

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Inorganic Chemistry-II**Subject Code: 4SC06CHC1****Branch: B.Sc.(Chemistry)****Semester: 6****Date: 11/04/2017****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.
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- Q-1** **Attempt the following questions:** **(14)**
- a) Define: Poly-nuclear metal carbonyl. **(1)**
 - b) Give limitation of polarization theory. **(1)**
 - c) Define: Laporte forbidden rule. **(1)**
 - d) Calculate microstate for p^2 . **(1)**
 - e) Give any one preparation for $\text{Fe}(\text{CO})_5$. **(1)**
 - f) Find out ground state term for the following set of term symbol.
 $^3F, ^3P, ^1G, ^1D, ^1S$. **(1)**
 - g) How many terminal B-H bonds found in pentaborane -10? **(1)**
 - h) Give formalytic pairs for d^1, d^2, d^3, d^4 . **(1)**
 - i) Define: Hund's rule **(1)**
 - j) Draw the structure of $\text{Fe}_3(\text{CO})_{12}$. **(1)**
 - k) Define: Hole formalism. **(1)**
 - l) Define: Spherical charge symmetry of d orbitals. **(1)**
 - m) Define: π acid ligands. **(1)**
 - n) Define: Trans effect. **(1)**

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

- Q-2** **Attempt all questions** **(14)**
- a) Draw and explain combine Orgel energy level diagram for D and F term splitting. **(7)**
 - b) Calculate possible term for d^2 and draw the Pigeon hole diagram. **(7)**
- Q-3** **Attempt all questions** **(14)**
- a) Discuss the preparation and properties and structure of $\text{Fe}_2(\text{CO})_9, \text{Ni}(\text{CO})_4$. **(8)**
 - b) Write a note on Metal Nitrosyls. **(6)**
- Q-4** **Attempt all questions** **(14)**
- a) Draw and explain MO diagram for $[\text{PtCl}_4]^{-2}$. **(7)**
 - b) Discuss various types of bond found in higher boranes and explain structure of B_4H_{11} . **(7)**



- Q-5** **Attempt all questions** (14)
a) Discuss Schrodinger wave equation for hydrogen atom. (7)
b) Explain particles in three dimensional box. (7)
- Q-6** **Attempt all questions** (14)
a) Give the differences between trans influence and trans effect. (5)
b) Explain analytical application of trans effect to differentiate cis and trans isomers. (5)
c) Calculate total microstate for Cr and excited state of Ti*. (4)
- Q-7** **Attempt all questions** (14)
a) Discuss Jahn Teller distortion. (5)
b) Explain substitution reaction of square planar complexes. (5)
c) Find electronic configuration for d¹ to d¹⁰ and explain Jahn Teller distortion effect (Strong or Weak or not observed) of the tetrahedral complexes. (4)
- Q-8** **Attempt all questions** (14)
a) Discuss any two mechanisms of trans effect. (7)
b) Write a note on Operators. (7)

