

B.Sc. Semester - 1 (CBCS) Examination
July-2025 (OLD COURSE)
CHEMISTRY (CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

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

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- Que-1(A) Answer the four objective questions. (04)**
- 1) Write the equation of De-Broglie
 - 2) Write the name of any two quantum numbers.
 - 3) Draw the structure of BF_3
 - 4) Write the hybridization of PCl_5
- Que-1(B) Answer any one out two. (02)**
- 1) Draw the structure of SnCl_2 and CO_3^{2-}
 - 2) Write the Pauling's exclusion principle.
- Que-1(C) Answer any one out two. (03)**
- 1) Give the VBT of SiH_4
 - 2) Give the Heisenberg's uncertainty principle.
- Que-1(D) Answer any one out two. (05)**
- 1) Draw the MOT diagram of N_2 .
 - 2) Explain: Anomalous behaviour of Li and Be.
- Que-2(A) Answer the four objective questions. (04)**
- 1) Give the example of carbocation.
 - 2) Give the example of carbanion.
 - 3) Give the full form of E^1
 - 4) Give the full form of E^2
- Que-2(B) Answer any one out two. (02)**
- 1) Explain: addition reaction with example.
 - 2) Give any two examples of aliphatic hydrocarbon.
- Que-2(C) Answer any one out two. (03)**
- 1) Explain: Electrophile and nucleophile.
 - 2) Explain: Diels-Alder reaction.
- Que-2(D) Answer any one out two. (05)**
- 1) Explain: SN^1 mechanism.
 - 2) Explain: E^2 mechanism.
- Que-3(A) Answer the four objective questions. (04)**
- 1) Write only equation of first order reaction.
 - 2) Give any one example of homogenous catalyst.
 - 3) Define adsorption.
 - 4) Write Arrhenius equation.
- Que-3(B) Answer any one out two. (02)**
- 1) Give types of catalysis with one example of each.
 - 2) Give types of adsorption with one example of each.
- Que-3(C) Answer any one out two. (03)**
- 1) Discuss order and molecularity of the reaction
 - 2) Derive freundlich adsorption isotherm equation

- Que-3(D) Answer any one out two. (05)**
1) Explain: Second order reaction with example.
2) Discuss any one theory of adsorption.
- Que-4(A) Answer the four objective questions. (04)**
1) Define atomic radii
2) Define electronegativity
3) Give types of substitution reaction
4) Give example of free radical
- Que-4(B) Answer any one out two. (02)**
1) Give example of Homolytic and heterolytic fission.
2) Give types of elimination reaction
- Que-4(C) Answer any one out two. (03)**
1) Discuss De-Broglie's equation
2) Explain: SN^2 mechanism.
- Que-4(D) Answer any one out two. (05)**
1) Explain: E^1 mechanism with example
2) Explain: Diagonal relationship of B and Si.
- Que-5(A) Answer the four objective questions. (04)**
1) Define: Second order reaction
2) Define: Negative catalyst
3) Define: Free radical
4) Write only equation of zero order reaction.
- Que-5(B) Answer any one out two. (02)**
1) Define autocatalyst with example.
2) Give any four name of reactive intermediate
- Que-5(C) Answer any one out two. (03)**
1) Explain: Wurtz-Fittig reactions
2) Give the difference between: homogeneous and heterogeneous catalysis.
- Que-5(D) Answer any one out two. (05)**
1) Explain: First order reaction with example.
2) Give the difference between: SN^1 and SN^2 reactions.
