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SE-6015

B. E. I. (Sem. I & II) Examination

April / May – 2011

Engineering Chemistry

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 1. (Sem - 1 & 2)**

Name of the Subject :

☛ **Engineering Chemistry**

☛ Subject Code No. : **6 0 1 5** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Give reactions and neat diagrams wherever necessary.

(3) Questions 1 and 4 are compulsory and carries 20 marks each.

(4) Question 2, 3 and 5, 6 are of 15 marks each.

1 (a) Fill in the blanks : **10**

(1) Hardness of water can be removed with the help of _____ .

(2) _____ lime soda process is better to remove hardness of water.

(3) Corrosion of any metal is dependent upon its _____.

(4) To provide hardness to the rubber _____ can be carried out.

(5) Sterilization of water is normally done with the help of _____ .

(6) Puzzolona cement is made up from _____ and _____ .

(7) The corrosion can be decreased by applying _____ on the metal.

(8) As the temperature increases, the solubility of $CaSO_4$ _____ .

(9) _____ is an example of the volatile oxidation product of a metal.

(b) Explain Hot lime soda process in detail. **5**

(c) Explain pilling-bedworth rule of corrosion in detail. **5**

2 Answer any **three** : **15**

(1) Describe the structure of Ca-EDTA complex and write the equations showing the color changes in course of reaction of hardness analysis.

(2) Explain Portland cement in detail with its formation.

(3) Explain the heat of hydration in cement.

(4) Detail the methods of treatment of Boiler feed water and explain Zeolite method in detail.

(5) Explain different types of Organic coatings.

3 Answer any **three** : **15**

(1) Detail the ISI specification of cement.

(2) Explain Galvanising.

(3) Explain the mechanism of electrochemical corrosion with the help of an example.

(4) What is RCC ? Which one is stronger PCC or RCC; explain individual of same.

(5) Explain briefly the reverse osmosis method of desalination.

4 (a) Fill in the blanks : **10**

(1) Full from of COD is _____ .

(2) Polymerization of any monomer is done by _____ and _____ polymerization method.

(3) The trade name of PTEE (polytetrafluoro - ethylene) is _____ .

(4) _____ gas was released during Bhopal gas tragedy.

(5) Graphite is a _____ refractory.

(6) Diffusion current I_d in polarography is given by _____ equation.

(7) Pollution of air is generally due to _____ .

(8) In sea water the dissolution of _____ and _____ salt makes the water hard.

(b) Short answer questions. **10**

(1) Write the structure of Nylon-6,6

(2) Define Lambert-Beer's Law.

(3) Principle of Glass Electrode.

(4) Types of pollutants of air.

(5) Write the harmful effect of Acid rain.

5 Answer any **three** : **15**

(1) Define pollution and its causes.

(2) Write a note on composite materials.

(3) Explain sewage treatment by trickling filter method.

(4) Explain different types of Bio-polymers.

(5) Explain mechanism of polymer by cationic polymerisation.

6 Answer any **three** : **15**

(1) Define air pollution. Explain the use of cyclone collector.

(2) Give in detail the different types of Glasses.

(3) Explain conductometric titration in detail.

(4) Write the importance of Alloys.

(5) Write in brief about :

(1) Ni/Cd battery

(2) Pb/Acid battery