24005

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

December–2014

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 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

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(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

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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