



EASTERN UNIVERSITY, SRI LANKA

THIRD YEAR SECOND SEMESTER EXAMINATION IN SCIENCE-2009/2010

(FEB/MARCH 2013)

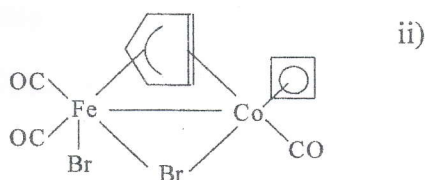
CH 305 ORGANOMETALLIC CHEMISTRY & NON-AQUEOUS SOLVENTS

(Special Repeat)

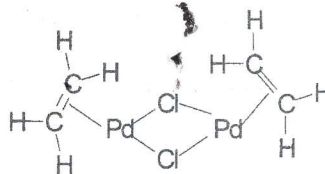
Answer all questions

Time: 01 hour

1. a) Indicate the monohapto, dihapto, trihapto, tetrahapto, pentahapto and bridging ligands present in the following compounds



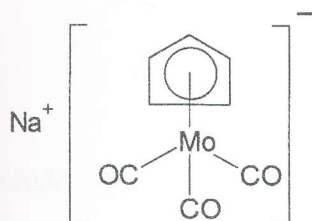
i)



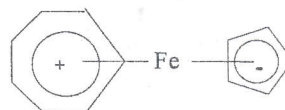
(20 Marks)

- b) Give the systematic names of the following organometallic compounds.

i)



ii)



(20 Marks)

Contd..

- c) i) Arrange the following compounds in the order of increasing stretching frequency of the C-O bond. Account for your arrangement.

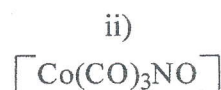
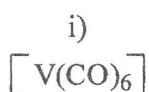


(20 Marks)

- ii) Manganese carbonyl **D** having empirical formula  $\text{Mn}(\text{CO})_5$ , is diamagnetic and shows strong absorption only at  $\sim 2000 \text{ cm}^{-1}$  in the region where CO stretching frequencies are observed. Deduce the structure of manganese carbonyl **D**.

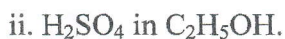
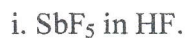
(40 Marks)

2. a) What is meant by EAN rule? Indicate whether the following organometallic compounds obey Effective Atomic Number (EAN) rule or not. (Atomic number: V = 23, Co = 27, Fe = 26, Cr = 24)



(20 Marks)

- b) Give balanced chemical equations for the following reactions.



(40 Marks)

Contd..

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c) What is the difference between Ammoniation reaction and Ammolytic reaction?

Explain with chemical equations.

(20 Marks)

d).  $\text{Na}^+ (\text{H}_2\text{NCONH})^-$  Cannot be prepared in aqueous medium but can be prepared in liquid  $\text{NH}_3$ . Explain this statement using balanced chemical equations.

(20 Marks)