



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Is air a mixture?
2. Explain homogeneous and heterogeneous mixtures with examples.
3. Name the dispersed phase and medium in fog.
4. Classify fog as solution, suspension or colloid.
5. Does a true solution usually show the Tyndall effect?
6. Compare particle size and light scattering in solutions and colloids.
7. A solution contains 10 g salt in 90 g water. Find mass percentage.
8. How much solute is in 200 g of a 15% solution?

B. Short answers / practice - 2 marks each

9. Choose a method to separate sand from water.
10. Explain why ordinary filtration cannot remove dissolved salt.
11. Choose a method to obtain salt from salt solution when water recovery is unnecessary.
12. Why is crystallisation preferred for obtaining purified crystals?
13. Choose a method to recover water from salt solution.
14. Draw the apparatus and explain evaporation and condensation.
15. Which method separates immiscible liquids such as oil and water?
16. Explain the role of density difference and layers.
17. Name a method to separate dyes in ink.
18. Explain why different dyes may travel different distances.
19. Can a magnet separate iron filings from sand?
20. Design steps to separate iron, sand and salt from a mixture.

C. Application / reasoning - 3 marks each

21. Which method separates cream from milk mechanically?
22. Explain the basic principle of centrifugation.
23. Name a technique for separating miscible liquids with close boiling points.
24. Explain the role of the fractionating column.
25. Which component can be removed from sand-ammonium chloride by sublimation?
26. Draw a sublimation setup and describe what collects on the cool surface.
27. A solution contains 18 g solute in 120 g solution. Find mass percentage.
28. Why is a separating funnel unsuitable for separating ethanol and water?
29. Can a transparent liquid be a mixture? Give an example.
30. Choose a separation method for coloured components in leaf extract and explain the principle.
31. Compare evaporation and distillation when both solute and solvent are valuable.
32. Do suspended particles generally settle on standing?
33. Compare suspension, colloid and true solution in a table.
34. Is separation of a mixture normally a chemical change?
35. Plan a method to obtain clean water from muddy salty water and explain each stage's limitation.

ANSWER KEY - Numerical / closed questions

1) Yes. 3) Liquid droplets in gas. 4) Colloid. 5) No. 7) 10%. 8) 30 g. 9) Filtration. 11) Evaporation/crystallisation. 13) Simple distillation. 15) Separating funnel. 17) Chromatography. 19) Yes. 21) Centrifugation. 23) Fractional distillation. 25) Ammonium chloride. 27) 15%. 29) Yes; salt solution. 30) Chromatography. 32) Yes. 34) No; normally physical.