G 1996 (Pages : 2) Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, MARCH 2015

First Semester

Faculty of Science

Branch : Chemistry

AN 1C 01/AP 1C 01/CH 1C 01/PH1C 01/POH 1C 01—ORGANOMETALLICS AND NUCLEAR CHEMISTRY

(Common to all Branches of Chemistry)

[2012 Admissions]

Time : Three Hours Maximum Weight : 30

Section A

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

1. Draw the structure of $CH_3 C_6 H_4 NH_2 Pt Cl_2 C_2 (t-Bu)_2$. What is the co-ordination number of Pt in this complex ?
2. Explain the hapticity of ligands in the following compounds :
   (a) Butadiene tricarbonyl iron.
   (b) $Cl_3 Pt C_2 H_4$.
   (C) bis (allyl) nickel.
3. Explain EAN taking two examples.
4. Discuss the reductive elimination reaction in organometallic chemistry with one example.
5. What is Vaska's complex? Give its structure.
6. Ethylene is commonly chosen to illustrate homogeneous hydrogenation with Wilkinson's catalyst, but the process is very slow. Explain why.
7. Explain waeker process.
8. Give one example for the preparation of organometallic polymers by ring opening.
9. Discuss the constitution of cell membrane.
10. Write note on valinomycin.
11. What is $Na^+ - K^+$ pump ?
12. What are trans-uranic elements ? How is plutonium curium and nobelium prepared ?
13. Explain the principle of neutrons activation analysis.

(10 × 1 = 10)

Turn over

Section B

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

14. Explain why carbonyls $Pd(CO)_4$, $Pt(CO)_4$ do not exist where as $Ni(CO)_4$ exist as a stable compound.
15. Explain LNCC clusters ?
16. Give examples for carbonylation and decarbonylation reactions in organometallic compounds.
17. What is Ziegler-Natta catalyst ? What is its importance ?
18. What are organometallic dendrimers ? How are they prepared ?
19. Discuss the application of Cis-platin.
20. Briefly explain blood clotting mechanism.
21. Write note on neutron absorptiometry.

(5 × 2 = 10)

Section C

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

22. (a) Explain the synthetic details of any two allyl complexes.
    (b) Write note on dinitrogen complexes.
23. (a) Explain rearrangement reaction in organometallic compound with suitable examples.
    (b) Explain the following :
        (a) Tolman catalytic loop.
        (b) Fisher-Tropsch reaction .
24. (a) What are the toxic effect of Cd, Hg Pb ? Explain.
    (b) Compare the structure of haemoglobin and myoglobin.
25. (a) Explain Radiolysis of water.
    (b) Explain ferrocene based organometallic polymers.

(2 × 5 = 10)