

24005

B. Tech. 2nd Semester Examination, May-2011

ENGINEERING CHEMISTRY

Paper - CH-101-F

Time allowed : 3 hours]

[Maximum marks :100

*Note : Question No. 1 is compulsory. Attempt five questions in all, selecting at least **one** question from each section. All questions carry equal marks.*

1. (a) Define viscosity index. 2×10
- (b) Explain the terms degree of freedom and Eutetic temperature.
- (c) What is meant by heterogeneous catalysis?
- (d) State and explain cloud point.
- (e) What are ion exchangers? Give examples.
- (f) Differentiate between thermoplastic and thermoset.
- (g) Mention important applications of PF.
- (h) What do you understand by anodic protection?
- (i) Give characteristics of drinking water.
- (j) Describe biodegradable lubricants.

Section-A

2. (a) Discuss the applications of phase rule for ice-water-water vapours system. 1
- (b) What do you understand by reduced phase rule? Discuss Pb-Ag diagram in detail. 1
3. (a) Describe in detail the concepts of promoters, inhibitors and poisoners in catalysis. 1
- (b) Draw and explain the phase diagram of Zn-M alloy system. 1

Section-B

4. (a) 200 ml of water sample requires 25 ml of $N/10$ H_2SO_4 for neutralization to phenolphthalein endpoint and 35 ml for complete neutralization. Calculate the type and amount of alkalinity. 1
- (b) Write short notes on-
- (i) Boiler corrosion
- (ii) Mixed bed demineralization 5
5. (a) How is reverse osmosis and electrodialysis used for desalination of water?
- (b) Discuss caustic embrittlement and prevention.

Section-C

6. (a) Discuss the factors influencing the rate of corrosion. 10
- (b) Write a short note on saponification number and iodine number. 10
7. (a) Describe the mechanism of lubrication applicable to delicate instruments. 10
- (b) Define corrosion of metal. Explain the electrochemical theory of wet corrosion. 10

Section-D

8. (a) Discuss the principle and applications of DTA. 10
- (b) Give the application of PVC and PVA. 10
9. (a) Explain the effect of structure on the properties of polymers. 10
- (b) Write short notes on-
- (i) Flame photometry
- (ii) I.R. Spectroscopy 5×2