



QUESTIONS FROM NCERT TEXTBOOK

Question 1. 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.

Answer:

- (a) Evaporation
- (b) Sublimation
- (c) Filtration
- (d) Chromatography
- (e) Centrifugation
- (f) Separating funnel
- (g) Filtration
- (h) Magnetic separation
- (i) Winnowing/ sedimentation
- (j) Decantation and filtration

Question 2. Write the steps you would use for making tea. Use the words, solution, solvent, solute, dissolve, soluble, insoluble, filtrate and residue.

Answer:

1. Take a cup of water in a container as solvent and heat it.
2. Add sugar in it which is solute. Heat it till all sugar dissolves.
3. You get a solution of water and sugar.
4. Sugar is soluble in water completely.
5. Add half a tea-spoon of tea-leaves, it is insoluble in water.
6. Boil the content, add milk which is also soluble in water, boil again.
7. Filter the tea with the help of strainer, the tea collected in cup is filtrate and the tea leaves collected on the strainer is residue.

Question 3. 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 and Solubility				
	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?

Answer:

- (a) Mass of KNO_3 to produce a saturated solution of KNO_3 in 100 grams of water at 313 K = 62 g

\therefore Mass of KNO_3 in 50 grams of water at 313 K

$$= \frac{62.0 \times 50}{100} = 31.0 \text{ g}$$

- (b) Crystals of potassium chloride will be obtained on cooling the saturated solution.
- (c) Solubility of each salt at 293 K is
- (i) Potassium nitrate \rightarrow 32 g
 - (ii) Sodium chloride \rightarrow 36 g
 - (iii) Potassium chloride \rightarrow 35 g
 - (iv) Ammonium chloride \rightarrow 37 g
- (d) On increasing the temperature, solubility of a salt increases.

Question 4. Explain the following giving examples:

- (a) Saturated solution
- (b) Pure substance
- (c) Colloid
- (d) Suspension

Answer:

- (a) Saturated solution: In a given solvent when no more solute can dissolve further at a given temperature is called saturated solution.
- (b) Pure substance: A pure substance consists of a single type of particles. E.g., gold, silver.
- (c) Colloid: A colloid is a solution in which the size of solute particles are bigger than that of true solution. These particles cannot be seen with our naked eyes, they are stable, e.g., ink, blood.
- (d) Suspension: It is a heterogeneous mixture in which the solute particles are big enough to settle down, e.g., chalk-water, paints, etc.

Question 5. Classify each of the following as a homogeneous or heterogeneous mixture: soda water, wood, air, soil, vinegar, filtered tea.

Answer: Homogeneous: Soda water, vinegar, filtered tea.

Heterogeneous: Wood, air, soil.

Question 6. How would you confirm that a colourless liquid given to you is pure water?

Answer: By finding the boiling point of a given colourless liquid. If the liquid boils at 100°C at atmospheric pressure, then it is pure water. This is because pure substances have fixed melting and boiling point.

Question 7. Which of the following materials fall in the category of a "pure substance"?

- (a) Ice
- (b) Milk
- (c) Iron

- (d) Hydrochloric acid
- (e) Calcium oxide
- (f) Mercury
- (g) Back (h) Wood
- (i) Air.

Answer: Pure substances are: Ice, iron, hydrochloric acid, calcium oxide and mercury.

Question 8. Identify the solutions among the following mixtures.

- (a) Soil
- (b) Sea water
- (c) Air
- (d) Coal
- (e) Soda water.

Answer: Solutions are: Sea water soda water and air.

Question 9. Which of the following will show “Tyndall effect”?

- (a) Salt solution
- (b) Milk
- (c) Copper sulphate solution
- (d) Starch solution.

Answer: Milk and starch solution.

Question 10. Classify the following into elements, compounds and mixtures.

- (a) Sodium
- (b) Soil
- (c) Sugar solution
- (d) Silver
- (e) Calcium carbonate
- (f) Tin
- (g) Silicon
- (h) Coal
- (i) Air
- (j) Soap
- (k) Methane
- (l) Carbon dioxide
- (m) Blood

Answer:

Elements - Compounds - Mixtures

Sodium - Calcium carbonate - Sugar solution

Silver - Methane - Soil

Tin - Carbon dioxide - Coal

Silicon - Soap - Air ,Blood

Question 11. Which of the following are chemical changes?

- (a) Growth of a plant
- (b) Rusting of iron
- (c) Mixing of iron filings and sand
- (d) Cooking of food
- (e) Digestion of food
- (f) Freezing of water
- (g) Burning of a candle.

Answer: Chemical changes are:

- (a) Growth of a plant
- (b) Rusting of iron
- (c) Cooking of food
- (d) Digestion of food
- (e) Burning of a candle

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