

20P410

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Name:

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2022

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE4 E08 - ORGANOMETALLIC CHEMISTRY

(Chemistry - Elective Course)

(2019 Admission onwards)

Time: Three Hours

Maximum: 30 Weightage

Section A

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

1. Draw the structure of $\text{Be}(\text{CH}_3)_2$.
2. Give one application of Grignard reagent.
3. What is meant by two electron three center bonds?
4. Which is known as antiknock agent?
5. What is meant by reductive carbonylation?
6. What is the compound called Uranocene?
7. What is meant by 'Agostic alkyls'?
8. In general, d^0 and d^1 organometallic compounds are less reactive by beta elimination, why?
9. Name an organometallic compound which contains at least one δ bond.
10. What is the structure of Vaska complex?

(8 × 1 = 8 Weightage)

Section B

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

11. Describe the structure and bonding in $(\text{LiCH}_3)_4$.
12. Write one synthesis of Beryllocene and comment about its fluxional structure.
13. Write two synthesis of metal carbyne complexes.
14. Draw the structure and bonding in metal-allyl complexes.
15. Comment about sigma bond metathesis.
16. Give a brief account of synthesis of cyclopentadienyl compounds.
17. Differentiate between DC and MCP model in metal alkene complexes.
18. Give a detailed account of N_2 activation by complex formation.

(6 × 2 = 12 Weightage)

Section C

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

19. Give an account of various dissociation pathways of organometallic compounds.

20. Discuss the structure and bonding in ferrocene.

21. Discuss the following reactions.

(a) Water-gas shift reaction

(b) Fisher-Tropsch Reaction

22. Discuss the following catalytic reaction cycles.

(a) Monsanto acetic acid process

(b) Wacker process

(2 × 5 = 10 Weightage)
