

(i) Printed Pages: 3

Roll No.

(ii) Questions : 9

Sub. Code :

0	3	5	2
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Exam. Code :

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**B.A./B.Sc. (General) 4th Semester
(2054)**

CHEMISTRY

(Same for B.Sc. Microbial & Food Technology)

Paper : XV Physical Chemistry-B

Time Allowed : Three Hours]

[Maximum Marks : 22

Note :—Candidate is required to attempt **FIVE** questions in all including Q. No. 9 (which is compulsory) and attempt remaining **FOUR** questions by selecting **ONE** question from each Section.

SECTION—A

1. (a) Draw a well labelled diagram of sulphur system and discuss its salient features. 2
- (b) State Gibbs phase rule. Explain the terms involved in it. Discuss the derivation of phase rule from thermodynamic considerations. 2
2. (a) What is meant by upper critical solution temperature ? Illustrate phenol-water system. 2
- (b) Discuss the applications of Nernst distribution law. 2

SECTION—B

3. (a) Define the terms conductance, specific conductance and molar conductance. How are these related to each other ? 2
- (b) Explain Oswald's dilution law and its limitations. What are its applications ? 2
4. (a) Discuss the limitations of Arrhenius theory. How does Debye Huckel theory explain the anomalous behaviour of strong electrolytes ? 2
- (b) Explain the terms speed of ions, ionic mobility and transport number. How they are related to each other ? 2

SECTION—C

5. (a) What are reversible Electrodes ? Explain those giving examples. 2
- (b) Derive the Nernst equation for measuring the EMF of a cell. 2
6. (a) Define the terms activity and activity coefficient. 2
- (b) Describe how the hydrogen electrode is used for measuring pH of an aqueous solution ? 2

SECTION—D

7. (a) Give one example each of electrolyte concentration cell with and without transference and also write the cell reactions and expression for e.m.f. of these cells. 2
- (b) With the help of potentiometric method how will you determine the solubility of a sparingly soluble salt ? 2

8. (a) Explain how the discharge potential of an ion helps in deciding the deposition of a metal on the electrode from a solution containing a number of different ions. 2
- (b) Explain the terms electrolytic polarization and concentration polarization. 2

(Compulsory Question)

9. (a) What are freezing mixtures ? Give examples.
- (b) What is the cause of positive deviations from Raoult's law ? What are its consequences ?
- (c) What is the effect of temperature on distribution law ?
- (d) State Kohlrausch's law. Why is it called the law of independent migration of ions ?
- (e) What is liquid junction potential ?
- (f) What is EMF of a cell ? Why EMF of the cell drops to zero after some time ? $6 \times 1 = 6$