

19P311

(Pages: 2)

Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CBCSS-PG)

CC19P CHE3 C10 - ORGANOMETALLIC AND BIOINORGANIC CHEMISTRY

(Chemistry)

(2019 Admission Regular)

Time: Three Hours

Maximum: 30 Weightage

Section A

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

1. State and explain 18 electron rule as applied to organometallics.
2. What are Zintl ions? Give examples?
3. Write a note on Chevral phase. Explain metathesis reaction with a suitable example.
4. What are migratory insertion reactions? Give one example.
5. Comment on the isolobal analogy of metal cluster.
6. Write a note on properties of Schrock carbenes.
7. Explain the bonding of nitrogen in transition metal complexes.
8. Differentiate between active and passive transport.
9. Discuss the detoxification role of cytochrome P-450 in human body.
10. What do you mean by 'red drop' in photosynthesis?

(8 x 1 = 8 Weightage)

Section B

Answer any *six* questions. Each question carries 2 weightage.

11. What are fluxional organometallics? How ^1H NMR spectroscopy is useful in the structural investigation of such compounds?
12. Explain the role of metalloenzymes in iron metabolism and transport.
13. How is Zeise's salt synthesized? Discuss the structure and bonding in Zeise's salt.
14. Discuss the structure and bonding in $[\text{Re}_4(\text{CO})_{12}]^{2-}$.
15. How are ionophores classified in terms of the mechanism of ion transport? How can it be distinguished?
16. What is meant by Ziegler-Natta polymerization and why is it known as stereoregular polymerization?
17. Explain the structure and functions of superoxide dismutase.
18. Discuss the role of manganese in photosynthetic process.

(6 x 2 = 12 Weightage)

Section C

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

19. Discuss the structure and functions of ferritin and transferrin in iron metabolism.
20. (a) Explain the co-operative interaction and Bohr effect during the oxygenation of haemoglobin.
(b) Write a note on anticancer drugs.
21. (a) Discuss the structure and bonding in metal nitrosyls.
(b) How are linear and bent metal nitrosyls distinguished by spectroscopic technique?
22. (a) How ferrocene is synthesized? Discuss its structure and reactivity.
(b) Discuss the role of a co-catalyst in Wacker process.

(2 x 5 = 10 Weightage)
