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AOI1314

## Engineering Chemistry - I (Old) (1020)

P. Pages : 2

Time : Two Hours

Max. Marks : 50

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** from each unit.
5. Figures to right indicate full marks.
6. Assume suitable data if necessary.

### UNIT - I

1. Solve **any two** from the following. 10
- a) Define hybridization ? Explain SP hybridization with the help of acetylene molecule.
  - b) Explain co - ordinate bonding with the help of any one example ?
  - c) Explain inner and outer orbital complex with suitable example ?

### UNIT - II

2. Solve **any two** from the following. 10
- d) Define hard water ? How it becomes hard ? What is the action of hard water on Soap ?
  - e) Give the different chemical reactions in Lime - Soda process. deduce the equation of lime and soda required for softening of hard water ?
  - f) Explain gravity sand bed filter.

**UNIT - III**

3. Solve **any two** from the following. 10
- g) What is lubricant ? Explain type of lubricants with suitable example.
  - h) Explain the following types of lubrication mechanism.
    - i) Hydrodynamic lubrication
    - ii) Boundary lubrication
  - i) Explain following properties of lubricant.
    - i) Neutralization number
    - ii) Cloud point.

**UNIT - IV**

4. Solve **any two** from the following. 10
- j) State and derive the equation for Faradays law of electrolysis.
  - k) Write a note on single electrode potential.
  - l) Calculate the quantity of electricity required to deposit 216 gm of silver from silver nitrate. (At.Wt=108)

**UNIT - I & IV**

5. Solve **any one** of the following (X or Y). 10
- x)
    - i) Define buffer. Explain the mechanism of basic buffer.
    - ii) Define metallic bond. Explain the nature of electrical conductivity of high temperature and normal temperature.
  - y)
    - i) Explain the biological role cobalt complex.
    - ii) Explain the concept of pH.

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