

QB365 Question Bank Software Study Materials

Solutions Important 2 Marks Questions With Answers (Book Back and Creative)

10th Standard

Science

Total Marks : 60

2 Marks

30 x 2 = 60

1) Define the term: Solution.

Answer : (i) A solution is a homogeneous mixture of two or more substances.

E.g: Sea water.

(ii) In a solution, the component present in lesser amount by weight is called a solute.

(iii) The component present in a larger amount by weight is called a solvent.

(iv) Solute + Solvent → Solution

2) What is meant by binary solution?

Answer : (i) A solution must at least be consisting of two components (a solute and a solvent).

(ii) Such solution which are made of one solute and one solvent (two components) are called binary solution.

(iii) E.g: On addition copper sulphate crystals to water.

3) Give an example each

i) gas in liquid

ii) solid in liquid

iii) solid in solid

iv) gas in gas

Answer : i) Gas in liquid - CO₂ dissolved in water (Soda water)

ii) Solid in liquid - NaCl dissolved in water

iii) Solid in solid - Copper dissolved in gold (Alloys)

iv) Gas in gas - Mixture of Helium-oxygen gases

4) What is aqueous and non-aqueous solution? Give an example.

Answer : (i) **Aqueous solution:**

a) The solution in which water acts as a solvent is called aqueous solution.

b) Example: common salt in water, Copper Sulphate in water.

(ii) **Non - Aqueous solution:**

a) The solution in which any liquid, other than water, acts as a solvent is called non-aqueous solution.

b) Example: Sulphur dissolved in carbon disulphide, Iodine dissolved in carbon tetrachloride

5) Define Volume percentage

Answer : (i) Volume percentage is defined as the percentage by volume of solute (in ml) present in the given volume of the solution.

(ii) Volume Percentage = $\frac{\text{Volume of the solute}}{\text{Volume of the solution} + \text{Volume of the solvent}} \times 100$

6) The aquatic animals live more in cold region Why?

Answer : (i) Aquatic animals live more in cold regions.

(ii) More amount of dissolved oxygen is present in the water of cold regions.

(iii) This shows that the solubility of oxygen in water is more at low pressure.

7) Define Hydrated salt.

Answer : (i) Ionic substances crystallize out from their saturated aqueous solution with a definite number of molecules of water.

(ii) The number of water molecules found in the crystalline substance is called water of crystallization.

(iii) Such salts are called hydrated salts.

(iv) E.g, Blue vitriol - $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

8) A hot saturated solution of copper sulphate forms crystals as it cools. Why?

Answer : (i) The number of water molecule in blue vitriol is five.

(ii) The hot saturated solution of copper sulphate has no water molecule.

(iii) When cooled the hot saturated solutions gain five molecules of water and it will turn to crystal.

9) Classify the following substances into deliquescent, hygroscopic. Conc. Sulphuric acid, Copper sulphate pentahydrate, Silica gel, Calcium chloride, and Gypsum salt.

Answer :

DELIQUESCENT	HYGROSCOPIC
Copper sulphate pentahydrate, Calcium chloride, Gypsumsalt.	Conc. Sulphuric acid, Silica gel.

10) Define a solute and a solvent.

Answer : In a solution, the component which is present in lesser amount (by weight), is called solute and the component, which is present in a larger amount (by weight) is called solvent.

11) Define dissolution.

Answer : The process of uniform distribution of solute into solvent is called dissolution.

12) Define mass percentage.

Answer : Mass percentage of a solution is defined as the percentage by mass of the solute contained in the solution.

$$\text{Mass percentage} = \frac{\text{Mass of the solute}}{\text{Mass of the solvent}} \times 100$$

13) Find the concentration of solution in terms of weight percent if 20g of sugar is dissolved in 40g of water

Answer : Concentration of a solution

$$= \frac{\text{Amount of the solute}}{\text{solvent}} \times 100$$

$$= \frac{20}{40} \times 100$$

$$= 50$$

14) 5 g of copper sulphate are dissolved in 100 g of water to form a saturated solution at 298K. Find out the solubility of the solute at the temperature.

