CHE 2504   **FUNDAMENTALS OF CHEMISTRY-II**   **Time: 3 Hours**
Max Marks: 75

Answer any FIVE Questions   **(5 X 15 = 75)**

1. a) Differentiate order and molecularity.

    b) How temperature affects the rate of the reaction ?

    c) Derive the expression for the rate constant of first order reaction.   [5+5+5]

2. a) Discuss Hess's law and its applications.

    b) How enthalpy of combustion is measured by using Bomb Calorimeter ?   [7+8]

3. a) Discuss Rotation-Vibration (IR) spectra of Diatomic molecule with example.

    b) Give the applications of NMR spectroscopy to Organic compounds.   [7+8]

4. a) What are meso compounds ? Are the meso compounds optically active

    or inactive ? Explain your answer through a suitable example.

    b) Comment on the physical and chemical properties of enantiomers and

    diastereomers.   [8+7]

5. a) Discuss about the Crystal field splitting in an octahedral crystal field.

    b) Define EAN rule. Which is expected to be more stable $[Cu(NH_3)_4]^{2+}$ or $[Cu(CN)_4]^{3-}$

    on the basis of EAN rule.   [7+8]

6. a) Define pH. Derive Henderson equation.

    b) What are buffer solutions ? Explain buffer action with suitable example. [7+8]

7. a) Explain about Michaelis Menten hypothesis and its applications.

    b) Discuss acids and bases on the basis of Lowry Bronsted Theory.   [7+8]

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