

Roll No. ....

Total Pages : 03

**GSQ/M-20**

**1750**

**CHEMISTRY**

**Paper XVIII (CH-304)**

**Inorganic Chemistry**

Time : Three Hours]

[Maximum Marks : 32

**Note :** Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. **1** is compulsory.

1. (i) Why Carbonyls are generally diamagnetic ?
- (ii) What are Levelling solvents ?
- (iii) Name the element present in Chlorophyll.
- (iv) What is inorganic rubber ?
- (v) Write IUPAC name of  $---(\text{Si}(\text{CH}_3)(\text{C}_6\text{H}_5)-\text{O}---)_n$
- (vi) Draw structure of staggered ferrocene.
- (vii) Why is  $\text{HNO}_3$  stronger acid than  $\text{HNO}_2$  ?
- (viii) Draw structure *o*-Phenylene mercury. 1×8

**Section A**

2. (a) What are hard and soft acids and bases ? 2
- (b) What is relationship of electronegativity with hardness and softness ? 2

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- (c) Explain, how  $\text{BF}_3$  and  $\text{CO}_2$  behave as Lewis acids. 2
3. (a) Explain Bronsted Lowry concept of acids and bases. 2
- (b) Explain the feasibility of the following reaction : 2  
 $\text{CH}_3\text{HgF} + \text{HSO}_3^{-1} \longrightarrow \text{CH}_3\text{HgSO}_3^{-1} + \text{HF}$
- (c) Why  $\text{Cl-OH}$  is an acid while  $\text{NaOH}$  is a base ? 2
4. (a) Discuss bonding in Zeise salt. 2
- (b) Give important uses of organomercury compounds. 2
- (c) Complete the following : 2
- (i)  $\text{AlR}_3 + \text{SnCl}_4 \longrightarrow \dots\dots\dots$
- (ii)  $[\text{Fe}(\text{CO})_5] + \text{Ph}_3\text{P} \longrightarrow \dots\dots\dots$
5. (a) How can you increase the stability of metal-alkyl compounds ? 2
- (b) Explain  $3\text{C}-2\text{e}$  bond in Trialkyl aluminium compounds. 2
- (c) Give *three* methods of preparation of Organo-Lithium compounds. 2

### Section B

6. (a) What are essential and non-essential elements ? 2

- (b) Discuss the role of  $Mg^{+2}$  in biological system and in ATP. 2
- (c) Discuss reason, why Fe[II] in myoglobin does not oxidise. 2
7. (a) What are similarity and difference in the structure of Haemoglobin and Myoglobin and give their functions ? 2
- (b) What is the difference between  $N_2$  fixation and nitrogen assimilation ? 2
- (c) Sodium pump is electrogenic in nature. Explain. 2
8. (a) Discuss Island model of bonding in cyclic  $(NPCl_2)_3$ . 2
- (b) How are cross-linked silicones prepared ? 2
- (c) Sketch the conformations of tetramer  $(NPCl_2)_4$ . 2
9. (a) State *three* major classes of silicone elastomers and write their uses. 2
- (b) Give *three* uses of Phosphazenes. 2
- (c) Complete the following : 2
- (i)  $(NPCl_2)_3 + NaF \longrightarrow \dots\dots\dots$
- (ii)  $(NPCl_2)_3 + RNa \longrightarrow \dots\dots\dots$