

Roll No. ....

Total Pages : 4

**GSQ/M-21**

**1750**

**INORGANIC CHEMISTRY**

Paper–XVIII, CH-304

Time Allowed : 3 Hours]

[Maximum Marks : 32

**Note** : Attempt **five** questions in all, selecting **two** questions each from Unit-I and Unit-II. Question No. 1 is compulsory.

**Compulsory Question**

1. (i) Give two examples of one Carbon Bonded ligand. 1
- (ii) Which is stronger acid between  $\text{BF}_3$  and  $(\text{CH}_3)_3\text{B}$  ? 1
- (iii) Which enzyme is used in conversion of  $\text{CO}_2$  to Bicarbonate ? 1
- (iv) What is the formula of Ferrocene ? 1
- (v) How is Iron stored in the body ? 1
- (vi) What is the hepaticity of Butadiene in the complex  $[\text{Fe}(\text{CO})_3(\text{C}_4\text{H}_6)]$  ? 1

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**P. T. O.**

- (vii) Name any two  $\pi$ -acid ligands. 1
- (viii) What is Glass transition temperature ? 1

### UNIT-I

2. (a) What do you understand by  $\beta$ -elimination in metal alkyls ? How can it be avoided ? Explain giving example. 2
- (b) Explain the structure of Methyl lithium. 2
- (c) What is EAN rule ? Give one example each of organometallic compound in which EAN rule is :
- (i) obeyed
- (ii) not obeyed. 2
3. (a) Discuss the nature and bonding in metal Carbonyl complexes. 3
- (b) Explain Lewis concept of Acids and Bases. 2
- (c) Write the IUPAC name of  $[\text{PtCl}_3(\text{C}_2\text{H}_4)]^-$ . 1
4. (a) What are the limitations of HSAB principle ? 2
- (b) Give any two methods of preparation of Organotin compounds. 2

- (c) In each of the following pairs, which is stronger acid and why ?
- (i) HF and HCl.
  - (ii)  $C_6H_5COOH$  and  $CH_3COOH$ . 2
5. (a) What is  $\beta$ -strain ? Explain giving example. 3
- (b) What is the theoretical justification of HBAB principle ? 2
- (c)  $[AgI_2]^-$  is stable and  $[AgF_2]^-$  is unstable. Why ? 1

## UNIT-II

6. (a) What is Nitrogen fixation ? Discuss briefly biological and abiological nitrogen fixation. 2
- (b) Draw the polymeric backbones of Silicones and Phosphagenes. 2
- (c)  $Fe^{II}$  salts undergo hydrolysis in air, but not so in Mb or Hb. Explain. 2
7. (a) Name two Oxygen carriers and give their importance in Biological system. 3
- (b) What is the biological role of  $Mg^{2+}$  ? 2
- (c) Define Bohr effect. 1

8. (a) Draw a cyclic process showing role of Hb and Mb as O<sub>2</sub> and CO<sub>2</sub> transporter. 3
- (b) What are Silicon resin ? Give their applications. 3
9. (a) What are homomorphous and heteromorphous  $\pi$  system ? 2
- (b) List important properties of Silicones. 2
- (c) Name four main classes of the Silicone elastomers. 2