

CLASS IX SCIENCE | MATTER IN OUR SURROUNDINGS

CHAPTER PRACTICE | NCERT TOPIC | CBSE-STYLE QUESTION FORMATS

Time: 1 hour 30 minutes

Questions: 25

Maximum Marks: 50

Name: _____ Roll No.: _____ Date: _____

Instructions: All questions are compulsory; attempt either alternative in Q24. Write answers on a separate answer sheet. Marks are shown in brackets. Give reasons where asked. Show steps in calculations and label diagrams neatly.

SECTION A | OBJECTIVE QUESTIONS

12 × 1 = 12 marks

- Which of the following is matter? [1]
(A) Heat (B) Light (C) Air (D) Sound
 - Which state has a definite volume but no definite shape? [1]
(A) Solid (B) Liquid (C) Gas (D) All three
 - Which sample can be compressed most easily? [1]
(A) A stone (B) Water (C) Air (D) Ice
 - Which change slows evaporation when all other conditions stay the same? [1]
(A) Higher temperature (B) Larger surface area (C) Higher humidity (D) Stronger airflow
 - Fill in the blank:** A direct change from solid to gas is called _____. [1]
 - Fill in the blank:** The SI unit of temperature is the _____. [1]
 - True or False:** Evaporation can occur below a liquid's boiling point. [1]
 - True or False:** The particles in a solid are completely at rest. [1]
 - Match the columns.** Write the two correct pairs. (½ mark each) [1]

Column A	Column B
(i) Gas changes into liquid	(a) Freezing
(ii) Liquid changes into solid	(b) Condensation
 - Very short answer:** Name the spontaneous mixing of particles of different substances. [1]
- For Q11-12, choose the correct assertion-reason option:**
 (A) Both A and R are true; R correctly explains A. (B) Both are true; R does not explain A.
 (C) A is true, but R is false. (D) A is false, but R is true.
- Assertion (A):** A gas fills the entire container available to it. [1]
Reason (R): Gas particles move freely in all directions.
 - Assertion (A):** A desert cooler works better in humid air than in dry air. [1]
Reason (R): Higher humidity slows evaporation, other conditions being the same.

SECTION B | SHORT ANSWERS

5 × 2 = 10 marks

- Use $K = ^\circ C + 273$ to convert: (a) $30^\circ C$ into kelvin; (b) 293 K into $^\circ C$. (1 + 1) [2]
- State two differences between evaporation and boiling. (1 + 1) [2]
- Water droplets form on the outside of a cold glass on a humid day. Where does this water come from? Name the change of state. (1 + 1) [2]
- A drop of ink spreads in still water without stirring. Explain why it spreads and why it spreads faster in warm water. (1 + 1) [2]
- Identify the states shown by particle models X and Y. [2]
Which is more compressible, and why? (1 + 1)



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Continue answering on your answer sheet. Give reasons wherever asked.

Q18-25 | 28 marks

SECTION C | APPLICATION QUESTIONS

4 × 3 = 12 marks

- 18.** Explain how lowering temperature and increasing pressure help to liquefy a gas. Refer to particle motion, spacing and forces of attraction. **[3]**
- 19.** Why does acetone at room temperature feel cold as it evaporates from the palm? Explain using evaporation, energy transfer and the motion of particles. **[3]**
- 20.** A sponge can be compressed, yet it is a solid. Explain this using its structure, the air in its pores and its shape after the pressing force is removed. **[3]**
- 21.** Equal masses of ice at 0°C and water at 0°C are warmed to the same final temperature above 0°C. Which absorbs more heat? Explain using latent heat. **(1 + 2)** **[3]**

SECTION D | CASE-BASED QUESTIONS

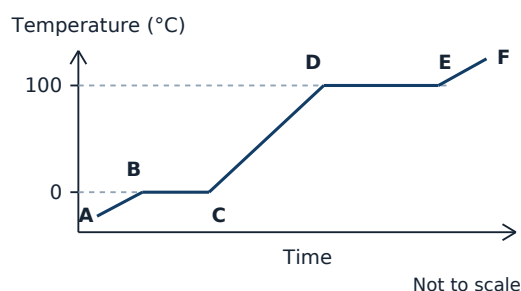
2 × 4 = 8 marks

22. Heating pure ice

[4]

Pure ice is heated steadily at normal atmospheric pressure. Study the schematic graph.

- (a) Identify the change along BC. **(1)**
- (b) Name the two states present along DE. **(1)**
- (c) Explain why temperature stays constant along DE despite continued heating. **(2)**



23. Investigating evaporation

[4]

Equal water samples in identical trays are kept for 20 minutes at the temperatures shown. Exposed surface area and relative humidity are the same in all trials.

Trial	Water temperature	Airflow	Mass of water lost
P	25°C	Still air	4 g
Q	25°C	Fan blowing	8 g
R	35°C	Still air	11 g

- (a) Which pair of trials isolates the effect of wind speed? **(1)**
- (b) Which pair isolates the effect of temperature? **(1)**
- (c) Explain why Q loses more water than P. **(2)**

SECTION E | LONG ANSWERS AND REASONING

2 × 4 = 8 marks

- 24.** Equal masses of steam and liquid water, both at 100°C, cool to 40°C. The steam condenses completely. Which sample releases more heat? Explain using the change of state, latent heat and subsequent cooling of the liquid. **(1 + 3)** **[4]**
OR
Describe repeated dilution of potassium permanganate solution with water. State your observation and what it shows about particle size. **(2 + 1 + 1)**
- 25.** Design a test of how surface area affects evaporation. Give the setup, two factors to keep constant, the measurement and the expected result. **(1 + 1 + 1 + 1)** **[4]**