



K23P 3073

Reg. No. : .....

Name : .....

I Semester M.Sc. Degree (CBCSS – OBE – Regular)  
Examination, October 2023  
(2023 Admission)  
**CHEMISTRY**  
MSCHE01C02 : Inorganic Chemistry – I

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **any 5** questions from the following. **Each** question carries **three** marks.

1. Discuss about the characteristic features of Cupferron, the organic precipitant.
2. Explain the principle behind flow injection analysis.
3. Write a short note on proton affinity.
4. Define radioactive equilibrium.
5. Write briefly on Isopoly acids of molybdenum.
6. How many skeletal electrons are present in  $B_5H_9$  ? (5×3=15)

SECTION – B

Answer **any 3** questions from the following. **Each** question carries **six** marks.

7. Discuss about the theory of EDTA titrations and give the general properties of the metal ion indicators used in EDTA titrations.
8. Discuss about different theories for the explanation of the stability of complexes formed by hard-hard and soft-soft interactions.
9. Explain different types of super acids with examples and discuss about their applications.

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10. Give the principle behind the working of Scintillation counters.
11. Write short note on polythiazyl and its applications. (3×6=18)

SECTION – C

Answer **any 3** questions from the following. **Each** question carries **nine** marks.

12. Explain the theory, experimental setup and applications of Electro gravimetric analysis.
13. a) Explain the properties of non-aqueous solvents.  
i) HF  
ii)  $N_2O_4$   
b) Write a short note on the chemistry of molten salts as nonaqueous solvent systems.
14. Describe the basic principles behind the working of the following nuclear reactors :  
a) BWR  
b) PHWR.
15. Write notes on :  
a) Radiolysis of water  
b) Nuclear activation analysis  
c) Application of radiation chemistry in Medicine.
16. Discuss in detail about the structure, bonding and topology in boron hydrides. (3×9=27)