

M.Sc.(Chem.) Semester - 1 (CBCS) Examination
OCT/NOV-2024 (AS PER SYLLABUS YEAR JUNE-2018)
INORGANIC CHEMISTRY (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- Q.1 (A) Answer the following (04)**
(1) Briefly explain types of bonding in molecules with suitable examples.
- Q.1 (B) Answer any two questions out of three. (10)**
(1) Discuss the AB₂ type molecule with two lone pairs.
(2) Give the MOT Diagram of O₂ and explain stability of O₂, O₂⁺, O₂⁻.
(3) Discuss the shape of Cl₂O according to VBT and VSEPR.
- Q.2 (A) Answer the following. (04)**
(1) Briefly discuss sulphates of alkaline earth metal.
- Q.2 (B) Answer any two questions out of three. (10)**
(1) Give the details of elements in group-13 and discuss its oxidation state.
(2) Write a note on carbides of group-2.
(3) Explain the chemical properties of oxygen family.
- Q.3 (A) Answer the following. (04)**
(1) Briefly explain classification of metal complexes.
- Q.3 (B) Answer any two questions out of three. (10)**
(1) Discuss the rules of IUPAC nomenclature of metal complexes.
(2) Explain geometrical isomerism in 4 C.N. compounds.
(3) Discuss transition and spectra in d² and d⁷ configuration in Oh and Td high spin.
- Q.4 (A) Answer the following. (04)**
(1) What is trans effect in metal complexes? Explain briefly.
- Q.4 (B) Answer any two questions out of three. (10)**
(1) Discuss the factor effecting in substitution reaction of octahedral metal complexes.
(2) Discuss the substitution reaction mechanism in 4 C.N. metal complexes.
(3) Discuss the inner/outer sphere reaction mechanism in metal complexes.
- Q.5 (A) Answer the following (04)**
(1) Briefly explain electron capture and radioactive decay.
- Q.5 (B) Answer any two questions out of three. (10)**
(1) Explain nuclear recoil and theory of MB spectroscopy.
(2) Discuss the identification of prussian blue-turnbul's blue by use of MB spectroscopy.
(3) Write a note on identification of Iron protein by MB spectroscopy.
