

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.
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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-1 elements.

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

- (1) Give the IUPAC Name of:
(a) $[\text{Hg}(\text{CH}_3)\text{Cl}]$ (b) $[\text{Cr}(\text{H}_2\text{O})_6](\text{NO}_3)_3$
(c) $\text{Cs}[\text{CrFCl}_3]$ (d) $[\text{Cu}(\text{NH}_3)_2(\text{en})]\text{Br}_2$

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 planar 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 $[\text{Fe}(\text{CO})_5]$ and $[\text{Fe}_2(\text{CO})_9]$.
- (3) Discuss the MB spectra of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ and $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$.