

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. *pt.*
- (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~~. *Corrosion*

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[P.T.O.]

- (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.

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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 ~~E~~GA. 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