



QUICK DRILL · CBSE CLASS 9

Is Matter Around Us Pure?

Science · Chapter 2 · 15 MCQs · 20 minutes · PYQ-tagged with time budgets

DATE _____	TOTAL MARKS 15	DURATION 20 min	MARKING +1 / 0	TARGET ≥ 12/15
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OBJECTIVES

Reinforce the four core topics of Is Matter Around Us Pure? via 15 PYQ-derived MCQs. Identify weak sub-topics via concept-node IDs (see answer key). Build per-question time budget habit.

INSTRUCTIONS

Attempt all 15. Time budget shown per Q (use it as pacing guide). Mark answers (A/B/C/D) in the margin. Answer key + explanations on the last page. **Don't peek — score yourself honestly.**

SECTION · QUICK DRILL

Q 1-15 · 20 MIN

Q1. Which of the following is a pure substance?

(A) Sea water

(C) Diamond

PYQ 2019 · Delhi · 1 m · 30s

(B) Milk

(D) Air

Q2. The size of particles in a true solution is:

(A) Greater than 100 nm

(C) Less than 1 nm

PYQ 2020 · Delhi · 1 m · 30s

(B) Between 1 and 100 nm

(D) Exactly 50 nm

Q3. Tyndall effect is shown by:

(A) True solution only

(C) Both colloid and suspension

PYQ 2018 · All India · 1 m · 30s

(B) Colloid only

(D) Pure water

Q4. Which separation technique is used to separate cream from milk?

(A) Filtration

(C) Centrifugation

PYQ 2022 · Delhi · 1 m · 30s

(B) Sublimation

(D) Chromatography

Q5. A solution contains 30 g of NaCl in 270 g of water. The mass percentage is:

(A) 10%

(C) 30%

PYQ 2023 · Delhi · 1 m · 60s

(B) 11%

(D) 50%

Q6. Which of these is NOT a colloid?

(A) Milk

(C) Salt water

PYQ 2018 · Delhi · 1 m · 30s

(B) Fog

(D) Whipped cream

Q7. Smoke is a colloid where:

(A) Liquid is dispersed in solid

(C) Gas is dispersed in liquid

PYQ 2019 · All India · 1 m · 30s

(B) Solid is dispersed in gas

(D) Solid is dispersed in liquid

Q8. Fractional distillation is preferred over simple distillation when:

(A) BP difference > 50°C

(C) Liquids are immiscible

PYQ 2020 · Delhi · 1 m · 30s

(B) BP difference < 25°C

(D) Solid + liquid mixture

Q9. Which technique separates ammonium chloride from sodium chloride?

- (A) Filtration
(B) Sublimation
(C) Distillation
(D) Crystallisation

PYQ 2022 · All India · 1m · 30s

Q10. Brass is an example of:

- (A) A compound
(B) A homogeneous mixture
(C) A heterogeneous mixture
(D) An element

PYQ 2023 · Delhi · 1m · 30s

Q11. Which is a physical change?

- (A) Burning of paper
(B) Rusting of iron
(C) Melting of ice
(D) Cooking of rice

PYQ 2018 · Delhi · 1m · 30s

Q12. Which can be separated by chromatography?

- (A) Salt from water
(B) Sand from iron filings
(C) Different dyes in black ink
(D) Oil from water

PYQ 2019 · All India · 1m · 30s

Q13. A saturated solution at 25°C:

- (A) Can dissolve more solute
(B) Has maximum dissolved solute at that temperature
(C) Has supersaturated particles
(D) Is always coloured

PYQ 2024 · Delhi · 1m · 30s

Q14. Which is an emulsion?

- (A) Smoke
(B) Jelly
(C) Mayonnaise
(D) Salt water

PYQ 2022 · Delhi · 1m · 30s

Q15. Water (H₂O) is best classified as:

- (A) A mixture
(B) An element
(C) A compound
(D) A colloid

PYQ 2023 · All India · 1m · 30s

ANSWER KEY & EXPLANATIONS

Q 1-15 · MARK YOUR SCORE

Q1. Answer: C

Diamond is pure carbon — one kind of atom. Sea water, milk and air are all mixtures.

Q2. Answer: C

True solution particles are less than 1 nm — too small to be filtered or to scatter light.

Q3. Answer: C

Both colloids and suspensions scatter light because their particles are large enough (>1 nm). True solutions do NOT show Tyndall.

Q4. Answer: C

Milk is a colloid; cream particles cannot be filtered. Centrifugation separates them by density using rotational force.

Q5. Answer: A

Mass of solution = 30 + 270 = 300 g. Mass % = $(30/300) \times 100 = 10\%$.

Q6. Answer: C

Salt water is a true solution — particles are <1 nm. Milk, fog, and whipped cream are colloids.

Q7. Answer: B

Smoke is an aerosol: solid carbon and ash particles dispersed in a gas (air).

Q8. Answer: B

Fractional distillation uses a fractionating column for repeated condensation-evaporation cycles — needed when BP difference is less than 25°C.

Q9. Answer: B

Ammonium chloride sublimes (changes directly from solid to gas); sodium chloride does not. Sublimation separates them.

Q10. Answer: B

Brass is a solid solution of copper and zinc — homogeneous mixture (alloy). Composition can vary slightly, so it is not a compound.

Q11. Answer: C

Melting of ice is a physical change — no new substance forms and it is reversible by freezing.

Q12. Answer: C

Chromatography separates components by different rates of adsorption — perfect for ink dyes.

Q13. Answer: B

A saturated solution has dissolved the MAXIMUM possible amount at the given temperature — adding more leaves it undissolved.

Q14. Answer: C

Mayonnaise is an oil-in-water emulsion stabilised by egg yolk. Smoke is aerosol, jelly is gel, salt water is solution.

Q15. Answer: C

Water is two elements (H, O) chemically combined in a fixed 1:8 mass ratio — that defines a compound.