SIR SYED COLLEGE LIBRARY
Acc. No.....
Date.....
TALIPARAMBA

K21P 4176

Reg. No. : .....

Name : .....

I Semester M.Sc. Degree (CBSS – Reg./Supple./Imp.) Examination, October 2021
(2018 Admission Onwards)
CHEMISTRY
CHE1C.02 : Inorganic Chemistry – I

Time : 3 Hours Max. Marks : 60

SECTION – A

Answer **all** questions in **one** word or **one** sentence. **Each** question carries **1** mark.

1. What do you mean by standard deviation ?
2. Name an organic precipitant used for the gravimetric estimation of Nickel (II).
3. Why is pH 10 buffer used in EDTA titration ?
4. Classify the following on Lewis acid or Lewis base giving reason :
   i) CO_2
   ii) Mg^{2+}.
5. What is Dosimetry ?
6. What are magic numbers ?
7. Complete the following equation :
   $B_2H_6 + 2NaH \xrightarrow{\text{diglyme}}$
8. What are phosphazines ? **(8×1=8)**

SECTION – B

Answer **any eight** questions. Answer in **two** or **three** sentences. **Each** question carries **2** marks.

9. What is distribution law ? What are the limitations of distribution law ?
10. How do you assess the reliability of results ?

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11. What do you mean by precipitation from homogeneous solution ? Explain.

12. Is OH^- or S^{2-} more likely to form insoluble salts with 3+ transition metal ions ? Which is more likely to form insoluble salts with 2+ transition metal ions ?

13. What are room temperature molten salts ?

14. What is hydrometallurgy ?

15. Explain the Bethe's notation of nuclear process with example.

16. What do you mean by neutron capture cross section ?

17. Explain spontaneous fission.

18. How is S_4N_4 prepared ? S_4N_4 is associated with thermochromic property. Why ?

19. The 'STYX' number of B_5H_9 is 4120. Explain.

20. Give an account of the structure and bonding in $(PNCl_2)_3$. **(8×2=16)**

SECTION – C

Short paragraph questions. Answer **any four** questions. **Each** question carries **3** marks.

21. What are the essential requirements for a substance to be used as a metallochromic indicator ?

22. Write a short note on organic precipitants used in gravimetric analysis.

23. Explain symbiosis.

24. Discuss the acid base properties of different substances in sulphuric acid solvent.

25. Explain the principle and working of GM counter.

26. Write a short note on radiolysis of water.

27. By taking a suitable example explain the Jemmis 'mno' rule.

28. Give one method each for the preparation of P_4S_3, P_4S_5 and P_4S_{10}. What are their uses ? **(4×3=12)**

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SECTION – D

Essay type questions. Answer either **'a'** or **'b'** of each question. **Each** question carries **6** marks.

29. a) Explain the terms distribution coefficient and distribution ratio in solvent extraction. Discuss the principle involved in counter current extraction and its applications.

OR

b) What are Chelometric titrations ? Explain selective masking and demasking techniques in EDTA titration with suitable examples. Discuss the industrial applicaiton of masking.

30. a) Write about the merits and demerits of liquid ammonia as a nonaqueous solvent. Explain the properties of alkali metal – liquid ammonia solution.

OR

b) Explain the theoretical basis of hardness and softness of acids and bases.

31. a) Write the salient features of liquid drop model. How does it explain the nuclear fission reaction ?

OR

b) Explain different types of nuclear reactions. How is reaction rate and reaction cross section related ?

32. a) Discuss the importance of icosohedral frame work in understanding the structure of higher boranes and carboranes.

OR

b) Explain the preparation, structure and properties of S_2N_2 and polythiazyl.

(4×6=24)