



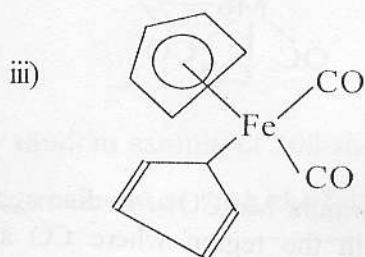
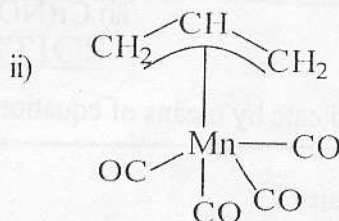
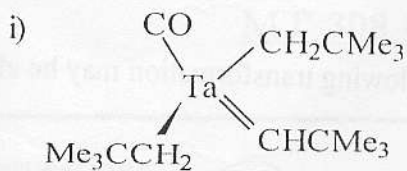
EASTERN UNIVERSITY, SRI LANKA  
THIRD EXAMINATION IN SCIENCE (2004/2005)  
(SPECIAL EXAMINATION)

CH 305 ORGANOMETALLIC CHEMISTRY AND NON-AQUEOUS SOLVENTS  
(REPEAT)

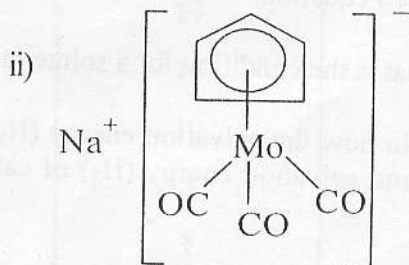
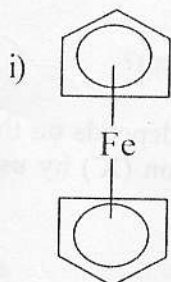
Answer all questions

Time: One hour

- 1) a) Indicate on a diagram any monohapto, dihapto, trihapto and pentahapto ligands present in the following organometallic compounds



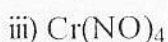
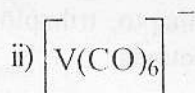
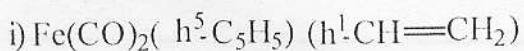
- b) Give the systematic names of the following compounds



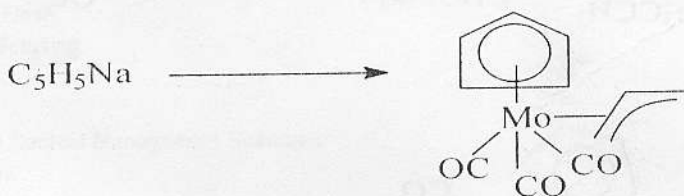
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c) i) State the EAN rule.

ii) Show that the following organometallic compounds obey the EAN rule (atomic number Fe - 26, V- 23, Cr-24)



d) Indicate by means of equations how the following transformation may be effected.



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

b) Briefly describe the classification of solvents according to their polarity or protophilic character.

c) State the function of urea as base or acid in liquid ammonia and water using balanced equation.

d) What is the condition for a solute to dissolve in a solvent?

Explain how the solvation energy ( $H_S$ ) of a solid MX depends on the lattice energy ( $H_L$ ) and solvation energy ( $H_S$ ) of cation ( $M^+$ ) and anion ( $X^-$ ) by using Born-Haber cycle.

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