



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

A. Very short answers - 1 mark each

1. In salt water, name the solute and solvent.
2. Define solution using this example.
3. Can water dissolve every substance?
4. Compare salt, sand and oil when mixed with water.
5. What is a saturated solution at a stated temperature?
6. Explain how an unsaturated solution differs.
7. A solution has 5 g salt and 95 g water. Find total mass.
8. Find mass percentage of salt.

B. Short answers / practice - 2 marks each

9. A 200 g solution contains 20 g sugar. Find mass percentage.
10. Find solvent mass.
11. Does stirring usually increase the rate of dissolving?
12. Does stirring necessarily change equilibrium solubility at fixed temperature?
13. What happens to many solids' solubility in water on heating?
14. Design a fair comparison of dissolving sugar in warm and cool water.
15. Is crushing a sugar lump likely to make it dissolve faster?
16. Explain this using exposed surface area.
17. Name the process for obtaining dissolved salt by removing water.
18. Explain how crystallisation produces crystals from solution.
19. Does a clear solution necessarily contain only water?
20. Suggest a method to detect a dissolved nonvolatile solid.

C. Application / reasoning - 3 marks each

21. A liquid dissolves 30 g solute per 100 g water at a given temperature. How much dissolves in 50 g water?
22. What happens if 20 g is added to that 50 g water at the same temperature?
23. Can a gas act as a solute in a liquid?
24. Give an example and explain bubbles escaping after opening it.
25. Is ordinary filtration suitable for separating dissolved sugar from water?
26. Compare filtration and evaporation for different mixtures.
27. Find mass percentage when 12 g salt is dissolved in 108 g water.
28. How much sugar is needed for 250 g of an 8% sugar solution?
29. Explain why solubility and speed of dissolving are different ideas.
30. A solution can dissolve 25 g solute per 100 g water at a fixed temperature. How much dissolves in 80 g water?
31. Can two clear colourless solutions contain different dissolved substances? Give examples.

D. Extended practice - 5 marks per pair

32. A 10% solution has total mass 150 g. Find solute mass.
33. How much water does it contain?
34. Mix 100 g of 10% salt solution with 100 g water. Find new mass percentage.
35. Design an experiment to prepare a saturated salt solution and recover crystals, including controls and observations.

ANSWER KEY - Numerical / closed questions

- 1) Salt; water. 3) No. 7) 100 g. 8) 5%. 9) 10%.
10) 180 g. 11) Yes. 12) No. 13) It often increases; not a universal rule. 15) Yes. 17) Evaporation. 19) No. 21) 15 g. 22) 15 g dissolves; 5 g remains. 23) Yes. 25) No. 27) 10%. 28) 20 g. 30) 20 g. 31) Yes; clear salt and sugar solutions. 32) 15 g. 33) 135 g. 34) 5%.