

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Inorganic Chemistry-I

Subject Code: 5SC01ICH1

Branch: M.Sc. (Chemistry)

Semester: 1

Date: 19/03/2018

Time: 02:30 To 05:30

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.
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SECTION – I

- Q-1** **Attempt the Following questions** **(07)**
- a. Write the uses of tannin. (2)
 - b. Define: Anti-ferromagnetic substance (1)
 - c. Define: Curie Temperature (1)
 - d. Define: Hybridization (1)
 - e. Define: Magnetic Permeability (1)
 - f. Write the Schrodinger equation for wave function. (1)

- Q-2** **Answer the following questions** **(14)**
- a. Evaluate the coefficient of wave function for sp -hybrid orbitals and prove that the angle between two hybrid orbitals is 180° . (7)
 - b. Explain Hückel's theory for π orbital of Allyl system. (7)

OR

- Q-2** **Answer the following questions** **(14)**
- a. Determine the secular equations and molecular orbital energies by using Hückel's theory for π orbital of ethylene. (7)
 - b. Evaluate the coefficient of wave function for sp^3 -hybrid orbitals and prove that the angle between two hybrid orbitals is $109^\circ 28'$. (7)

- Q-3** **Answer the following questions** **(14)**
- a. Derive Secular equations and secular determinant for the wave function of hydrogen molecular ion (H_2^+). (7)
 - b. Write a brief note on EDTA. (4)
 - c. Explain j-j Coupling in brief. (3)

OR

Q-3

Answer the following questions

- a. What is diamagnetism? Write a brief note on Pascal's Constant. (7)
- b. Write a various uses of potassium bromate and Diphenyl carbazide. (4)
- c. Write a note on effect of temperature on magnetic property of the substance. (3)

SECTION – II

Q-4

Attempt the Following questions

(07)

- a. Define: Recoiless emission (1)
- b. Define: Magnetic dipole (1)
- c. Write reaction of Cu^{+2} ion with Cupferron. (1)
- d. Define: Mossbauer spectroscopy (1)
- e. Draw chemical structures of Pyragallol and Salicyladoxime. (1)
- f. Write the use of Aluminon. (2)

Q-5

Answer the following questions

(14)

- a. Write a note on the principle of Mossbauer spectroscopy. (7)
- b. Explain Russell - Saunders Coupling. (5)
- c. Write note on 8-Hydroxyquinoline in inorganic analysis. (2)

OR

Q-5

Answer the following questions

- a. Draw the schematic diagram of Mossbauer spectrometer in detail. (7)
- b. Explain Magnetic splitting observed in Mossbauer spectroscopy. (5)
- c. Write the various uses of Anthranilic acid in inorganic analysis. (2)

Q-6

Answer the following questions

(14)

- a. Write a brief note on Ammonium Vanadate [NH_4VO_3]. (7)
- b. Write advantages of organic reagents and write the uses of Cupferron. (4)
- c. Explain in brief about DMG. (3)

OR

Q-6

Answer the following questions

- a. Explain quadrupole splitting for Mossbauer spectroscopy. (7)
- b. Write a note Diphenyl carbazone and *o*-Phenanthroline. (4)
- c. Write uses of Pyrogallol and α -Nitroso- β -Naphthol in inorganic analysis. (3)

