



परमाणु ऊर्जा शिक्षण संस्था
Atomic Energy Education Society
कार्यपत्रक / Worksheet (2026-27)

कक्षा /Class: VII विषय /Subject: SCIENCE

माह/ Month: July

अंक/Marks: 40

दिया गया पाठ्यक्रम/Portion covered: Chapter 2 and 3

विद्यार्थी का नाम/Name of the student: _____

अनुक्रमांक /Roll No._____ **कक्षा/अनुभाग Class /Sec.:**_____ **दिनांक /Date:** _____

Section A: Multiple Choice Questions

(1 Mark each)

Q1. Many is blindfolded for a classroom game. She is given two cups: one contains a base and the other contains neutral water. She cannot see the liquids and she is not allowed to taste them. Which testing material will help her successfully find the base using only her sense of smell?

- a) Dry red litmus paper b) Cloth strip treated with onion extract
 c) Dry yellow turmeric powder d) Clean blue litmus paper

Q2. A student makes a beautiful pink liquid indicator by boiling red rose petals in hot water. When she drops this indicator into an unknown test solution, the pink color instantly changes to a dark green. Which common kitchen item can she add to this green mixture to reverse the chemical change and turn it back to pink?

- a) Baking soda solution b) Clear lime water
 c) White vinegar d) Common salt solution

Q3. A factory releases dangerous chemical acid into a local fishing lake. To fix the water safely and save the fish without making the lake basic, what should the workers add to the water?

- a) Strong sodium hydroxide b) Mild basic slaked lime
 c) Pure industrial salt d) Hydrochloric acid

Q4. Litmus paper strips are prepared using a natural extract obtained from lichens. If you put a blue litmus strip and a red litmus strip into a neutral sugar solution, what will you see?

- a) Blue turns red; red stays red b) Red turns blue; blue stays blue
 c) Both strips turn yellow d) Neither strip changes color

Q5. To make a three-cell battery work correctly to light up a heavy toy motor, how must the individual cells touch each other inside the holder?

- a) Positive terminal to positive b) Negative terminal to negative
 c) Positive terminal to negative d) Leave an air gap between cells

Q6. When a standard glass light bulb stops glowing, teachers call it a "fused bulb". Think about the complete loop needed for electricity to flow. What is physically broken inside a fused bulb that blocks the electric current from moving through it?

- a) The outer protective glass cover b) The thin curly tungsten filament wire
c) The metal base cap at the bottom d) The safe gas trapped inside the bulb

Q7. An LED (Light Emitting Diode) is connected into a complete circuit, but it does not light up at all. When you disconnect it, flip it around, and put it back, it instantly glows brightly. What does this experiment prove about the electronic nature of an LED?

- a) It only works when it gets very hot b) It allows current in only one direction
c) The short leg must be cut off d) It doubles the total cell voltage

Q8. A student builds a handy circuit tester to check different materials. Which group contains only good conductors that will successfully complete the loop and make the tester bulb glow?

- a) Copper wire, aluminium foil, iron nail b) Plastic spoon, nylon rope, glass rod
c) Rubber eraser, copper key, wood stick d) Aluminium strip, sulfur, cotton string

Q9. A switch is placed near the negative side of a battery. When you turn the switch OFF, what happens to the current at the positive side?

- a) It keeps moving forward b) It turns backward
c) It stops completely everywhere d) It leaks out into the room

Q10. Imagine plugging a heavy room heater, a toaster, and a microwave into one single multi-plug wall socket at the same time. The wires inside the wall instantly face a massive demand for electrical energy. Why does this cause the home MCB switch to trip off automatically?

- a) It overloads the circuit with current b) It makes the copper wires freeze up
c) It changes the plastic cover's color d) It stops the main station voltage

Section B Assertion & Reason

(1 Mark)

Choose the best option (a, b, c, or d) using the following guide:

- (a) Both Assertion and Reason are true, and Reason explains Assertion.
(b) Both Assertion and Reason are true, but Reason does not explain Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Q11. Assertion: You should never operate electrical switches or touch household wall plugs with wet hands.

Reason: Pure distilled water is an excellent conductor of electricity, which instantly pulls current into the body.

Section C: Case-Based Question

(4 Marks)

Q12. Read this short factory log and answer the questions below:

"A big truck spilled a large tank of strong liquid acid into a concrete pit at a factory. The safety team did not wash it with water because water would just spread the dangerous liquid everywhere."

Instead, they dumped large bags of crushed chalk powder (a mild base) onto the spill. The liquid bubbled up wildly, made a fizzing sound, and then went completely quiet. The pit was safe again."

Part i: What is the name of the chemical reaction used to fix the acid spill? (1M)

Part ii: Why did the mixture bubble and fizz when the chalk was added? (1M)

Part iii: What would happen if the team used a very strong, dangerous industrial base instead of mild chalk? Why is mild chalk safer? (2M)

Section D: Short Answer Type-I

(2 Marks Each)

Q13. A solution does not change the color of either yellow turmeric paper or blue litmus paper. A student declares: "This proves the liquid must be neutral pure water." Explain why this reasoning is incomplete. What else could the liquid be?

Q14. When a student is stung by a honeybee, the teacher immediately applies a paste of baking soda to the skin to ease the sting. However, when a wasp stings someone (which is basic), the teacher uses vinegar instead. Explain the chemical logic behind using different remedies.

Q15. Using standard scientific circuit symbols, draw a clean circuit diagram showing a battery made of two cells, a light bulb that is NOT glowing, and a switch placed anywhere in the loop. Label the components.

Q16. You have an unlabelled wooden board with two bare wire ends. When you touch a metal key to the two ends, a bulb glows. When you touch a plastic ruler to the two ends, nothing happens. Classify these materials based on their electrical properties and explain the logic.

Section E: Short Answer Type-II

(3 Marks Each)

Q17. You are given three test tubes filled with unknown colorless liquids named X, Y, and Z.

* Liquid X turns turmeric paper red.

* Liquid Y has no effect on turmeric paper but turns blue litmus paper red.

* Liquid Z has no effect on blue litmus or turmeric paper.

Identify the chemical nature (acidic, basic, or neutral) of X, Y, and Z, and explain your logical deduction for each.

Q18. A student connects three cells in a straight line to power a small toy motor. They arrange the cells as: (+)[Cell 1](-) joined to (-)[Cell 2](+) joined to (+)[Cell 3](-). The motor completely fails to rotate. Explain the troubleshooting steps and pinpoint the exact error in this terminal arrangement.

Q19. Explain the chemical process of using turmeric paste as a hidden drawing ink. How can a simple soap solution be used to turn a plain yellow painted paper into a bright red greeting card?

Q20. Why does a study lamp bulb feel hot to touch after it has been glowing for an hour? Name the scientific effect responsible for this, and list one real-world device where this effect is useful and one where it is a disadvantage.

Section F: Long Answer Question (5 Marks)

Q21. Read the setup and answer the questions:

A student wraps a long insulated copper wire around a soft iron rod and connects it to a battery through a switch. When the switch is ON, the rod acts as a strong magnet. When the switch is OFF, the magnetic power vanishes completely.

(a) Draw a neat labeled diagram of this setup. Show the path of the current using arrows and label the soft iron core. (2 Marks)

(b) Explain the underlying physics of why the iron rod shows magnetic properties only when the current flows, and why it loses this property the exact second the switch is opened. (2 Marks)

(c) The student replaces the soft iron rod with a steel rod of identical size. When the switch is turned OFF, some iron paperclips still remain stuck to the steel rod. Explain the reason behind this unexpected observation. (1 Mark)