First Semester B.Sc. Degree Examination, November 2018
First Degree Programme Under CBCSS
Chemistry
Core Course – I
CH 1141 : INORGANIC CHEMISTRY – I
(2013 Admission-2016 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** carries **1** mark.

1. Sketch the shape of dz^2 orbital.
2. How do you prove the particle nature of electron ?
3. What is Afbau principle ?
4. Explain Hunds rule of maximum multiplicity.
5. For Azimuthal quantum number l = 2, what will be the maximum number of electrons that can be accommodated ?
6. Magneson reagent is used to detect which metal ion ?
7. What is co-precipitation ?
8. Ozone layer is present in which region of the atmosphere ?
9. The thickness of ozone layer is measured in which unit ?
10. Which pollutant is responsible for minamata disease ? **(10×1=10 Marks)**

P.T.O.

SECTION – B

Answer **any 8** questions. **Each** carries **2** marks.

11. The uncertainty in position of an electron is 10 nm. Calculate uncertainty in momentum.

12. Sketch the radial probability distribution curves of 1s and 2s orbitals.

13. Give the significance of ψ and ψ^2.

14. Fe^{2+} ion is less stable than Fe^{3+} ion. Why ?

15. Write general electronic configuration of transition metals.

16. Write the structure of EDTA.

17. Write the theory of acid-base indicators.

18. What is common ion effect ?

19. What is global warming ?

20. Write any two applications of gas chromatography.

21. What is the importance of hydrosphere ?

22. Describe the various water purification methods. **(8×2=16 Marks)**

SECTION – C

Answer **any 6** questions. **Each** carries **4** marks.

23. What is smog ? Explain.

24. What are the causes and consequences of ozone layer depletion ?

25. Describe the important water quality parameters.

26. Discuss in detail the structure of the atmosphere.

27. State and explain de-Broglie hypothesis. Give its experimental verification.

28. What are quantum numbers ? How are they related to each other ?

29. How is Mulliken's electronegativity and Pauling scale of electronegativity inter-related ?

30. What do you mean by primary and secondary standard ? Give example.

31. Methyl orange cannot be used as an indicator in the titration of a weak acid and strong base. Explain.

(6×4=24 Marks)

SECTION – D

Answer **any 2** questions. **Each** question carries **15** marks.

32. Solve Schrodinger wave equation for particle in a one dimensional box and deduce expression for energy.

33. How do you make use of the concept of solubility product in qualitative analysis ? Discuss.

34. Discuss briefly :

    a) Redox indicators

    b) Complexometric titration.

35. What are the major sources of air pollutants ? How do you minimize air pollution ? Discuss.

(2×15=30 Marks)