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CHE-501

Inorganic Chemistry

M.Sc. CHEMISTRY

(MSCCH - 12/13/16/17)

First Year, Examination-2019

Time: 3 Hours **Max. Marks: 80**

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Note:- This paper is of Eighty (80) marks divided into two (02) Section A and B. Attempt the question contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Question)

Note:- Section - A contains five (05) long answer-type questions of fifteen (15) marks each. Learners are required to answer any three (03) questions only. (3×15=45)

1. Explain crystal field theory with examples. Describe its limitation.

2. Explain trans – effect. Give a suitable mechanism for the substitution reaction in square planer complexes?

3. Discuss the role of metal ions in Biological systems?

4. Discuss the mechanism involved in electron transfer reaction. Give suitable examples.

5. Discuss briefly the various applications of the group theory.

Section-B

(Short Answer Type Question)

Note:- Section-B contains eight (08) short answer type questions of seven (07) marks each. Learners are required to answer any five (05) questions only. (5×7=35)

1. Write a note on stepwise formation constant and over all formation constant?

2. What is a metal cluster? Illustrate giving suitable examples.

3. Find the point group of following compounds

   (a) H_2O (b) H_3BO_3

   (c) CO_2 (d) PF_5

4. Show that each fe atom in $Fe_3(CO)_{12}$ conforms to the 18 electron rule?

5. Explain $[Ni(CN)_4]^{-2}$ is square planer diamagnetic but $[NiCl_4]^{-2}$ is tetrahedral paramagnetic?

6. Draw the catalytic cycle for olefin hydrogenation using Wilkinson's catalyst.

7. Explain the effect of basicity of ligands on the stability of metal complexes?

8. Draw and explain orgel diagram of d^8 ion in tetrahedral field.

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