C. ABDUL HAKEEM COLLEGE (AUTONOMOUS),
MELVISHARAM - 632 509.
SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.Sc., CHEMISTRY **SEMESTER V**

U15MCH503 – PHYSICAL CHEMISTRY - I

Time: Three Hours Maximum: 75 Marks

SECTION - A (10 X 2 = 20 Marks)

Answer **ALL** Questions.

1. State Raoult's law.
2. What is azeotropic mixture?
3. Give any two examples for freezing mixtures.
4. State the number of phases in the following (a) solution of water and ethanol (b) A gaseous mixture of oxygen, hydrogen and carbon-di-oxide.
5. What is van't Hoff factor?
6. Define osmosis.
7. What is equivalent conductance?
8. State Kohlrausch's law.
9. What are buffer solutions.
10. Define hydrolysis.

SECTION - B (5 X 5 = 25 Marks)

Answer **ALL** Questions.

11. a) Define upper critical solution temperature. Explain this with a suitable example.

(Or)

b) Derive an expression for Gibbs-Duhem-Margules equation.

12. a) State Gibbs phase rule. Explain the terms involved in it using suitable examples.

(Or)

b) Draw and explain the phase diagram of Zn-Mg system.

13. a) Write thermodynamic derivation for depression in freezing point.

(Or)

b) Deduce an expression for van't Hoff reaction isochore.

14. a) How will you measure equivalent conductance of the given solution?

(Or)

b) Explain the variation of equivalent conductance and specific conductance on dilution.

15. a) Derive an expression for hydrolysis constant of salt of weak acid and weak base.

(Or)

b) Indicate how the degree of dissociation of weak electrolytes can be determined conductometrically.

SECTION - C (3 X10 = 30 Marks)

Answer **ANY THREE** Questions.

16. State Nernst Distribution law. Write thermodynamic derivation of it.
17. Draw and explain the phase diagram for sulphur system.

18. Derive thermodynamically the relationship between the molality and elevation of boiling point of dilute solution containing non-volatile solute in a volatile solvent.
19. Describe Hittorf's method for the determination of transference numbers of ions.
20. Sketch and explain the shapes of conductometric titration curves.

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