

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

Ans 2. Water is the solvent. Sugar, tea leaves, milk are solutes. Sugar being soluble dissolves in water and tea leaves is insoluble and remains suspended. All this make solution. Once tea is prepared the filtrate is poured in the cup and the remaining tea leaves are residue.

Substance Dissolved	Temperature in K				
	283	293	313	333	353
	Solubility				
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 gms of water at 313K?

Ans a. Mass of $\text{KNO}_3 = 62\text{gms}/100\text{ gms of water} \times 50\text{ gms of water} = 31\text{ gms}$

- b. Potassium nitrate is fully saturated at 353 K. When the temperature of solution decreases the solution of potassium chloride decreases and it crystallizes.
 - c. From the data given above Ammonium Chloride has the highest solubility
 - d. As the temperature increases the solubility increases except for sodium chloride whose solubility remains constant with increase of temperature.
3. Explain the following:
 - a. Saturated solution: Solution that has dissolved as much solute as it is capable of dissolving it is said to be saturated solution.
 - b. Pure Substances have constant composition, has fixed melting and boiling point & consistent physical and chemical properties.
 - c. Colloid: It is a heterogeneous mixture, the size of particle cannot be seen by naked eyes, they scatter the beam of light which passes through them. They are separated by special technique known as centrifugation.
 4. Soda water, air, vinegar, filtered tea –homogenous. Wood & water-Heterogeneous
 5. This can be confirmed by determining the boiling point of the liquid as water boils at 100°C
 6. Ice(pure compound), Iron(pure element), Hydrochloric acid(pure compound), Calcium oxide(pure compound), mercury(pure element)
 7. Sea water, air, soda water
 8. Milk

9. Sodium, silver, tin, silicon-elements. calcium carbonate, methane, carbon dioxide, soap, soil, sugar, coal, air, blood-mixture
10. Growth of plant, rusting of iron, cooking of food, digestion of food, burning of candle.

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