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

M.Sc., CHEMISTRY **SEMESTER I**

P14MCH103 – PHYSICAL CHEMISTRY - I

Time: Three Hours Maximum: 75 Marks

SECTION - A (5 X 6 = 30 Marks)

Answer **ALL** Questions.

1. a) Give any one method for the determination of activity coefficient of nonelectrolytes.

(Or)

b) Define the term fugacity. Explain the determination of fugacity by any one method.

2. a) Derive rate expression based on activated complex theory.

(Or)

b) Give a detailed account on potential energy surfaces.

3. a) Derive Michaelis-Menton equation.

(Or)

b) State and explain Bronsted catalysis law.

4. a) How will you determine the activity coefficient by employing electrochemical method?

(Or)

b) Write a detailed account on mean ionic activity.

5. a) Discuss the Direct product representation.

(Or)

b) Explain symmetry operations.

SECTION - B (3 X 15 = 45 Marks)

Answer **ANY THREE** Questions.

6. a) Define partial molar quantities. How is partial molar volume determined?
   b) How does chemical potential vary with temperature and pressure?
7. State Linear free energy relationship. Explain the importance of Hammett equation in studying reaction mechanism.
8. Explain the influence of pH and temperature on enzyme catalysed reactions.
9. a) Explain the activity coefficient of strong electrolytes.
   b) Discuss about mean ionic activity coefficient.
10. (a) Find out the vibrational modes in water molecule?
    (b) Construct the Character table for C_{3v} point group.

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