

Univ. Roll No:.....

**II - Mid Term Examination 2015-16**  
**B.Tech First Year – 1<sup>st</sup> Sem.**

Subject: Engg. Chemistry  
Time: 90 Min

Paper Code: AHC-1001  
Max. Marks: 20

Section - A

Note: Attempt All Five Questions

1×5 = 5 Marks

- Ques.1. Define - Degree of freedom.  
Ques.2. Calculate pH of a solution containing  $4 \times 10^{-2}$  gm. NaOH in 100 ml solution.  
Ques.3. Write monomers of Terylene.  
Ques.4. Give two examples of solid lubricant.  
Ques.5. Define potable water.

Section B

Note: Attempt Any Three Question

2×3= 6 Marks

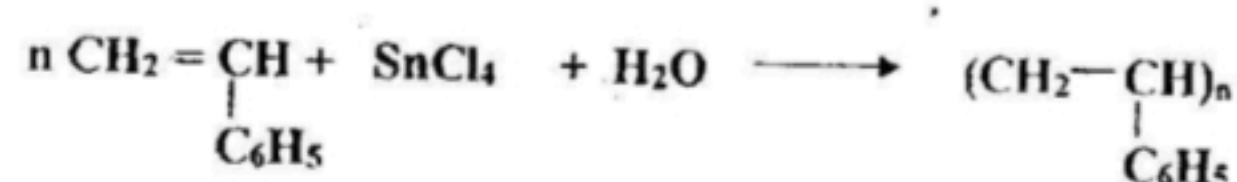
- Ques.1. Explain "Steam Emulsion Number" and "Aniline Point" of a lubricating oil.  
Ques.2. Define hardness of water. How temporary hardness of water can be removed?  
Ques.3. Derive Henderson equation for acidic buffer.  
Ques.4. Differentiate thermosetting and thermoplastic polymers.

Section C

Note: Attempt Any Three Question

3×3= 9 Marks

- Ques.1. Draw a neat labeled phase diagram of water system and explain the areas and curve on it.  
Ques.2. Write stepwise mechanism of given polymerization process.



- Ques.3. Calculate the amount of lime (74% pure) and soda (90% pure) required for the treatment of 5,000 litres of water whose analysis is as follows:  
 $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ ppm}$ ,  $\text{Mg}(\text{HCO}_3)_2 = 36.5 \text{ ppm}$ ,  $\text{CaCl}_2 = 27.75 \text{ ppm}$ ,  
 $\text{HCl} = 3.65 \text{ ppm}$ ,  $\text{H}_2\text{S} = 3.4 \text{ ppm}$  and  $\text{CaSO}_4 = 34 \text{ ppm}$ .  
Ques.4. Discuss the Reverse Osmosis or Zeolite process for the treatment of hard water.