19002711

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Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, OCTOBER 2019

First Semester

Faculty of Science

Branch : CHEMISTRY

ANIC01/APIC01/CHIC01/PHIC01/POHIC01—ORGANOMETALLICS AND NUCLEAR CHEMISTRY

(Common to all Branches of Chemistry)

[2012—2018 Admissions]

Time : Three Hours

Maximum Weight : 30

Section A

Answer any **ten** *questions.*
Each question carries a weight of 1.

1. How is the compound $(OC)_5 W=C<^{R}_{OMe}$ Prepared ?
2. What are 'Sandwich' Compounds ? Give two examples with structures.
3. Give one example for dinitrogen complex. How is it prepared ?
4. How is $Fe(CO)_4 PR_3$ prepared ? Give equations.
5. What is 'Vaska's Complex ? What happens when molecular hydrogen reacts with it ?
6. Homogeneous organometallic catalysis is more preferred than Heterogeneous catalysis. Explain why ?
7. What are Ziegler Natta Catalysts ? Give one use.
8. Give two examples of organometallic condensation polymers based on ferrocene.
9. What is meant by biological calcification ?
10. Distinguish between Myoglobin and Haemoglobin.
11. What is cis-platin ? Give one application.
12. Explain Neutron capture cross-section.
13. Give any *two* relevance of radiation chemistry in Biology.

(10 × 1 = 10)

Turn over

Section B

Answer any **five** *questions.*
Each question carries a weight of 2.

14. Explain the stereo chemistry of allyl complexes taking two examples.
15. Formulate neutral 18 electron complexes of chromium which contains only cyclopentadienyl and nitrosyl ligands.
16. Substitution reactions of poly nuclear metal carbonyls with tertiary phosphines often induce the formulation of bridging carbonyls. Provide an explanation.
17. Write note on photo dehydrogenation Catalyst.
18. Explain the method of preparation of organo metallic dentrimers.
19. Explain the role of Calcium in muscle contraction.
20. Discuss the importance of superoxide dismutase.
21. Write note on 'Cloud Chamber'.

(5 × 2 = 10)

Section C

Answer any **two** *questions.*
Each question carries a weight of 5.

22. Discuss the bonding in π-metal olefin and π-metal acetylene complexes. How is the bonding in these complexes different from the one in σ-metal olifin and σ-metal acetylene complexes ?
23. (a) Explain the following reaction with examples :
    (i) Reductive elimination ; and(ii) Rearrangement reactions.
    (b) Explain the importance of Wilkinson catalyst and Ziegler Natta Catalyst.
24. (a) Write briefly on organo metallic polymers.
    (b) Explain Nuclear Fission reaction and their applications.
25. (a) Give an account of Iron Storage and transport in biological systems.
    (b) Write note on Valinomycin and crown ether complexes of Na^+ and K^+.

(2 × 5 = 10)