

# C.U.SHAH UNIVERSITY

## Summer Examination-2019

**Subject Name: Inorganic Chemistry-III****Subject Code: 4SC05ICH1****Branch: B.Sc. (Chemistry)****Semester: 5 Date: 14/03/2019****Time: 10:30 To 01:30****Marks: 70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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**Q-1 Attempt the following questions: (14)**

- What is center of symmetry? (1)
- Define symmetry elements. (1)
- What is horizontal plane of symmetry? (1)
- Define silicones. (1)
- What is compounding? (1)
- Define carbonyl clusters. (1)
- What is chevreton phases? (1)
- Give conjugate acid and conjugate base for  $\text{NH}_3$ . (1)
- Write HSAB principle. (1)
- What do you mean by solvent? (1)
- Is  $\text{NH}_3$  protonic solvent or not? (1)
- Give full form of CFSE. (1)
- Which one is high spin complex  $\text{K}_4[\text{Fe}(\text{CN})_6]$  or  $\text{K}_4[\text{Fe}(\text{H}_2\text{O})_6]$ ? (1)
- What is general formula of magnetic moment  $\mu$  for transition elements? (1)

**Attempt any four questions from Q-2 to Q-8****Q-2 Attempt all questions (14)**

- Describe center of symmetry with example. (7)
- Write short note on plane of symmetry. (7)

**Q-3 Attempt all questions (14)**

- Write short note on polycarboranes. (7)
- Describe elastomers. (7)

**Q-4 Attempt all questions (14)**

- Write Wade's rules for electron counting scheme. (7)
- Describe high nuclearity carbonyl cluster (HNCC). (7)

**Q-5 Attempt all questions (14)**

- Define acid-base as per Arrhenius concept, Lowry-Bronsted concept and Lux-Flood concept. (7)



- b) Describe hard and soft acid-base concept. (7)
- Q-6**      **Attempt all questions**      (14)
- a) Give general information about anhydrous HF as solvent. (7)
- b) Give advantages and limitation of liquid  $\text{NH}_3$  as a solvent. (7)
- Q-7**      **Attempt all questions**      (14)
- a) Explain Splitting of d-orbital in octahedral complex. (7)
- b) Calculate CFSE and magnetic moment of  $\text{K}_4[\text{Fe}(\text{CN})_6]$  and find oxidation number of Fe. (7)
- Q-8**      **Attempt all questions**      (14)
- a) Find the symmetry elements like  $C_n$ ,  $S_n$ ,  $\sigma_v$ ,  $\sigma_h$  and  $i$  of benzene. (7)
- b) Explain Splitting of d-orbital in tetrahedral complex. (7)

