

B.Sc. Semester - 5 (CBCS) Examination

Oct/Nov. - 2021(Old 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) What are carbohydrates? Give difference between Aldose/Ketose and Sugar/Asugar.

Q.1 (B) Answer the following questions. (Any two) (10)

- (1) Give any three general reactions of monosaccharides.
- (2) Explain osazone formation from glucose and fructose.
- (3) Give Kiliani reaction for the preparation of D-Glucose from D-Arabinose

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

- (1) What is Symmetry element? Give names of symmetry element with symbol and operations associated with it.

Q. 2 (B) Answer the following questions. (Any two) (10)

- (1) Give difference between σ_h , σ_v and σ_d
- (2) Give symmetry elements and point group of H_2O and NH_3 .
- (3) Construct multiplication table for C_{2h} point group.

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

- (1) Give synthesis and uses of Ibuprofen.

Q. 3 (B) Answer the following questions. (Any two) (10)

- (1) Give Synthesis and uses of Orange II and Chrysodine G.
- (2) Give electrophilic substitution reaction of furan.
- (3) Discuss relative basicity of pyridine, pyrrole and aliphatic amines.

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

- (1) Which molecular vibrations are considered IR active? Give equation for calculation of degree of freedom for linear and nonlinear molecules.

Q. 4 (B) Answer the following questions. (Any two) (10)

- (1) Explain Arndt Eistert reaction with mechanism and one application.
- (2) Write a note on types of modes of fundamental vibrations.
- (3) Discuss IR spectra of CO_2 molecule.

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

- (1) Name different types of molecular energies. Give types of molecular transitions possible.

Q. 5 (B) Answer the following questions. (Any two) (10)

- (1) Explain constitution of Coniine.
- (2) Give synthesis of nicotine by Spath and Bretschneider.
- (3) Explain chromophore and auxochrome.
