

# C.U.SHAH UNIVERSITY

## Winter Examination-2022

Subject Name: Inorganic Chemistry-II

Subject Code: 5SC02ICH1

Branch: M.Sc. (Chemistry)

Semester: 2

Date: 19/09/2022

Time: 11:00 To 02:00

Marks: 70

### Instructions:

- (1) Use of Programmable calculator and 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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### SECTION – I

**Q-1 Attempt the Following questions. (07)**

- a. What is the 'g' value for free electron? (1)
- b. Is deuterium ESR active or not? (1)
- c. How much spectral line for  $\text{NH}_3$  and  $\text{ND}_3$ . (2)
- d. Define ion exchanger. (1)
- e. Define polyatomic ion? (1)
- f. Who made first synthetic organic ion exchanger? (1)

**Q-2 Attempt all questions (14)**

- a. Write note on instrumentation of ESR? (7)
- b. Write calculation of energies of Zeeman level. (7)

OR

**Q-2 Attempt all questions (14)**

- a. One electron effected by three equivalent proton. (14)

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

- a. Principle of ion exchange chromatography. (7)
- b. Describe cation exchanger and anion exchanger (7)

OR

**Q-3 Attempt all questions (6)**

- a. Write advantages and disadvantages of ion-exchange chromatography. (6)
- b. Write note on ion exchange resin and ion exchange cellulose. (8)

### SECTION – II

**Q-4 Attempt the Following questions (07)**

- a. Define  $\sigma$ -bonded organometallic compound (1)
- b. What is homoleptic and  $\sigma$ -bonded organometallic compound? (1)
- c. What is Metallobiomolecules? (1)



- d. Which metal ion is essential for maintaining rhythm of heart? (1)  
e. Which are ultra-trace elements? (1)  
f. Give the name of essential macro minerals for body. (1)  
g. How many porphyrin ring in myoglobin? (1)

- Q-5 Attempt all questions (14)**  
a. Write classification of essential elements based upon amount of needed. (7)  
b. Write roll of alkali and alkaline earth metal ion in biological system. (7)

**OR**

- Q-5 Attempt all questions (14)**  
a. Give the difference between  $\sigma$ -bonded and  $\pi$ -bonded OMC. (8)  
b. Write physical properties of  $\eta^2$ -alkene complexes. (6)

- Q-6 Attempt all questions (14)**  
a. Brief note on biological nitrogen fixation. (14)

**OR**

- Q-6 Attempt all Questions (14)**  
a. Introduction of Na-K pump. (10)  
b. Give any four preparation of  $\sigma$ -bonded OMC of transition metals. (4)

