Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2022

Subject Name: Inorganic Chemistry-III
Subject Code: 4SC05ICH1 **Branch: B.Sc. (Chemistry)**
Semester: 5 **Date: 22/04/2022** **Time: 11:00 To 02:00** **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.

Q-1 **Attempt the following questions:** **(14)**

a) What is symmetry element? **(1)**
b) Define symmetry operation. **(1)**
c) What is vertical plane of symmetry? **(1)**
d) Give any example of inorganic polymer. **(1)**
e) What is cross linking? **(1)**
f) Define High nuclearity carbonyl clusters. **(1)**
g) Give any example of mono nuclear carbonyl cluster. **(1)**
h) Give conjugate acid and conjugate base for NH_3. **(1)**
i) What is acid according to Lux-flood concept? **(1)**
j) What do you mean by amphiprotic solvent? **(1)**
k) Is C_6H_6 aprotic solvent or not? **(1)**
l) Give full form of CFT. **(1)**
m) Which one is high spin complex $Na_4[Co(CO)_6]$ or $K_4[Co(NH_3)_6]$? **(1)**
n) What bi dentate ligand? **(1)**

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**
a) Describe vertical plane of symmetry with example. **(7)**
b) Explain multiplication table for PCl_3. **(7)**

Q-3 **Attempt all questions** **(14)**
a) Write general properties of inorganic polymer. **(7)**
b) Write short note on layer polymer of $(BN)_n$. **(7)**

Q-4 **Attempt all questions** **(14)**
a) Write Wade's rules for electron counting scheme. **(5)**
b) Find metal cluster frame work or skeletal structure of following (i) $Fe_4C(CO)_{12}]^{2-}$, (ii) $[H_3Ru_4(CO)_{12}]^-$ and (iii) $Rh_6(CO)_{16}$ **(9)**

Q-5 **Attempt all questions** **(14)**
a) Describe acid-base as Lowry and Bronsted concept. **(7)**

	b)	Describe hard and soft acid-base concept.	**(7)**
Q-6		**Attempt all questions**	**(14)**
	a)	Write advantages and limitation of liquid ammonia.	**(7)**
	b)	Explain characteristic properties of solvents.	**(8)**
Q-7		**Attempt all questions**	**(14)**
	a)	Explain Splitting of d-orbital in octahedral complex.	**(7)**
	b)	Calculate CFSE and magnetic moment of $[Fe(CO)_6]^{2+}$ and find oxidation number of Fe.	**(7)**
Q-8		**Attempt all questions**	**(14)**
	a)	Write multiplication table for C_2v.	**(7)**
	b)	Explain Splitting of d-orbital in tetrahedral complex.	**(7)**