

Roll No.

Total Pages : 03

BT-2/M-19
CHEMISTRY
CH-101E

32011

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Define Chemical Potential. How is it related with free energy ?
(b) Discuss the phase diagram of water.
(c) Derive an expression for Gibbs-Helmholtz equation. 6,6,8

2. Discuss the following :
 - (a) Second law of thermodynamics
 - (b) Work function
 - (c) Entropy change for an ideal gas
 - (d) Gibbs phase rule. 20

Unit II

3. (a) What do you understand by hardness of water ? How can it be determined ?
(b) What is Reverse Osmosis ? What is the main advantage of reverse osmosis over ion exchange process ? 10,10

4. Write short notes on the following :
 - (a) Electrodialysis
 - (b) Scale and Sludge formation in boilers. 20

Unit III

5. What is an electrochemical corrosion ? Explain its mechanism. 20

6. (a) Outline the various factors affecting corrosion.
(b) Write a short note on cathodic protection. 10,10

Unit IV

7. (a) Differentiate between polymers and macromolecules.
(b) What are thermoplastic and thermosetting polymers ? Give suitable examples.
(c) Discuss the conductometric titrations of :
 - (i) Strong acid against strong base
 - (ii) Weak acid against strong base. 4,6,10

8. (a) What do you understand by the term TGA ? How is it helpful in determining thermal stability of polymer composites ?
- (b) What are the applications of thermoplastic polymers ?
- (c) What are Redox Titrations ? 10,6,4

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