



K23P 3261

Reg. No. :

Name :

**First Semester M.Sc. Degree (CBSS – Supple. (One Time Mercy Chance)/
Imp.) Examination, October 2023
(2014 to 2022 Admissions)
CHEMISTRY
CHE1 C.02 : Inorganic Chemistry – I**

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **all** questions in **one** word or **one** sentence. **Each** carries **one** mark. **(8×1=8)**

1. Represent the autoionization of liquid sulphuric acid.
2. In order to reject a result, we have to do _____ test in analytical chemistry.
3. Give the structure of oxine.
4. Write the expression for standard deviation.
5. What is the IUPAC name of B_4H_{10} ?
6. Name a covalent polymer that exhibit metallic properties.
7. Define half life period of a radioactive element.
8. Name the compound of phosphorus used commercially in match industry.

SECTION – B

Answer **any 8** questions. Answer may be **two** or **three** sentences. **Each** question carries **2** marks. **(8×2=16)**

9. Consider the reaction $^{59}\text{Co} (p, n)$. What is the product of the reaction?
10. Comment on the stability of S_2N_2 .
11. What is meant by a metallochromic indicator? Give any two examples.

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12. What is a proton sponge? Why is it called so?
13. What is meant by sequestering agent? Give an example.
14. Define students t test.
15. Write any one method of preparation of P_4S_5 . Draw its structure.
16. What is the reaction between B_2H_6 with 1) CO 2) H_2O . Give the corresponding chemical equations.
17. The role of NH_4Cl in liquid NH_3 solution is same as that of HCl in aqueous solution. Substantiate the statement.
18. What is a fission chain reaction? Mention how it can be useful for practical purposes.
19. What is the principle involved in Fricke dosimeter?
20. Which is a weaker electron acceptor, BF_3 or BCl_3 ? Explain.

SECTION – C

Short paragraph questions. Answer **any 4** questions. **Each** carries **3** marks. **(4×3=12)**

21. Explain with suitable equations how diborane reacts with ammonia under different conditions.
22. Comment on the basicity of amines in gaseous phase and in aqueous phase.
23. Briefly explain the significance of the nuclear reaction cross-section.
24. How is tetrasulphur tetranitride prepared? Depict its structure.
25. Discuss briefly about hydrometallurgy.
26. Briefly discuss the classification of solvents.
27. Explain how energy is produced in the sun and stars.
28. Classify the following in to closo, nido and arachno structures a) $(B_6H_6)^{2-}$
b) CB_8H_{12} c) B_4H_{10} .



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SECTION – D

Essay type. Answer **4** questions. **Each** carries **6** marks.**(4×6=24)**

29. A) Briefly discuss the HSAB theory of acids and bases and its applications.

OR

B) Describe the use of liquid ammonia as a non aq. solvent.

30. A) Discuss briefly about the various types of EDTA titrations.

OR

B) Discuss the advantages and disadvantages of organic precipitants in inorganic analysis.

31. A) Outline the principle and working of GM Counter.

OR

B) Briefly discuss the liquid drop model of nucleus.

32. A) Explain how 1,2-dicarba-closo-dodecaborane (12) is prepared. Discuss its chemical reactivity.

OR

B) How is triphosphonitric chloride prepared? Give an account of its structure and bonding.