F 7738 (Pages : 2) Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, FEBRUARY 2014

First Semester

Faculty of Science

Branch —Chemistry

ANI C01/API C01/CHI C01/ PHI C01/POHI C01—ORGANOMETALLICS AND NUCLEAR CHEMISTRY

[Common to all Branches of Chemistry]

(2012 Admission onwards)

Time : Three Hours Maximum Weight : 30

Section A

Answer any **ten** *questions.*

Each question carries a weight of 1.

1. How is Zeize's salt synthesised ?
2. In $(C_6\ Me_6)_2$ Ru one hexamethylbenzene ligand is a non planar η^4-donar-commit on.
3. What is meant by reductive elimination ? Give one example.
4. What is agostic interaction in organometallic compounds ?
5. Explain 'oxo' reaction with suitable example.
6. What is Ziegler-Nutta Catalyst ? How is it prepared ?
7. Give *two* examples for organometallic condensation polymers based on rigid polyynis.
8. What are organometallic dendrimers ?
9. What are metallo-enzymes ? Give *two* examples.
10. What is the toxicity of Cd and Pb in biological system ?
11. What are sodiums pump and calcium pump ?
12. Give the principle of Newton Activation analysis ?
13. What are transuranic elements ? Give preparation of mendelevium.

(10 × 1 = 10)

Turn over

Section B

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

14. Explain why carbonyls Pd $(CO)_4$ and Pt $(CO)_4$ do not exist where as $Ni(CO)_4$ exists as a stable metal carbonyl. Also $Ni(CO)_2 Cl_2$ does not exist and Pd $(CO)_2 X_2$ do exist. Explain why ?
15. What short note about fluxional isomerism.
16. Explain the importance of Wilkinson catalyst, with suitable examples.
17. Write note about organometallic polymers based on ferrocene.
18. Discuss the important function of superoxide dismutane.
19. Explain the phenomenon of co-operatively in O_2 binding of hemoglobin.
20. Discuss the applications of radio isotopes in the diagnons of diseases and in the treatment of diseases.
21. Discuss Wade-Mingus rules ?

$(5 \times 2 = 10)$

Section C

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

22. Explain the catalytic cycle for hydroformylation reaction using the rhodium complex catalyst.
23. Discuss the synthesis, structure and bonding of nitrosyl complexes.
24. Discuss the structure of cytochrome oxidones. What is the role of copper in it ?
25. Write briefly on (a) relavance of radiation chemistry in biology ; (b) principle and working scintillation counters.

$(2 \times 5 = 10)$