

Answer guide for CHU 3127

Organometallic Chemistry - Assignment Test II

MCO answer guide (part A)

1. 1	11. 2
2. 3	12. 4
3. 2	13. 2
4. 4	14. 1
5. 1	15. 3
6. 2	16. 4
7. 1	17. 1
8. 3	18. 2
9. 2	19. 3
10. 3	20. 1

Answer guide for part B

(1).(a). Mn-CF₃ bond is very strong. Therefore CF₃ group does not migrate on to a CO ligand.

(b). This is an example for Reductive Elimination reaction.

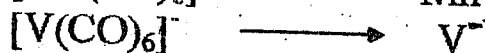
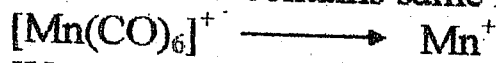
Formation of cationic complex promotes the reductive elimination of PhI.

Salt formation is enhanced in a polar solvent like MeOH.

As a result metal center carries a positive charge.

But with benzene (non polar) no such reaction occurs.

(c). Both Mn & V contains same number of "d" electrons



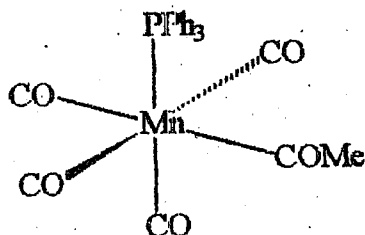
There is more Back Donation occurs in $[\text{V}(\text{CO})_6]^-$, so the stretching frequencies should be lower.

- (d) * Terminal hydrides
 * Doubly Bridging hydrides
 * Triply Bridging hydrides
 * Encapsulated hydrides

(c) Metal Hydrides containing Three or more hydride ligands per metal atom are called Poly Hydrides.

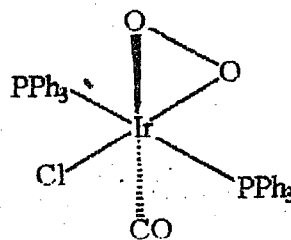
(2) (a).

(i)



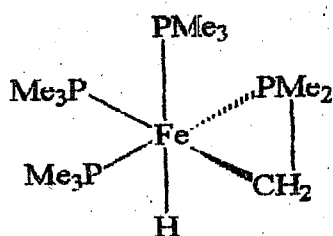
or $[\text{Mn}(\text{CO})_4\text{PPh}_3(\text{COMe})]$

(ii)

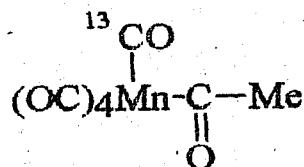


or $[\text{IrCl}(\text{PPh}_3)_2\text{CO}(\text{O}_2)]$

(iii)



(iv)



- (b) (i) 2 MeMgCl
 (ii) NaBH_4
 (iii) NaCp or $\text{Na}_4\text{C}_5\text{H}_5$
 (iv) $\text{LiAlH}_4 + \text{LiC}_5\text{H}_4\text{Me}$