

Enrollment No:- _____

Exam Seat No:- _____

C.U.SHAH UNIVERSITY

Summer-2015

Subject Code: 5SC02CHC1

Subject Name: Inorganic Chemistry

Course Name: M.Sc. (Chemistry)

Date: 18/5/2015

Semester:II

Marks:70

Time:10:30 TO 01:30

Instructions:

- 1) Attempt all Questions of both sections in same answer book/Supplementary.
- 2) Use of Programmable calculator & any other electronic instrument prohibited.
- 3) Instructions written on main answer book are strictly to be obeyed.
- 4) Draw neat diagrams & figures (if necessary) at right places.
- 5) Assume suitable & perfect data if needed.

SECTION-I

- Q1. Do as directed. 07
- a. Write the definition of organometallic complexes. 02
- b. What is an electron spin resonance phenomenon? 02
- c. Write the outcome of following reactions. 02
- $$\text{Na}^+[\text{Mo}(\text{CO})_3(\eta^5\text{-C}_5\text{H}_5)]^- + \text{Ph-CH}_2\text{Cl} \longrightarrow ? \xrightarrow{\text{UV}} ?$$
- $$\text{R}-\underset{\text{H}}{\text{C}}=\text{CH}_2 + \text{CO} + \text{H}_2 \xrightarrow[150^\circ\text{C, 100-400 atm}]{\text{Co}_2(\text{CO})_8} ?$$
- $$\text{H}_2\text{C}=\text{CH}_2 + \text{CO} + \text{H}_2 \xrightarrow[55^\circ\text{C, 500 atm}]{\text{RhCl}_3/\text{HCl}} ?$$
- d. What is coenzyme 01
- Q 2. Answer the following in detail. 14
- a. Derive the expression for determination of Lande's splitting factor. Calculate the value of Lande's splitting factor for DPPH. 05
- b. What are the differences between σ - and π -bonded complexes? 05
- c. Explain different parts of ESR instruments and its functions. 04
- Or
- Q 2. Answer the following in detail. 14
- a. Enlist the methods of preparation of σ -bonded organometallic compounds. Explain halide carbanion exchange reaction. 05
- b. Explain different types of ESR spectrometers. 05
- c. Explain chemical properties involving insertion reaction of η^3 -allyl complexes. 04
- Q 3. Answer the following in detail. 14
- a. What is eluent in ion exchange chromatography? Explain with suitable 07



- example the effect of temperature on the NMR of Rh-alkene complexes
- b. What is ESR spectroscopy? Discuss the different parts of ESR instruments and its functions. 07

Or

- Q 3. Answer the following in detail. 14
- a. What types of system can be studied by electron spin resonance phenomenon? 07
Explain the hyperfine splitting in the ESR spectra of H_2^+ .
- b. Explain different types of ESR spectrometers in detail with diagram. 07

SECTION-II

- Q 4. Do as directed. 07
- a. What is ion exchange? 02
- b. Why Zinc is called super biocatalyst? 02
- c. Gives the applications of ion exchange chromatography 02
- d. Define photosynthesis 01

- Q 5. Answer the following in detail. 14
- a. Explain the different structure of metallo porphyrins 05
- b. Write a note on bulk metal in human system 05
- c. Discuss the role of Myoglobin and Haemoglobin 04

Or

- Q 5. Answer the following in detail. 14
- a. What are the properties of ion exchange cellulose? Discuss the ion exchange cellulose with suitable example 05
- b. Discuss the different types of ion exchangers based upon functional group of the resin 05
- c. Write a note on ion exchange gel. 04

- Q 6. Answer the following in detail. 14
- a. Write a note on 07
- I. Iodine Hormone
- II. Physiology of blood
- b. Discuss the thyroid hormones in detail and derive the expression for calculating energies of Zeeman levels. 07

Or

- Q 6. Answer the following in detail. 14
- a. Write a note on 07
- I. Toxic effect of Lead and Cadmium
- II. Separation procedure for Co on anion exchanger
- b. Gives advantages of polymer over polycondensation and explain the theory and principle of ion exchange resin 07

