

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov - 2025 (NEW COURSE)
Organic Chemistry and Spectroscopy(Core)

Time: 2:30 Hours

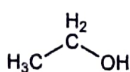
Marks: 70

Instructions:

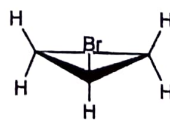
1. All questions are compulsory.
2. Figures to the right indicate marks.

- Que.1(A) Answer the following question. (04)
 (1) Give synthesis and uses of Dulcin.
- Que.1(B) Answer the following questions. (Any two) (10)
 (1) What is α -amino acid? Explain acidic, basic and neutral amino acids.
 (2) Explain Erlenmeyer azlactone synthesis.
 (3) Give difference between enantiomers and diastereomers.
- Que.2(A) Answer the following question. (04)
 (1) Explain LAH reduction of carbonyl compounds with one example.
- Que.2(B) Answer the following questions. (Any two) (10)
 (1) Write reactions only for the synthesis of Nicotine by any one method.
 (2) Construct multiplication table for C_{2h} symmetry point group.
 (3) Give difference between σ_h , σ_v and σ_d symmetry planes.
- Que.3(A) Answer the following question. (04)
 (1) Write a note on characteristics of mass spectra of alkanes.
- Que.3(B) Answer the following questions. (Any two) (10)
 (1) Give classification of drugs based on therapeutic effect with one example for each.
 (2) What is anisotropic effect? Explain anisotropic effect with suitable examples.
 (3) Write factors affecting chemical shift in PMR spectroscopy.
- Que.4(A) Answer the following question. (04)
 (1) Explain Enantiotopic and Diastereotopic protons w.r.t. PMR. Spectroscopy.
- Que.4(B) Answer the following questions. (Any two) (10)
 (1) Write general method of proving presence of (any three) functional groups in alkaloids.
 (2) Write synthesis of Conine.
 (3) Write differences between δ and j in NMR.
- Que.5(A) Answer the following question. (04)
 (1) Define various ions formed in mass spectrometry.
- Que.5(B) Answer the following questions. (Any two) (10)
 (1) Write short note on conformations of cyclohexane.
 (2) Write five reactions of amino acid due to amine functional group.
 (3) Answer the following questions as directed.

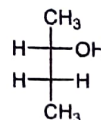
- a) Write number of possible PMR signals with multiplicity for molecule a.
- b) Write only number of PMR signals for molecules b, c and d.



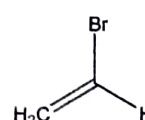
a



b



c



d
