

Roll No.

Total Pages : 3

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BT-LD-16

8111

CHEMISTRY

Paper : CH-101-E

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt *five* questions in all. Select at least *one* question from each Unit. All questions carry equal marks.

UNIT-I

- Derive Clausius-Clapeyron equation.
 - Give physical significance of Gibb's free energy, free energy change and work function.
 - What do you understand by chemical potential?
(8+9+3)
- State and explain the terms: Phase, component, degree of freedom. Deduce thermodynamically the phase rule equation.
 - Define the term congruent melting point. Explain Zn-Mg system with a well labelled phase diagram. (12+8)

UNIT-II

- Discuss the composition and properties of sludge.
 - What do you understand by hardness of water? Discuss the methods of determination of hardness of water?
(10+10)

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4. (a) Discuss the types of impurities which can be removed by filtration.
- (b) What do you understand by water softening.
- (c) What is desalinization. (6+7+7)

UNIT-III

5. (a) Define and explain the following terms:
- (i) Viscosity index.
 - (ii) Pour point.
 - (iii) Sporification value.
 - (iv) Acid value.
- (b) Discuss the types of additives used in lubricants. (12+8)

6. Write notes on the following:
- (a) Galvanic cell.
 - (b) Pitting corrosion.
 - (c) Waterline corrosion. (7+7+6)

UNIT-IV

7. (a) Discuss the effect of structure on the properties of polymers.
- (b) Discuss the method of preparation, properties and technical applications of the following:
- (i) PVA.
 - (ii) UF. (6+14)

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8. (a) Discuss the types of curves obtained when a weak acid base is titrated with a strong base.
- (b) Discuss the principle behind flame photometry. Also list its important applications.
- (c) Discuss the principle and applications of TGA.

(6+7+7)

