

23P311

(Pages: 2)

Name:

Reg.No:

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE3 C10 - ORGANOMETALLIC AND BIOINORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

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

1. Explain the applications of 18-electron rule.
2. Explain Fischer carbenes.
3. Discuss any two synthesis of butadiene complexes.
4. Explain carbide clusters.
5. What is the product after reductive leimination of $[\text{IrL}_2\text{COC}(\text{H}_2)]$?
6. What are the applications of Zeigler Natta catalysis?
7. Classify the following metal ions as trace or bulk: Fe, Cu, Zn, Na, K, Mg, Ca, Co, Cr, Ni, and V.
8. Explain the term "cooperativity " in hemoglobin?
9. What are metalloenzymes? Give one example.
10. Manganese plays a vital role in the production of oxygen in Photosynthetic pathway. Justify the statement.
11. What are fluxional organometallic compounds?
12. What are Wade's rule?

(8 × 1 = 8 Weightage)

Section B

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

13. Write a note on nitrosyl complexes.
14. Discuss the structure and bonding in metal ethylene complexes.
15. Explain the MO diagram of ferrocene.
16. What are the structural features of Vitamin B-12?
17. Discuss the Wacker process.
18. Explain the structure and bonding of a dinuclear cluster $[\text{Re}_2\text{C}_{18}]^{2-}$.

19. Discuss the structure and function of hemerythrin.

(4 × 3 = 12 Weightage)

Section C

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

20. Explain the use of spectroscopy in study of bonding in metal carbonyls.

21. Explain the electron counting scheme for high nuclear carbonyl clusters.

22. Explain about the storage and transport of metal ions—ferritin, transferrin, and siderophores.

23. Explain the structure and functions of Superoxide dismutase.

(2 × 5 = 10 Weightage)
