MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :…… **Name :……**

First Semester B.Sc. Degree Examination, November 2015

First Degree Programme under CBCSS

Core Course: Chemistry – I

AUCH141: Inorganic Chemistry – I

(*for 2015 Admissions Only*)

Time: **3** Hours Max. Marks: **80**

SECTION – A

*Answer **ALL** questions in a word or one or two sentences.*

1. Write de Broglie equation
2. What is the reason for anomalous electronic configuration of Cu ?
3. State Hund's rule of maximum multiplicity.
4. Draw the radial probability distribution curve of 3p electrons.
5. Name the element having maximum electronegativity.
6. What is called van der Waals radius ?
7. What are the gases used as mobile phase in gas chromatography ?
8. What is metallochromic indicator ?
9. CFC's are responsible for _____.
10. An example of Green house gas.

(10 × 1 = 10 Marks)

SECTION – B

*Answer any **EIGHT** questions, not exceeding a paragraph.*

11. Write Schrodinger wave equation and explain the terms.
12. The kinetic energy of an electron has been found to be 5.76×10^{-15} J. Calculate the wave length associated with the electron.
13. State and explain Heisenberg's uncertainty principle.
14. State Hund's rule of maximum multiplicity.

15. Discuss Allred and Rochow's electronegativity scale.
16. An electron is in 3d orbital. What possible values for quantum numbers n, l, m and m_s can it have ?
17. Mention two applications of common ion effect.
18. What is redox titration ?
19. What are the advantages of Gas Chromatography ?
20. Give two sources of asbestos dust and fly ash.
21. Explain green house effect and its adverse effect on world's climate.
22. What are the toxic effects of CO pollution ?

(8 × 2 = 16 Marks)

SECTION – C

*Short essay type : Answer any **SIX** questions.*

23. State Fajan's Rules.
24. Explain the theory of complexometric titration.
25. Why Lithium and magnesium have close values of electronegativities ?
26. Draw the structure of *d* orbitals.
27. Explain the principle of gravimetric analysis.
28. Explain the significance of R_f value in paper chromatography.
29. Write a note on ozone – layer depletion and its consequences.
30. Explain two ecofriendly methods of pest control.
31. Discuss two methods for the treatment of industrial waste water.

(6 × 4 = 24 Marks)

SECTION – D

*Long essay type : Answer any **TWO** questions.*

32. Write down the solution of Schrodinger equation for a particle in a one dimensional box and solve the equation for the energy of electron.
33. Write a note on
    i). Factors influencing electronegativity **(7 Marks)**
    ii). Cause of soil pollution **(8 Marks)**
34. What are quantum numbers ? Give the significance of each.
35. i). Explain the working of thin layer chromatography. **(8 Marks)**
    ii). Write basic principle and applications of paper chromatography. **(7 Marks)**

(2 × 15 = 30 Marks)

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