1. If 110 g of salt is present in 550 g of solution, calculate the concentration of solution in terms of mass by mass percentage of the solution.
2. Calculate the mass of glucose and mass of water required to make 250 g of 25% solution of glucose.
3. Identify the solutions among the following mixtures.

   (a) Soil (b) Air (c) Soda water

   (d) Sea water (e) Coal
4. Classify the following into homogeneous or heterogeneous mixtures : Soda water, Wood, Air, Soil, Vinegar, Filtered tea.
5. 2.5 g of a solute are dissolved in 25 g of water to form a saturated solution at 298 K. Find out the solubility of the solute at this temperature.
6. Paints often need to be stirred thoroughly before use. Why ?
7. Differentiate between saturated, unsaturated and supersaturated solutions.
8. How can a saturated solution be made unsaturated?
9. All mixtures are homogeneous. Comment upon this statement.
10. List the points of differences between homogeneous and heterogeneous mixtures.
11. To make a saturated solution, 36 g of sodium chloride is dissolved in 100 g of water at 293 K. Calculate the concentration of solution in terms of mass by mass percentage of the solution.
12. Give the properties of a suspension.
13. Give the properties of a colloidal solution.
14. Write the steps you would use for making tea. Use the words – solution, solvent, solute, dissolve, soluble, insoluble, filtrate and residue.
15. How are sol, solution and suspension different from each other?
16. Explain the following giving examples:

    (a) Saturated solution (b) Pure substance

    (c) Colloid (d) Suspension
17. Pragya tested the solubility of three different substances at different temperatures and collected the data as given below (results are given in the following table, as grams of substance dissolved in 100 grams of water to form a saturated solution).

Substance Dissolved	Temperature in K				
	283	293	313	333	353
Potassium nitrate	21	32	62	106	167
Sodium chloride	36	36	36	37	37
Potassium chloride	35	35	40	46	54
Ammonium chloride	24	37	41	55	66

    (a) What mass of potassium nitrate would be needed to produce a saturated solution of potassium nitrate in 50 grams of water at 313 K?

    (b) Pragya makes a saturated solution of potassium chloride in water at 353 K and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain.

(c) Find the solubility of each salt at 293 K. Which salt has the highest solubility at this temperature?

(d) What is the effect of change of temperature on the solubility of a salt?

18. Differentiate between aqua dag and oil dag.

19. Which of the following will show “Tyndall effect”?

(a) Salt solution (b) Milk

(c) Copper sulphate solution (d) Starch solution

20. Which will boil at a higher temperature; tap water or sea water?

21. Which gas forms the liquid first as the air is cooled ?

22. How will you confirm that a colourless liquid given to you is pure water ?

23. Giving a labelled diagram, explain the method to separate a mixture of two immiscible liquids- Kerosene oil and water.

24. How will you separate a mixture of common salt and ammonium chloride?

25. How would you separate the components of a mixture containing ammonium chloride, sand and iron fillings ?

26. What type of mixtures are separated by the technique of crystallization ?

27. Name the technique to separate

(i) butter from curd,

(ii) salt from sea-water,

(iii) Camphor from common salt.

28. Identify solute and solvent in the following solution :

aerated drinks, tincture of iodine, lemon water.

29. How will you separate dyes in black ink using chromatography?

30. Which separation techniques will you apply for the separation of the following?

(a) Sodium chloride from its solution in water.

(b) Ammonium chloride from a mixture containing sodium chloride and ammonium chloride.

(c) Small pieces of metal in the engine oil of a car.

(d) Different pigments from an extract of flower petals.

(e) Butter from curd

(f) Oil from water

(g) Tea leaves from tea

(h) Iron pins from sand

(i) Wheat grains from husk

(j) Fine mud particles suspended in water.

31. How will you separate a mixture containing kerosene and petrol (difference in their boiling points is more than 25^0C), which are miscible with each other ?

32. Is the sodium chloride a pure substance? If so, why?

33. Classify the following into elements and compounds?

(i) He (ii) H_2O (iii) Co (iv) CO

34. Give an example of a solution in which solid is a solute as well as the solvent.

35. What is meant by a pure substance?

36. Can physical and chemical changes occur simultaneously? Comment.

37. Which of the following material falls in the category of a “pure substance”?

(a) Ice (b) Milk (c) Iron (d) Hydrochloric acid

(e) Calcium oxide (f) Mercury (g) Brick (h) Wood

(i) Air

38. Classify the following as chemical or physical changes:

(a) cutting of trees,

(b) melting of butter in a pan,

(c) rusting of almirah,

(d) boiling of water to form steam,

(e) passing of electric current, through water and the water breaking down into hydrogen and oxygen gases,

(f) dissolving common salt in water;

(g) making a fruit salad with raw fruits, and

(h) burning of paper and wood.

39. Explain the term element with examples.

40. Define the terms compound and mixture giving examples of each.

41. Air is a chemical compound or a mixture? Support your answer by suitable facts.

42. Differentiate between an element and a compound.

43. What gas is produced when a mixture of 7 g iron filings and 4 g of sulphur powder is treated with dilute sulphuric acid at room temperature ? What gas would be produced, if the same mixture is first heated strongly, cooled and then treated with dilute sulphuric acid ? What is the cause of this difference in behaviour ?

44. Water containing 88.88% oxygen and 11.11% hydrogen is often used as fire extinguisher. Can a mixture containing the same two gases in the same ratio by mass be used for extinguishing fire ?

45. Explain why water is a compound and not a mixture?