

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**M.Sc., Summer 2017-18 Examination**

**Semester: 2**  
**Subject Code: 11205152**  
**Subject Name: Inorganic Chemistry-II**

**Date: 09/05/2018**  
**Time: 10:30 am to 1:00 pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**  
 (a) Explain any two quantum numbers.  
 (b) Discuss essential elements in biological system (any 4).
- Q.1. B) Answer the following questions (Any two) (04)**  
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)  
 1. Draw the shapes of s- and p- orbitals.  
 2. Discuss about cis-platin as anticancer drug.  
 (b) Short note : Photoelectric effect (04)  
 (c) Short note : Hemoglobin and Myoglobin (04)
- Q.2. A) Answer the following questions. (04)**  
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)  
 1. Discuss ring size effect in metal-ligand complex.  
 2. Draw the shapes of d-orbitals.  
 (b) Short note : Stability of complex ions (04)
- Q.2. B) Answer the following questions (Any two) (03)**  
 (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)  
 1. Give the Schrodinger wave equation.  
 2. Define : Symmetry group  
 3. What is MRI?  
 (b) Short note : Black body radiation (03)  
 (c) Short note : Determination of point group of H<sub>2</sub>O (03)
- Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**  
 (a) Explain all symmetry elements in brief.  
 (b) Describe the effect of nature of metal ion and ligand to the stability of metal-ligand complex.
- Q.3. B) Answer the following questions (Any two) (04)**  
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) (04)  
 1. Write down the symmetry elements of *T<sub>d</sub>* point group.  
 2. Discuss the metal complexes as radio diagnostic agents.  
 (b) Short note : Representation of symmetry operations as matrices. (04)  
 (c) Short note : Toxic metals in biological system. (any 4) (04)
- Q.4. A) Answer the following questions. (04)**  
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)  
 1. Discuss the effect of co-ordination number to the stability of metal-ligand complex.  
 2. What is symmetry operation? Explain with example.  
 (b) Short note : Determination of binary formation constants of complexes by pH metry titrations and spetrophotometric method. (04)
- Q.4. B) Answer the following questions (Any two) (03)**  
 (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)  
 1. What is atomic spectra?  
 2. Define : Co-ordination number  
 3. Which nitrogen fixation is superior? a). Biological b). Industrial  
 (b) Short note : Na-K pump (03)  
 (c) Short note : Chelate effect (03)