Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY
Winter Examination-2022

Subject Name : Inorganic Chemistry-III

Subject Code : 4SC05ICH1 **Branch: B.Sc. (Chemistry)**

Semester: 5 **Date: 22/11/2022** **Time: 02:30 To 05:30** **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.

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

a) What is symmetry? **(01)**
b) Give the name of symmetry elements. **(01)**
c) What is inorganic polymer? **(01)**
d) Give a structure of borazine. **(01)**
e) Write Arrhenius acid base principle. **(01)**
f) Give conjugate acid and conjugate base of NH_3. **(01)**
g) Define : metal cluster **(01)**
h) Give structure of $Fe_2(CO)_9$. **(01)**
i) Write equation to find magnetic momentum. **(01)**
j) Define: splitting energy. **(01)**
k) Give any two examples of halide type clusters. **(01)**
l) Write full form of C.F.S.E. **(01)**
m) Write only reaction to form linear chain silicone. **(01)**
n) What is axis of symmetry? **(01)**

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

Q-2 **Attempt all questions** **(14)**
A Construct multiplication table for C_2V point group. **(07)**
B Explain centre of symmetry with example. **(05)**
C Give the symmetry elements and point group with structure of BF_3 **(02)**

Q-3 **Attempt all questions** **(14)**
A Write a brief note on classification of inorganic polymers. **(06)**
B Discuss chemical properties of borazine. **(05)**
C Give uses of silicones. **(03)**

Q-4 **Attempt all questions** **(14)**
A Discuss, on the basis of molecular orbital theory, the structure of $[Re_2Cl_8]^{2-}$. **(07)**
B What are low nuclearity and high nuclearity carbonyl clusters? Giving **(07)**

suitable examples discuss the structure and bonding in LNCC.

Q-5		**Attempt all questions**	**(14)**
	A	Explain Lewis acid-base concept.	**(07)**
	B	Describe Lowry-Bronsted concept and write its merits and demerits.	**(07)**
Q-6		**Attempt all questions**	**(14)**
	A	Give classification of solvent.	**(07)**
	B	Write chemical properties of liquid NH_3 and give its advantages.	**(07)**
Q-7		**Attempt all questions**	**(14)**
	A	Explain splitting of d-orbitals in octahedral field and C.F.S.E.	**(07)**
	B	What is pairing energy? Explain high spin and low spin complex.	**(07)**
Q-8		**Attempt all questions**	**(14)**
	A	Splitting energy (Δo) of d orbitals in $[Cr(CN)_6]^{4-}$ is 26300 cm^{-1} and pairing energy is 23500 cm^{-1}. Find out C.F.S.E. and magnetic momentum (83.7 cm^{-1} = 1 k.J/mole)	**(06)**
	B	Explain different type of plane of symmetry with examples.	**(08)**