

Roll No. ....

**1985**

**B.E 2nd Semester**

**Examination – May, 2012**

**CHEMISTRY**

**Paper : CH-101-E**

**Time : Three Hours ]**

**[ Maximum Marks :100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. (a) Derive Clausius Clapeyron equation for liquid-vapour equilibrium. What are its important applications ? 10  
(b) Derive an expression relating the changes in free energy and enthalpy of a closed thermodynamic system at constant pressure. 10
2. (a) Distinguish between congruent and incongruent melting point. Discuss Zn-Mg system in detail. 10  
(b) What is triple point ? Explain the triple point with respect to water system. 10
3. (a) What is meant by alkalinity of water sample ? How is it determined volumetrically ? Explain with the help of suitable reactions involved in it. 10

- (b) What are boiler scales ? Give reasons for their formation. How are they removed ? 10
4. (a) Write a short note on mixed bed demineralization. 10
- (b) Name various steps involved in treatment of water for domestic use. Explain break point chlorination. 10
5. (a) Define corrosion of metals. Explain the electrochemical theory of wet corrosion. 10
- (b) What do you mean by Galvanic corrosion ? What are factors which influence the galvanic corrosion ? How is it controlled ? 10
6. Explain the following :  $5 \times 4 = 20$
- (a) Biodegradable lubricants
- (b) Neutralization number
- (c) Cloud point and pour point
- (d) Flash point and fire point
7. (a) Discuss polymeric composites in detail. 10
- (b) Write an essay on the 'effect of structure on properties of polymers'. 10
8. (a) Discuss the principle, method and applications of DTA technique. 10
- (b) What are conductometric titrations ? Describe conductometric titration of a strong acid with a strong base. 10