Answer : Solubility = $\frac{\text{Mass of the solute}}{\text{Mass of the solvent}} \times 100$

$$= \frac{5}{100} \times 100$$

$$= 5 \text{ g}$$

15) Calculate the percent by mass of glucose in a solution made by dissolving 500 g of glucose in 50 g of water.

Answer : Mass percentage = $\frac{\text{Mass of the solute}}{\text{Mass of the solute} + \text{Mass of the solvent}} \times 100$

$$= \frac{500}{500+50} \times 100$$

$$= \frac{500}{550} \times 100$$

$$= 90.90\%$$

16) What is water of crystallization?

Answer : The number of water molecules found in the crystalline substance is called water of crystallization

17) Define hygroscopic substance.

Answer : Some substances when exposed to the atmospheric air at ordinary temperature, absorb moisture without changing their physical state. Such substances are called hygroscopic substances.

18) What are the different kind of solution present in our body?

Answer : i) Blood.

ii) Lymph.

iii) Urine.

19) Define Super saturated solution.

Answer : Super saturated solution is one that contains more solute than the saturated solution at a given temperature. eg: 40 g of Sodium chloride in 100 g of water.

20) Define concentration of the solution.

Answer : Concentration of two solutions with respect to their solutes present in the given amount of the solvent.

21) Define Henry's law

Answer : The solubility of a gas in a liquid is directly proportional to the pressure of the gas over the solution at a definite temperature.

22) Write the examples hygroscopic substances

Answer : i) Conc. H_2SO_4 (Sulphuric Acid).

ii) Phosphorous pentoxide (P_2O_5).

iii) Quick lime (CaO).

iv) Silica gel (SiO_2).

v) Anhydrous calcium chloride (CaCl_2).

23) What are called deliquescent substances

Answer : Certain substances which as so hygroscopic, when exposed to the atmospheric air at ordinary temperature, absorb enough water to get completely dissolved. Such substances are called deliquescent substances.

24) Air is the naturally existing solution. Why?

Answer : (i) Air is a mixture of gases like nitrogen, oxygen, carbon dioxide, and other gases.

(ii) So, it is called as naturally existing solution.

25) Define Ternary solution.

Answer : (i) This Kind of solution which contain three components.

(ii) This solution is known as ternary solution.

(iii) Ex: Salt, sugar are dissolved with water in a beaker.

26) Give the factors affecting the solubility.

Answer : Three main factors which affect the solubility are:

(i) Nature of the solute and solvent

(ii) Temperature

(iii) Pressure

27) Why does it bubble when water is boiled?

Answer : (i) Water contain dissolved oxygen.

(ii) When water is boiled the solubility of oxygen in water decreases.

(iii) So oxygen escape in the form of bubbles.

28) Define mass of percentage.

Answer : Mass percentage of a solution is defined as the percentage by mass of the solute present the a solution. When solute is solid and solvent is liquid.

$$\text{Mass percentage} = \frac{\text{mass of solute}}{\text{mass of solute} + \text{mass of solvent}} \times 100$$

29) Write Henry's law.

Answer : i) The effect of pressure on the solubility of a gas in liquid is given by Henry's Law.

ii) Henry's law states that the solubility of a gas in a liquid is directly proportional to the pressure of the gas over the solution at a definite temperature.

30) A solution is prepared by dissolving 25 g sugar in 100 g of water. Calculate the mass percentage of solute.

Answer : Mass of the solute = 25 g

Mass of the solvent = 100 g

Mass Percentage = Mass of the solute / Mass of the solution \times 100

Mass Percentage = Mass of the solute / Mass of the solute + Mass of the solvent \times 100

= 25 / 25 + 100 \times 100

= 25 / 125 \times 100

= 20%