

# Viva Questions with Answers on Purification of Chemical Substances by Crystallisation

## 1. Define the term 'crystallisation'.

**Ans.** The substances when present in well-defined geometrical shapes are called crystals. These are formed when a hot saturated solution of the salt is allowed to cool slowly and undisturbed. This process is termed as crystallisation.

## 2. What is solubility ?

**Ans.** It is the amount of the solute which when dissolved in 100 gms of the solvent provides a saturated solution.

## 3. Why is crystallisation done ?

**Ans.** Crystallisation enables to prepare a substance in state of highest purity.

## 4. What is filtration ?

**Ans.** It is a process of separating insoluble substances by passing the solution through a filter paper.

## 5. What is Kipp's waste ?

**Ans.** It is a mixture left behind after production of  $H_2S$  gas by reaction between  $FeS$  and dilute  $H_2SO_4$ . It mainly contains  $FeSO_4$  and unreacted dilute  $H_2SO_4$ .

## 6. What is meant by the term, 'water of crystallisation' ?

**Ans.** Water of crystallisation is the definite number of water molecules that is present in loose combination with one formula unit of the compound.

## 7. Explain the term—saturated solution.

**Ans.** A solution in which no more of solute can be dissolved at a particular temperature is known as saturated solution.

**8. Why is solution not heated to dryness to get crystals ?**

**Ans.** Heating the solution to dryness will not remove soluble impurities and crystals of very poor quality are obtained.

**9. What is characteristic of crystals ?**

**Ans.** Crystals have well defined geometry and shape.

**10. Why is the hot saturated solution not cooled suddenly ?**

**Ans.** By allowing saturated solution to cool slowly, crystals grow in size. It helps in their better separation as units rather than giving a massy substance of no proper geometry.

**11. What is the term 'seeding' ?**

**Ans.** Sometimes on cooling the saturated solution, crystallisation does not occur. A crystal of same substance is placed in the saturated solution which causes seeding. It helps in quick separation of crystals from saturated solution.

**12. What is green vitriol ?**

**Ans.** It is hydrated ferrous sulphate  $FeSO_4 \cdot 7H_2O$ .

**13. What is mother liquor ?**

**Ans.** The liquid left behind after the separation of crystals from a saturated solution is known as mother liquor.

**14. Name the different steps involved in the process of crystallisation ?**

**Ans.** The various steps are :

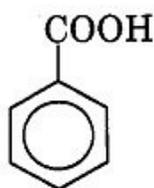
- (i) Preparation of the solution. (ii) Filtration of the solution.
- (iii) Concentration of the solution. (iv) Cooling of the solution slowly.
- (v) Separation and drying of the crystals.

**15. What are the formulae of blue vitriol, potash alum and green vitriol crystals ?**

**Ans.** The formulae are  $(CuSO_4 \cdot 5H_2O)$ ,  $(K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O)$ ,  $FeSO_4 \cdot 7H_2O$ .

**16. What is the formula of benzoic acid ?**

**Ans.**



**17. What happens when the following crystals are heated separately ?**

**(i) Blue vitriol (ii) Potash alum (iii) Benzoic acid**

**Ans.** (i) It changes into white powder due to loss of water of crystallisation.

(ii) It changes into fluffy white mass.

(iii) It undergoes sublimation.