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101/201

Paper Code: TCH-101/201

15/11/19  
9.30-12.30

**End Semester Back Paper Examination, 2019**

Course Name: B.Tech

Paper Name: Engineering Chemistry

Time: Three Hours

MM: 100

**Note:**

- (i) This question paper contains five questions.
- (ii) All questions are compulsory.
- (iii) Instructions on how to attempt question are mention against it.
- (iv) Each part carries ten marks. Total marks assigned to each question are twenty.

**Q1.** Attempt any two questions of choice from a, b and c (2x10=20 Marks)

- a. (i) Differentiate between (BMO and ABMO) bonding and antibonding molecular orbitals.
- (ii) Write the main postulates of Electron sea theory, to explain metallic bonding.
- b. Differentiate between Inter and intra bonding molecular H-bonding with their significances.
- c. Draw the MOT diagram of  $F_2$  molecule. Also report about its magnetic nature and bond order.

**Q2.** Attempt any two questions of choice from a, b and c (2x10=20 Marks)

- a. Differentiate between  $SN^1$  &  $SN^2$  reactions, with suitable examples and mechanism.
- b. Write a short note on (i) Resonance (ii) Free radical

c. Define the electrophilic substitution reaction with the example of nitration of benzene.

**Q3.** Attempt any two questions of choice from a, b and c (2x10=20 Marks)

- a. Differentiate between (i) LDPE and HDPE (ii) Thermoplastic and Thermosets polymers.
- b. Define about the conducting polymers. Also give suitable examples.
- c. Write the preparation, properties and uses of (i) Kevlar (ii) PMMA

**Q4.** Attempt any two questions of choice from a, b and c (2x10=20 Marks)

- a. (i) Write a short note on concentration cells (ii) Differentiate between Order and Molecularity



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- b. Prove that for second order reaction, the half life period is inversely proportional to initial concentration of one of reactant (when the reactants are same).
  - c. Derive the derivation of Nernst Equation for the calculation of EMF of half cell.
- Q5.** Attempt any two questions of choice from a, b and c (2x10=20 Marks)
- a. Write a short note on (i) zeolite process (ii) Ion Exchange method for softening of water.
  - b. Give the composition of Biogas. With the help of a neat diagram, explain bio gas plant.
  - c. Write the principle of IR spectroscopy. Also write the applications of it.