

H

Roll No.

TCH-201

**B. TECH. (SECOND SEMESTER)
MID SEMESTER EXAMINATION, 2018**

(All Branches)

ENGINEERING CHEMISTRY

Time : 1 : 30 Hours

Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)

(a) The shape of CH_3 (methyl carboanion) is

(b) The bond order of CN is

(c) NO molecule is paramagnetic in nature while N_2 is diamagnetic. (True/False)

(d) The shape of XeF_4 is square planar. (True/False)

(e) BF_3 is nucleophiles. (True/False)

2. Attempt any five parts : (3×5=15 Marks)

(a) Define Electromeric effect.

(2)

TCH-201

- (b) What are the Nucleophiles ?
- (c) Draw the shape of SF_4 molecule (on the basis of VSEPR theory).
- (d) Write a short note on Hyperconjugation effect.
- (e) Write a short note on free radicals.
- (f) Explain, why chloroacetic acid is strong acid than acetic acid.

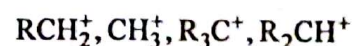
Section—B

- 3. Attempt any two parts of choice from (a), (b) and (c). (5×2=10 Marks)
 - (a) Draw the MOT diagram of HF molecule with its bond order and magnetic nature.
 - (b) Differentiate between bonding and antibonding molecular orbitals.
 - (c) Explain aromatic electrophilic substitution reaction with the mechanism of nitration.
- 4. Attempt any two parts of choice from (a), (b) and (c). (5×2=10 Marks)
 - (a) Describe the structures of CH_4 and NH_3 molecules in terms of VSEPR theory.
 - (b) Write a short note on H-Bonding with its classification and applications.
 - (c) Explain, why *p*-nitrophenol and *o*-nitrophenol can be able to separate through fractional distillation method.

F. No. : a-22

(3)

- 5. Attempt any two parts of choice from (a), (b) and (c). (5×2=10 Marks)
 - (a) Describe the electron sea theory of metallic bond.
 - (b) Differentiate the mechanisms between $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ nucleophilic substitution reactions with stereochemistry.
 - (c) With reason arrange the following carbocations in increasing order of stability :



TCH-201

310

F. No. : a-22