

24005

B. Tech. 1st Semester F-Scheme Examination,

December-2014

ENGINEERING CHEMISTRY

Paper-CH-101-F

*Time allowed : 3 hours]*

*[Maximum marks : 100*

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*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 eutectic point.
- (b) What is reduced phase rule ?
- (c) What are enzymes ?
- (d) What is meant by desalination ?
- (e) Name the main sources of water.
- (f) Define corrosion.
- (g) What is the saponification number ?
- (h) State Pilling-Bedworth rule.
- (i) Define degree of polymerization.
- (j) State Lambert's Law. 2×10

**Section-A**

2. (a) Draw and explain the phase diagram of Zn-Mg system and label it properly. 10

- (b) Explain the following with suitable examples :
- (i) Cooling curves 5
  - (ii) Triple point. 5
3. Explain the mechanism of homogeneous and heterogeneous catalysis with examples. 20

### Section-B

4. (a) What do you understand by hardness of water ? How is it determined by EDTA method ? 10
- (b) What are boiler scales ? Discuss various methods for preventing them. 10
5. (a) What do you understand by demineralization of water ? Discuss the process of demineralization of hardwater in detail. 10
- (b) Describe briefly :
- (i) Electrodialysis 5
  - (ii) Coagulation. 5

### Section-C

6. What are the factors affecting corrosion ? How is it prevented ? Discuss in brief. 20

7. (a) Why additives are used in lubricants ? Give some examples of additives which are commonly used in lubricants. 10
- (b) Describe the following properties of Lubricants
- (i) Aniline point 5
- (ii) Flash and Fire point. 5

**Section-D**

8. Write short notes on :
- (a) Polymeric composites. 5
- (b) PVC 5
- (c) Bakelite. 5
- (d) Biodegradable polymers. 5
9. (a) Discuss the principle and technique of TGA. 10
- (b) Write the applications of UV and IR spectroscopy. 10