

24005

B. Tech. 2nd Semester Examination, May-2013

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) What do you mean by the components of a system ? Explain with examples.
- (b) Give the concept of promoters in catalysis.
- (c) What do you understand by temporary and permanent hardness of water ?
- (d) Define reverse osmosis.
- (e) What is differential aeration corrosion ?
- (f) State cloud point.
- (g) Give important applications of PVA.
- (h) Define Lambert's Law.
- (i) What do you understand by biodegradable lubricants ?
- (j) Give the principle of TGA technique. 2×10

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Section-A

2. (a) Draw and explain the phase diagram of Pb-Ag system in detail. 10
- (b) Describe the concept of cooling curves. 10
3. (a) Explain with examples of following : 10
- (i) Homogenous catalysis
- (ii) Heterogeneous catalysis 5×2
- (b) State the phase rule and discuss its application to water system. 10

Section-B

4. (a) Differentiate between scale and sludge. How are they formed in boilers ? What are their disadvantages ? Write about the methods used for their prevention. 10
- (b) Write short notes on :
- (i) Caustic embrittlement
- (ii) Alkalinity of water. 5×2
5. (a) Describe in detail the demineralisation of water using the ion exchange resins. Give the reactions involved in this process. 10

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(b) Write short notes on :

(i) Break point chlorination

(ii) Electrodialysis. 5×2

Section-C

6. (a) Explain briefly the various methods used to prevent corrosion of metals. 10

(b) Write short notes on :

(i) Rusting of Iron

(ii) Soil Corrosion. 5×2

7. (a) What is a lubricant ? Give a brief account of different types of lubricants with examples. 10

(b) Write short notes on :

(i) Saponification number

(ii) Viscosity index. 5×2

Section-D

8. (a) What are thermosetting resins ? Give the preparation, properties and uses of PF and UF resins. 10

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- (b) What are polymers ? How are these classified on the basis of structure, synthesis and molecular forces. 10

9. (a) What is differential thermal analysis ? Discuss its principle, technique and important applications.

- (b) Write short notes on :

(i) Flame photometry

(ii) Ultraviolet spectroscopy.

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