

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc./IMSC, Winter 2019-20 Examination

Semester: 1/7

Date: 02/12/2019

Subject Code: 11205102

Time: 10:30 am to 01:00 pm

Subject Name: Inorganic Chemistry-I

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) Write a note on quenching of orbital magnetic moment by crystal field.
 (b) Discuss about spin orbit coupling on A and E terms.
- 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. Discuss ferrimagnetism.
 2. Write a note on magnetic susceptibility.
 (b) Short note: diamagnetism (04)
 (c) Short note: ferromagnetism and antiferromagnetism (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. Write a note on free particle.
 2. Discuss about commutative properties.
 (b) Short note: quantum numbers (04)
- Q.2. B) Answer the following questions (Any two) (03)**
 (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)
 1. What is Eigen value?
 2. Define degeneracy.
 3. What is quantum number?
 (b) Short note: particle in a one dimensional box (03)
 (c) Short note: Laplacian and Hamiltonian operators (03)
- Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**
 (a) What do you mean by organoborane compound? Discuss about it in detail.
 (b) Give applications of inorganic polymer compounds in organic synthesis.
- 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. What do you mean by STYX rules?
 2. Write a note on diborane.
 (b) Short note: phosphonitrilic polymers. (04)
 (c) Short note: crystal field theory for tetrahedral complexes (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. Calculate term symbols for d^2 configuration.
 2. Write a note on CFT.
 (b) Short note: tetragonal distortion in octahedral complexes (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 cyclic borazine?
 2. Define : Inorganic polymer
 3. Give any two uses of phosphonitrilic acid
 (b) Short note: crystal field theory for octahedral complexes (03)
 (c) Short note: MOT (03)