

# Vidyaa Vikas College of Engineering and Technology, Tiruchengode

## Department of Chemistry

### VIVA QUESTIONS - PRACTICALS

#### 1. DETERMINATION OF HARDNESS OF WATER

1. What is temporary hardness?

Hardness of water due to presence of carbonates and bicarbonates of Calcium and magnesium is called temporary hardness.

2. What is permanent hardness?

Hardness of water due to presence of chlorides and sulphates of calcium and magnesium is called permanent hardness.

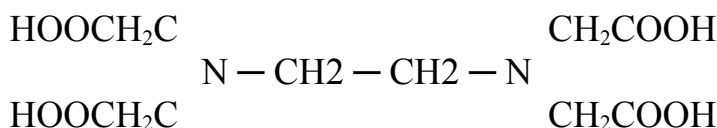
3. What is the other name for temporary and permanent hardness?

Carbonate and non – carbonate hardness.

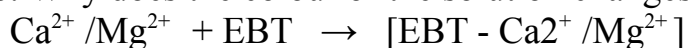
4. What is the unit of hardness?

Ppm and mg/l

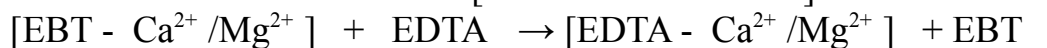
5. Give the structure of EDTA



6. Why does the colour of the solution changes from wine red to blue?



In water [less stable – wine red]



[Less stable – wine red] more stable - colourless blue

Colour

7. What is the role of buffer solution?

To maintain pH 9 – 10.

8. What is the name of the buffer used in EDTA titration?

Ammonium chloride - Ammonium hydroxide.

9. Why hardness is expressed in equivalents of calcium carbonate?

Calcium carbonate is most insoluble salt and its molecular weight and equivalent weights are 100 and 50 respectively.

10. What is hard water and soft water?

Water which readily lathers with soap is called soft water and which does not produce lather is known as hard water.

## 2. DETERMINATION OF ALKALINITY OF WATER SAMPLE

1. Why is water alkaline?

It is due to the presence of hydroxide, carbonate and bicarbonate ions.

2. What is the colour of phenolphthalein in acid and alkaline medium?

Colourless in acid and pink in alkaline.

3. What are the ions determined by phenolphthalein?

Hydroxide ion and half of carbonate ion.

4. What is the role of methyl orange indicator in determining alkalinity?

Total alkalinity is determined by using methyl orange.

5. How hydroxyl ions are neutralized?



6. Can  $\text{OH}^-$ ,  $\text{CO}_3^{2-}$  &  $\text{HCO}_3^-$  can exist together?

No, because  $\text{OH}^-$  &  $\text{HCO}_3^-$  combine together to form carbonate ions.

## 3. ESTIMATION OF CHLORIDE IONS

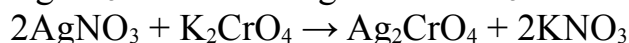
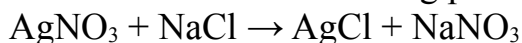
1. What type of titration is chloride ion estimation?

Precipitation titration

2. What are the sources of chloride in water sample?

$\text{NaCl}$ ,  $\text{MgCl}_2$  and  $\text{CaCl}_2$

3. What are the reactions taking place in the estimation?



4. What is the product formed in this estimation?

Silver Chromate – reddish brown precipitate.

5. What is the industrial importance of chloride ion estimation?

Presence of chloride leads to boiler corrosion.

## 4. DETERMINATION OF DISSOLVED OXYGEN

1. What method is used to determine dissolved oxygen?

Iodometric method.

2. What is Winkler's reagent?

Manganese sulphate, alkali iodide and concentrated sulphuric acid.

3. What is the amount of dissolved oxygen present in pure water?  
7 - 9 mg/litre.
4. What is the importance of dissolved oxygen?  
It is the fundamental requirement for survival of all aquatic living organisms.
5. Why estimation of dissolved oxygen is of great significance?  
Decrease in dissolved oxygen in water leads to decay and death of aquatics and causes foul odour.
6. What is the role of KI used in estimation?  
KI liberates iodine. Amount of iodine liberated is equal to dissolved oxygen present.
7. Complete the reaction  
 $\text{MnSO}_4 + \text{OH} \rightarrow \text{Mn(OH)}_2$  – white precipitate.
8. What is Winkler's method?  
Estimating dissolved oxygen using manganese sulphate, alkali iodide and concentrated sulphuric acid.

#### 4. DETERMINATION OF VISCOSITY

1. What is viscosity?  
The rate of flow of liquid with respect to time.
2. What is Mark Hownik equation?  
 $\eta_i = KM^a$
3. What is relation between intrinsic viscosity and molecular weight?  
 $\eta_i = KM^a$
4. What is degree of polymerization?  
 $M/m = \text{Molecular weight of polymer} / \text{molecular weight of monomer}$
5. What is the formula to calculate molecular weight?  
 $M = \text{Degree of polymerization} * \text{molecular weight of monomer}$
6. What is structure of Polyvinyl alcohol?  

$$\begin{array}{c}
 \text{— [CH}_2\text{— CH] —} \\
 | \\
 \text{OH}
 \end{array}$$
7. How will you compare the viscosities of two polymers?  
By comparing flow time of both polymers.
9. What is monomer of polyethylene?  
 $\text{CH}_2 = \text{CH}_2$
10. What is functionality?  
Number of reactive sites present in polymer.