M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Inorganic Chemistry - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. What is meant by F-Centre?
2. Distinguish between spinels and inverse spinels.
3. Mention the synthesis of Zeise's salt and its structure.
4. Predict the number of M-M bond in $Mn_2(CO)_{10}$ and $Os_4(CO)_{15}$
5. Define polymer bound catalyst.
6. What is hydroformylation reaction?
7. Define photo substitution reactions with an example.
8. What are the conditions for the molecule to act as photo sensitizer?
9. Define the term: orbital electron capture.
10. What is meant by nuclear isomerism?
11. Name the catalyst which is used for the hydrogenation and oxidation of olefins.
12. What is a superconductor?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Explain the types of magnetic behaviour in solids.
14. a) Predict which of the following complexes $[V(CO)_6]^-$, $[Cr(CO)_6]$, $[Mn(CO)6]^+$ has the shortest C-O bond. (2)
    b) Discuss about bonding in nitrosyls. (3)
15. Describe the cyclo-oligomerisation of acetylene using Reppe's catalyst.
16. Briefly explain the solar energy conversion with reference to ruthenium-bipyridyl complexes.
17. Describe in detail about neutron activation analysis.
18. a) Explain in detail about vacancy and interstitial diffusion mechanism. (3)
    b) Define Carbonylation. (2)
19. Describe briefly about Cosees monometallic mechanism using Zeigler-Natta catalyst.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. a) Discuss the structural aspects of the following:
    i) Pervoskite ii) Cadmium iodide
    b) Give brief a account on Garnets. (3+3+4)
21. Discuss the synthesis, structure and bonding of ferrocene.
22. Describe in detail about the Wacker's process.
23. Explain the photoredox reaction using Co(III) and Cr(III) coordination complexes.
24. a) Enumerate in detail about Scintillation and Cherenkov counters. (5+5)
    b) Outline briefly about thermonuclear reactions.

M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Inorganic Chemistry - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. What is meant by F-Centre?
2. Distinguish between spinels and inverse spinels.
3. Mention the synthesis of Zeise's salt and its structure.
4. Predict the number of M-M bond in $Mn_2(CO)_{10}$ and $Os_4(CO)_{15}$
5. Define polymer bound catalyst.
6. What is hydroformylation reaction?
7. Define photo substitution reactions with an example.
8. What are the conditions for the molecule to act as photo sensitizer?
9. Define the term: orbital electron capture.
10. What is meant by nuclear isomerism?
11. Name the catalyst which is used for the hydrogenation and oxidation of olefins.
12. What is a superconductor?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Explain the types of magnetic behaviour in solids.
14. a) Predict which of the following complexes $[V(CO)_6]^-$, $[Cr(CO)_6]$, $[Mn(CO)6]^+$ has the shortest C-O bond. (2)
    b) Discuss about bonding in nitrosyls. (3)
15. Describe the cyclo-oligomerisation of acetylene using Reppe's catalyst.
16. Briefly explain the solar energy conversion with reference to ruthenium-bipyridyl complexes.
17. Describe in detail about neutron activation analysis.
18. a) Explain in detail about vacancy and interstitial diffusion mechanism. (3)
    b) Define Carbonylation. (2)
19. Describe briefly about Cosees monometallic mechanism using Zeigler-Natta catalyst.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. a) Discuss the structural aspects of the following:
    i) Pervoskite ii) Cadmium iodide
    b) Give brief a account on Garnets. (3+3+4)
21. Discuss the synthesis, structure and bonding of ferrocene.
22. Describe in detail about the Wacker's process.
23. Explain the photoredox reaction using Co(III) and Cr(III) coordination complexes.
24. a) Enumerate in detail about Scintillation and Cherenkov counters. (5+5)
    b) Outline briefly about thermonuclear reactions.