

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2023 (NEW COURSE)****Organic Chemistry and Spectroscopy(Core)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q. 1 (a) Answer the following question. (04)

- (1) Give Gabriel phthalimide synthesis of amino acid.

Q. 1 (b) Answer any two questions out of three. (10)

- (1) Explain constitution of thyroxine in detail
- (2) Explain different conformation of cyclohexane and compare it through their potential energy diagram.
- (3) Give the synthesis and uses of saccharin and p-phenetyl urea.

Q. 2 (a) Answer the following question. (04)

- (1) Give mechanism and application of Curtius rearrangement.

Q. 2 (b) Answer any two questions out of three. (10)

- (1) Give the difference between 6_v , 6_h & 6_d
- (2) What is proper rotation axis? Explain different type of rotation axis with examples
- (3) Give the synthesis of papaverine.

Q. 3 (a) Answer the following question. (04)

- (1) Explain applications of NMR spectra with examples

Q. 3 (b) Answer any two questions out of three. (10)

- (1) Give the synthesis and uses of orange-II and Chrysodine -G.
- (2) Explain spin-spin coupling in NMR.
- (3) Discuss in detail Mc-Lafferty rearrangement with example.

Q. 4 (a) Answer the following question. (04)

- (1) Explain any four chemical properties of amino acid due to amino group

Q. 4 (b) Answer any two questions out of three. (10)

- (1) Give five differences between enantiomers and diastereomers.
- (2) Give a point group of various isomers of dichlorobenzene and trichlorobenzene. (any five)
- (3) Explain factors affecting on chemical shift in detail.

Q. 5 (a) Answer the following question. (04)

- (1) Determine the structure from the following NMR data

Molecular formula $C_6H_{14}O$

- a) 12H doublet, 1.6 δ ppm
- b) 2H multiplet, 3.6 δ ppm

Q. 5 (b) Answer any two questions out of three. (10)

- (1) Give synthesis of nicotine.
- (2) Give synthesis of thyroxine from 4-Nitro Aniline.
- (3) Discuss Harsh and soft techniques used to produce molecular ion in the ionization chamber of mass spectrometer.
