Enroll No.

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER – 2016

M.Sc. Chemistry / M.Sc. Pharmaceutical Organic Chemistry

16PCECC01 / 16PCHCC01 - INORGANIC CHEMISTRY

Duration of Exam - 3 hrsSemester - IMax. Marks - 70

<u>Part A</u> (5x2= 10 marks)

Answer ALL questions

- 1. Define M.O and M.O.
- 2. What is the hepticity? Explain with Suitable Example..
- 3. Draw the complex of copper metal with cupferron.
- 4. Write principle of Mossbauer spectroscopy.
- 5. Give the resonance condition for ESR

<u>Part B</u> (5X5 = 25 marks)

Answer ALL questions

6a. Explain Huckel theory for benzene molecule in quantum chemistry.

OR

- 6b. Explain instrumentation of Mossbauer spectroscopy with schematic diagram.
- 7a. Explain whether following complexes are stable or not? Justify your answer
 i. [Ir(PO₄)₂(CO)]⁻¹
 - ii. $[Co(CO)_2Cp]$

OR

- 7b. Explain briefly hydroboration-oxidation.
- 8a. What is Zeeman Splitting in ESR? Explain in brief.

OR

- 8b. What is g (gyro magnetic) factor ratio in ESR? Explain in brief.
- 9a Answer the following questions.
 - i. What is the role of Aluminon in inorganic analysis?
 - ii. Give the method of purification of Nickel by mond process?
- OR
- 9b Discuss SP hybridization in quantum chemistry.
- 10a Discuss applications of α -benzoinoxime.

OR

10b Give the classification of Metal-Carbonyl compound?

<u>Part C</u> (5X7 = 35 marks)

Answer <u>ALL</u> questions

11a. Describe Born-Oppenheimer Approximation and Show that $\widehat{H}e\Psi(r,R) = E\Psi(r,R)$ $\widehat{H}N\Psi N(R) = E\Psi N(R)$

OR

11b. Describe the applications of grubbs catalyst in ring closing olefin metathesis reaction.

12a. Discuss Mausbauer spectra of following (i) K₃[Fe(CN)₆] (ii) K₄[Fe(CN)₆]

OR

- 12b. Describe secular equation for hydrogen molecule ion H_2^+ .
- 13a. Discuss application of EDTA in inorganic analysis.

OR

- 13b. Give the theory and mechanism of alkene- hydrogenation by Wilkinson catalyst.
- 14a Explain brief theory about the 18 e⁻ rule With Three Example?

OR

- 14b Describe application of Cupferron and Dithizone in detail.
- 15a Differentiate between NMR & ESR spectroscopy

OR

- 15b Answer the following in brief:
 - i. Recoil energy
 - ii. Doppler shifts.