

2012

B.A./B.Sc. (General) Third Semester
Chemistry
Paper – IX: Inorganic Chemistry – A
(Same for B. Sc. Microbial and Food Technology)

Time allowed: 3 Hours

Max. Marks: 22

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

- 1.(a) Why do transition metals have high enthalpies of atomisation? Give reason.? 1
(b) Describe platinum metals. 1
(c) Comment on the catalytic behaviour of transition metals. 1
(d) Delineate the stability of coordination compounds? 1
(e) Write a short note on bridging ligand. 1
(f) How would you differentiate the inner orbital complex and outer orbital complex? 1

UNIT-I

- 2.(a) Describe the properties of the first transition series elements reference to ionisation energy and oxidation state. 2
(b) Discuss the complex formation tendency of first transition series elements. Give example. 2
3.(a) Explain the following with proper reasons: (i) First transition series elements, the atomic radii decrease from Sc to Cr, and from Cr to Cu, it is almost nearly same (ii) Cd is transition elements but its salts are colourless. 2
(b) Discuss the important properties of Mn and the aqueous chemistry of the Zn in different oxidation states. 2

UNIT-II

- 4.(a) How does oxidation state and electron negativity influence the properties and complex formation tendency of second and third transition series elements? Explain 2
(b) Discuss the occurrence of rhodium in nature? Explain any method for the measurements of magnetic susceptibility. 2
5.(a) Explain the complexation ability, properties and uses of platinum. 2
(b) Clarify the magnetic moment. Write all the factors that affect the magnetic moment of the elements of the second and third transition series in the periodic table. 2

UNIT-III

- 6.(a) What do you mean by optical isomerism? Discuss the concept of geometrical isomerism concerning the geometry of metal complexes. 2
(b) State primary and secondary valency of coordination compounds. Explain Werner's theory of experimental verification for coordination compounds. 2
7.(a) Describe Sidwick's electronic concept of coordinate bond and its limitation with examples. 2
(b) How would you explain the isomerism in coordination compounds with different coordination numbers? 2

UNIT-IV

- 8.(a) What do you mean by hybridization? Based on valence bond theory, discuss the geometry and magnetic behaviour of the tetrahedral and square planar complexes of the Ni(II). 2
(b) State distortion in octahedral complexes. Write the limitation of the Valence bond theory. 2
9.(a) Describe the following terms with suitable examples: (i) antiferromagnetic (ii) ferrimagnetic substance (iii) d^2sp^3 hybridisation (iv) Low spin. 2
(b) With the help of valence bond theory discuss the bonding and colours in the transition metal complexes. 2

x-x-x