Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Inorganic Chemistry

Subject Code: 5SC02CHC1 **Branch: M.Sc.(Chemistry)**

Semester : 2 **Date : 04/05/2016** **Time : 10:30 To 01:30** **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.

SECTION – I

Q-1 **Attempt the following questions** **(07)**

a. What are toxic elements? **(1)**
b. Define metallobiomolecules. **(1)**
c. What are organometallic compounds? **(1)**
d. Give the structure of Heme-b. **(1)**
e. Write the outcome of the following reaction: **(1)**

f. Give the biological functions of Na and K in human body. **(1)**
g. Give the name of a disease caused by the deficiency of iodine in human body. **(1)**

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

a. Explain classification of σ-bonded organometallic compounds. Write any two methods for preparation of σ-bonded organometallic compound. **(7)**
b. Discuss the toxicity of Lead and Cyanide. **(7)**

OR

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

a. What are η^2-alkene complexes? Explain various methods of preparation of η^2-alkene complexes **(7)**
b. Discuss the toxic effect of Arsenic and Mercury. **(7)**

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

a. Write a note on metalloporphyrins. **(5)**
b. Discuss the role of Haemoglobin and Myoglobin in human body. **(5)**
c. Explain any four chemical reactions of σ-bonded organometallic compounds. **(4)**

OR

Q-3 **a.** Explain nucleophilic and electrophilic reactions of η^2-alkene complexes. **(5)**

b. Discuss the preparation of η^3-allyl complexes. **(5)**

c. Give the differences between σ-bonded and π-bonded organometallic compounds. **(4)**

SECTION – II

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

a. Give the principle of ESR spectroscopy. **(1)**

b. What is ion-exchange chromatography? **(1)**

c. Define elution. **(1)**

d. Give the uses of ion-exchange chromatography. **(1)**

e. Why zinc is called as super biocatalyst? **(1)**

f. $B(CH_3)_3$ is organometallic compound, but $B(OCH_3)_3$ is not. Why? **(1)**

g. Define ESR silent system. **(1)**

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

a. Derive the expression for determination of Lande's splitting factor. Calculate the value of Lande's splitting factor for DPPH. **(5)**

b. Write a note on hyperfine splitting in ESR. **(5)**

c. Describe types of systems studied by ESR spectroscopy. **(4)**

OR

Q-5 **a.** Discuss ion-exchange resins. **(5)**

b. Explain the types of ion-exchangers on the basis of functional groups of the resins. **(5)**

c. Explain the separation of chloride and bromide on an anion exchanger. **(4)**

Q-6 **Attempt all questions** **(14)**

a. Explain hyperfine splitting formed by the interaction of an unpaired electron with two equivalent hydrogen atoms in ESR spectroscopy. **(7)**

b. Write a note on ion-exchange cellulose. **(7)**

OR

Q-6 **Attempt all Questions**

a. Discuss factor affecting g value. Calculate the g value if the methyl radical shows ESR at 3290 G (0.3290 T) in a spectrometer operating at 9230 MHz. [where h = 6.627×10^{-34} Js, $\beta = 9.274\times10^{-24}$ JT^{-1}]. **(7)**

b. Explain the separation of zinc and magnesium on anion exchanger. **(7)**