

92277

B.Sc. 4th Semester (New Scheme)

Examination, May-2023

BIO TECHNOLOGY

Paper- BT-406

Organic Chemistry

Time allowed : 3 hours]

[Maximum marks : 40

*Note : Attempt five questions in all, selecting one question from each section. Q. No. 1 is compulsory. All questions carry equal marks.*

**Compulsory Question**

1. (a) What is Fermi resonance? 1
- (b) What is vibrational coupling? 1
- (c) What is carbylamine test? 1
- (d) Out of p-nitro and m-nitroaniline, which is the stronger base and why? 1
- (e) Why arenes undergo nitration more easily than alkanes? 1
- (f) What is Zinin reduction? 1
- (g) What is Sarett reagent? 1
- (h) What is Mannich reaction? 1

**Section-A**

2. Differentiate the following pairs of compounds using IR spectroscopy: 4, 4

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[P.T.O.]

- (i) Benzaldehyde and ethanol
  - (ii) Acetic acid and ethyl acetate
3. (a) Explain different types of bending vibrations. 6
- (b) Describe the effect of inter and intramolecular hydrogen bonding on absorption frequencies in IR spectroscopy. 2

### Section-B

4. (a) Describe three important preparations of ethylamine. 6
- (b) Compare the relative basicity of O-, m- and p-toluidine. 2
5. (a) Describe the separation of primary, secondary and tertiary amines by Hinsberg's method. 4
- (b) Describe Hoffmann bromamide reaction. 4

### Section-C

6. Describe with mechanism: 3,3,2
- (i) Nitration of benzene
  - (ii) Diazotisation
  - (iii) Coupling reaction

7. (a) Compare the reduction of nitrobenzene under acidic, basic and neutral conditions, 4
- (b) Convert benzenediazonium chloride into: 2,2
- (i) Nitrobenzene
- (ii) Fluorobenzene

## Section-D

COOH  
RCOOH

8. Describe: 4,4
- (i) Perkin reaction
- (ii) Wittig reaction
9. Explain: 3,3,2
- (i) Cannizzaro reaction
- (ii) Baeyer- Villiger oxidation K P E C
- (iii) Clemmensen's reduction

Benzaldehyde

cinamic  
acid