

F 5538

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Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, FEBRUARY 2016

First Semester

Faculty of Science

Branch : Chemistry

AN1C01/AP1C01/CH1C01/PH1C01/POH1C01—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. Explain fluxionality with two examples.
2. Draw the structure of $K^+ [Pt Cl_3 (C_2H_4)]$. How is synergic effect occur in these compounds ?
3. Explain hapticity with suitable examples.
4. It is rather easy to displace all four CO groups of $Ni (CO)_4$. Explain why.
5. Explain oxidative addition reaction in organometallic compound with one example.
6. What is Wilkinson catalyst ? What is it used for ?
7. Explain hydroformylation reaction with one example.
8. What is organometallic dendrimers ? How is it prepared ?
9. What do you mean by essential trace elements ? What are the essential and beneficial metals ?
10. Distinguish between active and passive transport across the membrane.
11. What are ionophores ? Give examples for different types of naturally occurring ionophores.
12. Explain the principle of GM counter.
13. What are thermonuclear reactions ? What are its applications ?

(10 × 1 = 10 marks)

Turn over

Section B

Answer any five questions.

Each question carries a weight of 2.

14. Discuss the structures of $\text{Cr}(\text{CO})_6$, $\text{Re}_2(\text{CO})_{10}$.
15. Distinguish between LNCC and HNCC clusters.
16. Explain insertion reaction in organometallic compounds with suitable example.
17. Explain Monsanto acetic acid process.
18. Explain the therapeutic applications of MRI agents.
19. How are condensation polymers based on ferrocene prepared?
20. Write note on biological calcification.
21. Explain the application of radioisotopes in radiopharmacology.

(5 × 2 = 10 marks)

Section C

Answer any two questions.

Each question carries a weight of 5.

22. (a) Explain the bonding in π -metal olefins.
(b) Explain Wade-Mingos rules with suitable examples.
23. (a) Write briefly on fluxional isomerism.
(b) Explain the uses of $\text{Co}_2(\text{CO})_8$ catalyst.
24. (a) Explain 'Na⁺ – K⁺' pump.
(b) Explain the role of haemoglobin and myoglobin in the transport and storage of oxygen and CO_2 .
25. Write briefly on :
(a) Preparation of polymers by ring opening polymerisation.
(b) Explain the relevance of radiation chemistry in biology.

(2 × 5 = 10 marks)