

G 2027

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Reg. No.....

Name.....

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

Fourth Semester

Faculty of Science

Branch III—Chemistry—Pure Chemistry

CH 4E 01—ADVANCED INORGANIC CHEMISTRY

(2012 Admissions—Regular)

Time : Three Hours

Maximum Weight : 30

Section A

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

1. How self assembled monolayers (SAM_s) are formed on a gold surface ?
2. How is BOD estimated ? Explain the significance of its value.
3. Explain "photolysis of water".
4. What are sandwich complexes ?
5. What is meant by chemical actinometry ?
6. What is HSAB theory ? Explain how it is useful in predicting stability of complexes with suitable example.
7. Write a note on properties of fullerenes.
8. Give an account of the microwave decomposition.
9. What are the uses of fluxes ? Give example.
10. Draw the linear combination of a_{1g} and a_{2u} LGDs of cyclopentadiene with Fe²⁺ orbitals.
11. Write a note on auto-ionization.
12. What is meant by vanishing integral ?
13. What is SPM ? How does it pollute environment ?

(10 × 1 = 10)

Section B

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

14. How can you eliminate moisture in samples ? Explain the differences between essential and non-essential water in samples.

Turn over

15. Briefly discuss the properties of solutions of alkali metals in liquid ammonia.
16. Write a note on nitrogen fixation.
17. Briefly explain photochemical reactions of Cr (III) and Ru (II) complexes.
18. Define g value. What are the factors affecting g value ? Explain the determination of g value in EPR spectroscopy.
19. How is SO_2 content in air estimated ? Explain.
20. Write a note on formation of symmetry adapted group of ligands.
21. What are quantum dots ? How will you characterise them ? Give its important applications.

(5 \times 2 = 10)

Section C

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

22. (a) Discuss in detail, the various methods used for the elimination of interferences from samples.
(b) Discuss the method of preparation of laboratory sample for real analysis.
23. Briefly describe the application of Infrared spectroscopy in the structural elucidation of coordination compounds.
24. List the major air pollutants. How are they estimated ? Discuss.
25. Write a note on correlation diagrams and its applications.

(2 \times 5 = 10)