647510 MSCinoCC1010 Seat No :_____

M.Sc.(Chem.) Semester - 1 (*CBCS*) Examination
Oct/Nov. -2019 - [NEW COURSE]
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** **4 Marks**

(1) Explain the M.O. Diagram of Cl_2.

Q.1 (b) **Answer any two question out of three.** **10 Marks**

(1) Explain why the bond angle in H_2O is smaller than regular tetrahedron.

(2) Discuss the shape of SiF_6^{-2} according to VBT and VSEPR.

(3) Explain the M.O. diagram of CO molecule.

Q.2 (a) **Answer the following** **4 Marks**

(1) Write a short note on sulphates of group-2 elements.

Q.2 (b) **Answer any two question out of three.** **10 Marks**

(1) Write a note on chemical properties and structure of Xenon.

(2) Explain the chemical properties of Nitrogen family.

(3) Discuss the oxide, peroxide and superoxide of group-1elements.

Q.3 (a) **Answer the following** **4 Marks**

(1) Give the IUPAC Name of:
(a) $[Hg(CH_3)Cl]$ (b) $[Cr(H_2O)_6](NO_3)_3$
(c) $Cs[CrFCl_3]$ (d) $[Cu(NH_3)_2(en)]Br_2$

Q.3 (b) **Answer any two question out of three.** **10 Marks**

(1) Write a note on structural isomerism in coordinated compound.

(2) Discuss geometrical isomerism in compounds having Coordination number-6.

(3) Explain the term splitting with example of "D" term splitting.

Q.4 (a) **Answer the following** **4 Marks**

(1) Explain inert and labile. Give the factors affecting the labile/inert nature of complexes.

Q.4 (b) **Answer any two question out of three.** **10 Marks**

(1) Explain the substitution reaction in octahedral complexes.

(2) Discuss the factor effecting in substitution reaction of metal complexes.

(3) What is trans effect? Explain the trans effect in square planner complexes.

Q.5 (a) **Answer the following** **4 Marks**

(1) What is Doppler effect in MB spectroscopy?

Q.5 (b) **Answer any two question out of three.** **10 Marks**

(1) Discuss the isomer shift in MB spectroscopy.

(2) Explain the MB spectra of $[Fe(CO)_5]$ and $[Fe_2(CO)_9]$.

(3) Discuss the MB spectra of $FeSO_4.7H_2O$ and $FeCl_3.6H_2O$.

****