

B.Sc. Semester - 5 (CBCS) Examination

July-2025 (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.

Que.1(A) Answer the following question. (04)

- 1) Draw the full structure of Glucose & Fructose.

Que.1(B) Answer any two questions out of three. (10)

- 1) Determination of ring size of Glucose by Methylation method.
- 2) Explain: Step-down reaction by Ruff's method.
- 3) Give the Interconversion For D (-) Arabinose to D (+) mannose

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

- 1) Explain different types of planes of symmetry.

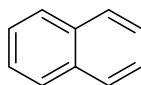
Que.2(B) Answer any two questions out of three. (10)

- 1) Give point group and order of the point group of following molecules,

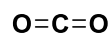
a)



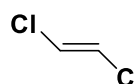
b)



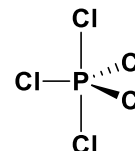
c)



d)



e)



- 2) Give the example of C_{2v} point group and construct its multiplication table.
- 3) Prove that $S_6^3 = i$ & $S_6^6 = E$ by example of staggered Ethane.

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

- 1) Give the one synthesis each of Pyrrole, Furan, Thiophene & Pyridine.

Que.3(B) Answer any two questions out of three. (10)

- 1) Explain: Structure and Aromaticity of Pyrrole.
- 2) Give the synthesis and uses of Saccharin and Chrysodine- G.
- 3) Give the synthesis and uses of Ibuprofen and Adrenaline.

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

- 1) Explain: Bayer-Villiger oxidation.

Que.4(B) Answer any two questions out of three. (10)

- 1) Explain: Arndt Eistert reaction.
- 2) Explain: fundamental mode of vibrations in IR Spectroscopy.
- 3) Determine the molecular structure by using following data
Molecular formula: C_8H_6
IR Data: 3300, 3040, 2110, 1605, 1579, 740, 690 cm^{-1}

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

- 1) Explain: types of transitions in organic molecules.

Que.5(B) Answer any two questions out of three. (10)

- 1) Give the constitution of coniine.
- 2) Give the synthesis of papaverine.
- 3) Explain: auxochrome and chromophore with examples.
