

21P311

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Name: .....

Reg.No: .....

**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2022**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P CHE3 C10 - ORGANOMETALLIC AND BIOINORGANIC CHEMISTRY**

(Chemistry)

(2017 Admissions)

Time : 3 Hours

Maximum : 30 Weightage

**Section A**

Answer any *eight* questions. Each question carries 1 weightage.

1. What is synergic effect?
2. Write any one method of preparation of fischer carbene.
3. Give two examples of fullerene organometallic compounds.
4. Draw the structure of  $[\text{Rh}_4(\text{CO})_{12}]$  and  $[\text{Co}_3(\text{CO})_{12}]$
5. What is the product of the reaction between ferrocene and acetic anhydride in the presence of phosphoric acid?
6. Write the catalyst used in (a) Monsanto acetic acid process and (b) Cativa process
7. Mention any two roles of alkali metal ions in biological systems.
8. What are oxygen transport and storage proteins?
9. What are metal activated enzymes? Give one example.
10. What are the functions of oxidase?
11. How does dioxygen binding affect the spin state of iron in haemoglobin?
12. What do you mean by 'red drop' in photosynthesis?

**(8 × 1 = 8 Weightage)**

**Section B**

Answer any *four* questions. Each question carries 3 weightage.

13. Write a note on dinitrogen complexes.
14. Discuss the structure and bonding in metal ethylene complexes.
15. Give a brief overview of zintl anions and cations, using examples.
16. Write a note on oxidative addition reaction.

17. Discuss the occurrence of inorganic elements in biological systems.
18. Explain the role of transferrin and ferritin.
19. Discuss about the anticancer activity of cis-platin.

**(4 × 3 = 12 Weightage)**

### **Section C**

Answer any *two* questions. Each question carries 5 weightage.

20. Explain rules used to calculate the electron count for organometallic compounds [LNCC].
21. Discuss the synthesis, structure and bonding in cyclopentadienyl complexes taking ferrocene as an example.
22. Write a note on hemerythrin and hemocyanin.
23. Discuss the structure and mechanism of carboxy peptidase.

**(2 × 5 = 10 Weightage)**

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