

24005

B. Tech. 1st Semeste (F-Scheme) Examination,

December-2011

ENGG. CHEMISTRY

Paper-CH-101-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : (i) Question No. 1 is compulsory.

(ii) Attempt *four* questions from remaining four sections selecting *one* question from each section.

(iii) Use of non programmable calculator is allowed.

1. (a) Define the system having incongruent melting.

(b) Define metastable equilibrium.

(c) Differentiate triple point and eutectic point.

(d) Define Break-point chlorination.

(e) Define demineralization of water.

(f) Describe stress cracking.

- (g) What do you understand by galvanization?
- (h) Describe saponification value of a lubricant.
- (i) Write uses of PVC.
- (j) What do you understand by Bathochromic shift.

Section-A

- 2. (a) Draw and explain the phase diagram of Zn-Mg system. 10
- (b) Explain the concepts of promoters inhibitors and poisoners. 10
- 3. (a) Draw and explain the phase diagram of H_2O - system. 10
- (b) Derive Michaelis-Menton equation for enzyme catalysis. 10

Section-B

- 4. (a) 100 ml of water sample requires 20ml N/50 H_2SO_4 during titration by using phenolphthalein

indicator and 26 ml of same acid by using methyl orange indicator. Calculate the alkalinity of each type in terms of Ca CO_3 equivalent. 10

- (b) What do you understand by demineralization of water ? Discuss in detail the ion exchange process for demineralization of hard water with help of neat, clean and labeled diagram. 10

5. (a) A zeolite softener was 70% exhausted by removing the hardness completely when the 100000 litres of hard water sample passed through it. The exhausted zeolite bed requires 145 litres of 25% Na Cl solution for its complete regeneration. Calculate the hardness of water. 10

- (b) Write short notes on : 5×2

(i) Caustic embrittlement

(ii) Boiler corrosion.

Section-C

6. (a) Write short notes on : 5×2

(i) Role of Proper Designing in corrosion control.

(ii) Role of sacrificial anode in corrosion control.

(b) Write short notes on : 5×2

(i) Soil corrosion

(ii) Microbial corrosion.

7. (a) Why additives are used in lubricants ? Give some examples of additives, which are commonly used in lubricants. 10

(b) Write short notes on : 5×2

(i) Flash and fire point.

(ii) Extreme pressure lubricant.

Section-D

8. (a) Discuss the principle and application of DGA. 10
- (b) Write short notes on : 5×2
- (i) Differentiate thermosetting and thermoplastics
- (ii) Buna-N
9. (a) Write the applications of U.V and I.R. spectroscopy. 10
- (b) Write short notes on : 5×2
- (i) Ziegler-Natta Catalyst
- (ii) Urea-formaldehyde resin