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B.Sc. Third Semester Degree Examination
CHEMISTRY
Paper III
(Old Syllabus)

Time : 3 Hours]

Max Marks : 75

Instructions : 1) Section A is compulsory.

2) All the Sections contain questions from In-organic, Organic and Physical Chemistry.

SECTION - A

Answer ALL the questions : (15 × 1 = 15)

1. What are the heterocyclic compounds?
2. Write IUPAC of t-butyl alcohol
3. What are phenols?
4. What is Grignard reagent?
5. What are acid amides?
6. What are Azeotropic mixtures?
7. Define Zeta potential
8. What are non-ideal solutions?
9. Write one use of diborane
10. Write the structure of graphite
11. Write general electronic configuration of Lanthanides

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12. Why 3d series elements show variable valency?
13. What is Borazole?
14. State III Law of Thermodynamics
15. What is an emulsion?

SECTION - B

Answer any **FIVE** of the following **(5 × 5 = 25)**

16. Describe the structure and application of Borazole.
17. What is isomerism? Discuss isomerism in monohydric alcohols up to C₄.
18. Derive Gibbs-Helmholtz's equation.
19. Explain magnetic properties of transition metals.
20. Write the mechanism for Pinacol-Pinacolone rearrangement.
21. Explain the Boiling point - Composition curves of binary mixtures of completely miscible liquids.

SECTION - C

Answer any **FOUR** of the following **(4 × 10 = 40)**

22. (a) Describe
 - (i) Atomic and ionic radii
 - (ii) Melting and boiling points and
 - (iii) Atomic volume and density**(6)**
- (b) Write a note Lanthanide contraction **(4)**

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23. (a) Explain manufacture of Phenol by Cumene and Dow process. (6)
- (b) Write any two methods of preparation of Furan. (4)
24. (a) Derive an expression for efficiency of Carnot's cycle. (6)
- (b) Give any four application of colloids. (4)
25. (a) Give preparation, properties and uses of Boron trifluoride. (6)
- (b) Describe ion-exchange method of separation of Lanthanides. (4)
26. (a) Explain the mechanism of Reimer Teimann reaction. (6)
- (b) What are diols? How is ethylene glycol synthesized? (4)
27. (a) Explain electrophoresis on the basis of electrical properties of sols. (6)
- (b) Discuss the origin of charge on colloidal particles. (4)
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