9. (a) What are Ferrocenes? Explain the structure and bonding in Ferrocenes.

Or

(b) Discuss the following reaction of organometallic compounds with mechanism

(i) oxidative addition

(ii) reductive elimination. (5+5)

10. (a) (i) What is Catalyst? Give the general characteristics of a catalyst.

(ii) Explain the mechanism of hydro-formylation of olefins using Rhodium catalyst. (5+5)

Or

(b) Describe the mechanism of :

(i) Wilkinson's catalyst

(ii) Zeigler Natta catalyst. (5+5)

S.No. 343

12PCHZ02/ 12POCZ02

(For the candidates admitted from 2012–2013 onwards)

M.Sc. DEGREE EXAMINATION,
APRIL/MAY 2018.

Second Semester

Chemistry

COORDINATION CHEMISTRY

(Common for Organic Chemistry)

Time : Three hours Maximum : 75 marks

PART A — ($5 \times 5 = 25$ marks)

Answer ALL questions.

1. (a) State Jahn-Teller theorem. Apply the theorem to d^8 and d^9 systems.

Or

(b) Discuss the factors affecting splitting orbitals.

2. (a) Explain stepwise and overall formation constants.

Or

(b) Bring out the application of CD in the identification of Chirality of complexes.

3. (a) Explain the following :

(i) Cross reaction

(ii) Marcus-Hush theory. $(2\frac{1}{2}+2\frac{1}{2})$

Or

(b) Discuss the hydrolysis of acid and base mechanism.

4. (a) Bring out the synthesis and structure of acetylene complexes.

Or

(b) What is Organometallics? Explain with example.

5. (a) Discuss the mechanism of Oxo process.

Or

(b) Describe the mechanism of Wacker process.

PART B — (5 × 10 = 50 marks)

Answer ALL questions.

6. (a) Define the following :

(i) MO theory

(ii) Energy level diagram. (5+5)

Or

(b) Discuss :

(i) Sigma and Pi bonding in complexes

(ii) Magnetic properties of complexes.

7. (a) What is meant by stability constant? On what factors does the stability of a complex ion depend? How stability constant of a given complex is determined by Spectro photometrically?

Or

(b) Explain the structure of

(i) Schiff's base

(ii) Cryptates. (5+5)

8. (a) Discuss the following :

(i) Labile and inert complex

(ii) Substitution in square planar complexes. (5+5)

Or

(b) Explain the experimental evidences in favour of SNCB mechanism.