

Registration No. :

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Total number of printed pages – 2

B. Tech  
BSCC 1208

### Third Semester Examination – 2012-13

#### CHEMISTRY – II

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.

(At.Wt : Ca=40, Mg=24, Na=23, S=32, O=16, H=1, Cl=35.5, N=14, Cr=52, K= 39)

1. Answer the followings : 2×10
- (a) How is exhausted zeolite regenerated ?
  - (b) Hard water containing Magnesium Chloride requires both Lime and Soda for softening. Explain.
  - (c) Write names of two coagulants.
  - (d) What is the effect of pH on corrosion ?
  - (e) A piece of impure Zinc and pure Zinc are placed in a salt solution. Which will corrode faster and why ?
  - (f) What is meant by *cat cracker* ?
  - (g) What is the composition of Water gas and Producer gas ?
  - (h) What are the basic components of a battery ?
  - (i) Write two examples of conducting polymers.
  - (j) What are SPIONs ?
2. (a) Define the term Desalination. With neat diagram describe the desalination by electro dialysis process. 5

P.T.O.

- (b) A sample of hard water contains 30 gm of  $\text{CaCO}_3$  per liter. 40ml of this required 25 ml of EDTA solution, 100 ml of sample required 36ml of EDTA solution. The sample after boiling required 24 ml of EDTA solution. Calculate the temporary hardness of given sample in terms of ppm. 5
3. (a) Discuss various methods for controlling corrosion. 7
- (b) What is Pilling-Bedworth rule? What is its significance? 3
4. (a) What are the disadvantages of using TEL as an anti-knocking agent? 3
- (b) Calculate the gross and net calorific value of coal having the following composition : 4  
 $\text{C}=85\%$ ,  $\text{H}=8\%$ ,  $\text{S}=1\%$ ,  $\text{N}=2\%$ ,  $\text{ash}=4\%$ . Latent heat of steam is 587cal/g.
- (c) Why a good fuel must have low ash content? 3
5. (a) Write the cell reaction of Lead acid storage cell during charging and discharging. 4
- (b) Why alkaline batteries are named so? Give two examples? 3
- (c) Give two examples of reserve batteries with their basic components. 3
6. (a) Write the mechanism of free radical polymerization. 4
- (b) Write the preparation, properties and uses of PMMA, PTFE. 6
7. (a) Discuss the synthesis, properties and application of carbon nano-tube. 6
- (b) Give the applications of nano materials in medicine and catalysis. 4
8. (a) Discuss the limitations, advantages and disadvantages of zeolite process. 6
- (b) Define Octane and Cetane numbers. What is their significance? 4