

B.Sc. Semester - 3 (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 following question. (04)**
1) Explain Normalized and Orthogonal wave functions.
- Que-1(B) Answer the following questions Any two out of three. (10)**
1) Derive the potential energy and Schrodinger equation for H₂ molecule using MOT.
2) Explain Eigen function and Eigen value with suitable example.
3) Derive the coefficient of wave function for sp-hybridization.
- Que-2(A) Answer the following question. (04)**
1) Discuss Wurtz-Fitting reaction.
- Que-2(B) Answer the following questions Any two out of three.**
1) Explain lanthanide contraction in details.
2) Give name, symbol and electronic configuration of lanthanide elements.
3) Explain the synthesis of aryl halides from diazonium salt in detail.
- Que-3(A) Answer the following question. (04)**
1) Explain acidity of phenol and factor affecting it.
- Que-3(B) Answer the following questions Any two out of three. (10)**
1) Give preparation of primary, secondary and tertiary alcohol using Grignard reagent.
2) Discuss Hinsberg test for distinguish primary, secondary and tertiary amine.
3) Write nitration, sulphonation and bromination reactions of aniline.
- Que-4(A) Answer the following question. (04)**
1) Define Reimer-Tiemann reaction and give any three applications.
- Que-4(B) Answer the following questions Any two out of three. (10)**
1) Write Pinacol-Pinacolone rearrangement with mechanism and applications.
2) Explain water system with phase diagram.
3) Describe phase diagram for Na-K system.
- Que-5(A) Answer the following question. (04)**
1) Write a short note on Azeotropes.
- Que-5(B) Answer the following questions Any two out of three. (10)**
1) Derive Nernst's distribution law when the molecules of solute Associate and Dissociation in one solvent.
2) Explain Henry's law.
3) Write the applications of Nernst's distribution law.
