



परमाणु ऊर्जा शिक्षण संस्था
Atomic Energy Education Society
उत्तर कुंजी / Answer Key (2026-27)

कक्षा /Class: __VII विषय /Subject: SCIENCE माह/ Month: JULY अंक/Marks: 40

दिया गया पाठ्यक्रम/Portion covered: Chapter 2 and 3

Section A: Multiple Choice Questions (1 Mark Each)

- * Q1: b (Litmus and turmeric require vision to see color changes. An olfactory indicator like onion changes its smell in basic conditions).
- * Q2: c (Rose extract turns green in bases. A mild acid like vinegar neutralizes the base to bring back the original pink color environment).
- * Q3: b (Slaked lime is basic and safely neutralizes the acid spill without creating a harsh, dangerous chemical hazard pool).
- * Q4: d (Sugar solution is neutral. Neutral substances do not alter the color of red or blue litmus strips).
- * Q5: c (Opposite terminals must touch for electricity to flow continuously through a series circuit alignment).
- * Q6: b (A broken filament creates a physical gap in the wire path, turning it into an open circuit where current cannot flow).
- * Q7: b (LEDs are directional components with specific polarity and completely block current if connected backward).
- * Q8: a (Copper, aluminum, and iron are all metals, making them excellent conductors that complete the path).
- * Q9: c (Breaking a single-loop circuit at any single point completely stops the current everywhere in the loop).
- * Q10: a (Drawing too much power increases the total current demand, overloading the wire safety capacity and tripping the breaker).

Section B: Assertion & Reason (1 Mark)

- * Q11: c (The Statement is true, but the Reason is false. Pure distilled water does not conduct electricity. Tap water or moisture on hands contains dissolved minerals that create conducting ions).

Section C: Case-Based Question (4 Marks)

* Q12:

- (i) Neutralization reaction.

(1 Mark)

- (ii) Carbon dioxide gas is produced during the reaction between the acid and the chalk base. When the fizzing stops, the acid is fully neutralized. (1 Mark)

- (iii) A strong industrial base is caustic and would create a new dangerous chemical pool if added in excess. Mild chalk is safer because any extra remains unreacted and harmless. (2 Marks)

Section D: Short Answer Type-I (2 Marks Each)

* Q13: The conclusion is incomplete because a neutral salt solution (like common salt dissolved in water) also has no effect on turmeric or blue litmus paper. It does not have to be pure water. (2 Marks)

* Q14: A bee sting is acidic, so a mild base like baking soda neutralizes it. A wasp sting is basic, so an acid like vinegar is needed. Applying a base to a basic sting makes the chemical burn worse. (2 Marks)

* Q15: Diagram requirements: Two alternating cell symbols, a plain circle for the bulb with no glowing lines, and a switch drawn in the raised, open position. Clear text labels are required. (2 Marks)

* Q16: The metal key is a conductor because it completes the path and lets current flow. The plastic ruler is an insulator because it blocks the current and keeps the circuit open. (2 Marks)

Section E: Short Answer Type-II (3 Marks Each)

* Q17:

- X is Basic (turns turmeric red). (1 Mark)

- Y is Acidic (turns blue litmus red). (1 Mark)

- Z is Neutral (no change on indicators). (1 Mark)

* Q18: Cell 1 and Cell 2 are connected negative-to-negative (-) to (-).

This opposing polarity cancels out the electrical pushing forces, preventing current from reaching the motor. Fix by reversing cell 2. (3 Marks)

* Q19: Turmeric stays yellow in neutral/acidic items but turns deep red with bases. Since soap solution is basic, rubbing it onto yellow turmeric paper creates a red color change. (3 Marks)

* Q20:

- The bulb gets hot due to the Heating Effect of Electric Current (frictional resistance to electrons inside the wire). (1 Mark)

- Useful: Electric iron or toaster. (1 Mark)
- Disadvantage: Computers or smartphones heating up and wasting power. (1 Mark)

Section F: Long Answer Question (5 Marks)

* Q21:

- (a) Drawing criteria: Insulated coil wrapped around a central rod labelled "soft iron core". Must form a closed series loop with a battery and switch. Arrows must show current flowing from positive to negative. (2 Marks)

- (b) Moving current creates a magnetic field around the coil, which temporary magnetizes the core (Magnetic Effect of Current). When the path breaks, current stops and soft iron immediately loses magnetism due to low retentivity. (2 Marks)

- (c) Steel has high magnetic retentivity. It retains a high amount of magnetism after current stops, becoming a permanent magnet and keeping paperclips stuck. (1 Mark)