer: Tungsten.
   Tag: NTSE

6. What happens when the circuit is open?
   Answer: Electric current does not flow.
   Tag: NSO

7. Name a safety device used to prevent overloading in an electric circuit.
   Answer: Fuse.
   Tag: NTSE

8. What is a conductor?
   Answer: A material that allows electric current to pass through it.
   Tag: NSO

9. What is an insulator?
   Answer: A material that does not allow electric current to pass through it.
   Tag: NSTSE

10. What is heating effect of current?
    Answer: The production of heat when electric current flows through a conductor.
    Tag: NSO

Section B: Applying & Analyzing (2–3 Marks Each)

1. Why does a bulb glow when connected to a battery?
   Answer: The electric current from the battery flows through the filament, heating it up and making it glow due to the heating effect.
   Tag: NTSE

2. Give two examples of conductors and insulators.
   Answer: Conductors: copper, aluminum. Insulators: plastic, rubber.
   Tag: NSO

3. How is a fuse useful in household wiring?
   Answer: A fuse melts when excess current flows, breaking the circuit and preventing damage or fire.
   Tag: NTSE

4. What are the effects of electric current?
   Answer: Electric current can produce heat, light, and magnetic effects.
   Tag: NSO

5. State one advantage and one disadvantage of the heating effect of current.
   Answer: Advantage: Used in devices like geysers. Disadvantage: Can waste energy in unwanted heating.
   Tag: NSTSE

Section C: Evaluating & Creating (3–5 Marks Each)

1. Draw a simple electric circuit and label its components.
   Answer: [Diagram with a cell, wire, switch, and bulb] Labels: Cell, Connecting wires, Bulb, Switch. The bulb lights up when the switch is closed.
   Tag: NTSE

2. Explain how the electric bell works using the magnetic effect of current.
   Answer: When current flows, the coil becomes an electromagnet, pulling the hammer to strike the bell. The circuit breaks, resetting the hammer, and the process repeats, creating a ringing sound.
   Tag: NSO

3. What is an electromagnet? How is it made?
   Answer: An electromagnet is a temporary magnet made by passing current through a coil wrapped around a soft iron core. It becomes magnetic only when current flows.
   Tag: NSTSE

4. How is the heating effect of electric current used in daily life?
   Answer: It is used in devices like electric heaters, irons, and toasters where electric energy is converted to heat for practical use.
   Tag: NTSE

5. Create a comparison table for conductors and insulators.
   Answer:

Property	Conductors	Insulators
Flow of current	Allows flow	Does not allow flow
Examples	Copper, Aluminum	Rubber, Plastic
Use	Wiring, circuits	Coverings, safety tools

Tag: NSO

Section D: Case-Based/Scenario Questions (4–5 Marks Each)

1. **Case Study:** Rahul built a simple circuit at home using a battery, wires, and a bulb. However, the bulb didn't light up. He checked and found the wires weren't properly connected. a) What does this tell us about a complete circuit?
   b) Suggest how he could fix it and test again. **Answer:** a) A complete circuit is required for current to flow; if any connection is loose or open, the circuit is incomplete and the bulb won't glow. b) Rahul should ensure all wires are connected tightly and the switch is closed. He can then retest the setup. This encourages careful observation and troubleshooting.
   Tag: NSTSE

2. **Scenario:** In a classroom demonstration, a teacher shows a glowing bulb connected to a battery. She then adds more bulbs in the same circuit. a) What happens to the brightness of the bulbs?
   b) Explain why this change occurs.
   Answer: a) The brightness of each bulb decreases. b) Adding more bulbs in series increases resistance, reducing current, hence the bulbs glow dimmer. This shows how load affects circuit performance.
   Tag: NSO

3. **Case Study:** A student uses a thick copper wire in one circuit and a thin iron wire in another. Both are connected to identical batteries and bulbs. a) Which circuit will have a brighter bulb? Why?
   b) What does this demonstrate about material and thickness? **Answer:** a) The circuit with the thick copper wire will have a brighter bulb. b) Copper is a better conductor than iron, and thicker wires offer less resistance, allowing more current flow. This shows the role of material and cross-sectional

area in resistance.
Tag: NTSE

4. **Scenario:** During a power cut, Riya connects a small bulb to a 9V battery and uses it as a torch. However, after a few hours, the bulb stops working. a) What might have caused the bulb to stop?
   b) What should be considered while designing battery-powered devices? **Answer:** a) The battery may have drained, or the bulb filament may have broken due to prolonged use. b) We must consider battery life, bulb capacity, and voltage compatibility when designing such devices. This promotes practical design thinking.
   Tag: NSO

5. **Case Study:** In a science fair, students designed a magnetic crane using an iron nail, copper wire, and a battery. It could lift pins only when connected. a) Explain how this device works.
   b) What real-life applications does it represent? **Answer:** a) When current flows through the coil around the nail, it becomes an electromagnet and attracts the pins. When current stops, it loses magnetism. b) This represents devices like junkyard cranes, relays in circuits, and magnetic doorbells. It shows controlled use of magnetism.
   Tag: NSTSE