

Reg. No. :

Name :

Second Semester B.Sc. Degree Examination, September 2022

First Degree Programme under CBCSS

Chemistry

Complementary Course II for Botany / Zoology / Microbiology

**CH 1231.3/CH 1231.4/CH 1231.7 : INORGANIC AND BIOINORGANIC
CHEMISTRY**

(2017 – 2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(One word or sentence) **All** questions to be answered.

1. Give an example of an organometallic compound having Sandwich structure.
2. Write any one use of organosilicon compounds.
3. What are antineoplastic drugs?
4. What type nuclear reaction occur at Sun's atmosphere?
5. What is the SI unit of radioactivity?
6. Write the IUPAC name of $K_3[Fe(CN)_6]$.
7. The complexes $[Co(NH_3)_5NO_2]Cl_2$ and $[Co(NH_3)_5ONO]Cl_2$ were _____ isomers.
8. Metal present in chlorophyll is _____
9. Porphyrins are derivatives of _____
10. Write the oxidation state of iron in hemoglobin.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. How organoboron compounds are prepared?
12. Write the structure of Cis-Platin.
13. What is reformatsky reaction?
14. Define nuclear fusion.
15. Why attempts to make fusion reactors are not successful?
16. What is the main difference between a natural radioactive element and an artificially radioactive element?
17. What are chelates? Give an example.
18. Why tetrahedral complexes are generally high spin?
19. What is linkage isomerism Give one example?
20. What is nitrogen fixation?
21. What are essential elements?
22. What are cytochromes?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks.

23. What are different types of organometallic compounds?
24. Write any two methods of preparation of organo-mercury compounds.
25. Write a note on synthetic applications of organolithium compounds.
26. Discuss n/p ratio for stability of nucleus.
27. Explain the terms binding energy and mass defect.

28. What are the limitations of valence bond theory of coordination compounds?
29. Explain why $\text{Ni}(\text{CO})_4$ is diamagnetic but tetrahedral.
30. Discuss the structure of porphyrin ring system.
31. Draw the structure of chlorophyll.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. (a) Write the environmental aspects of organometallic compounds. 5
 (b) What are Grignard reagents? Give their preparation and synthetic uses. 5
 (c) How will you prepare organolithium compounds from alkyl halides? 5
33. (a) What are the differences between nuclear fission and nuclear fusion? 5
 (b) Write a note on neutron activation analysis. 5
 (c) Explain what is meant by radio carbon dating and rock dating. 5
34. (a) Discuss the hybridization, geometry and magnetic property of $[\text{CoF}_6]^{3-}$ by using VB theory. 5
 (b) What are strong and weak field ligands? Explain with suitable examples. 5
 (c) Explain stereoisomerism in coordination complexes. 5
35. (a) Write a note on trace elements in biological system. 5
 (b) Give brief outline of photosynthesis. 5
 (c) Explain the mechanism of $\text{O}_2 - \text{CO}_2$ transportation. 5

(2 × 15 = 30 Marks)