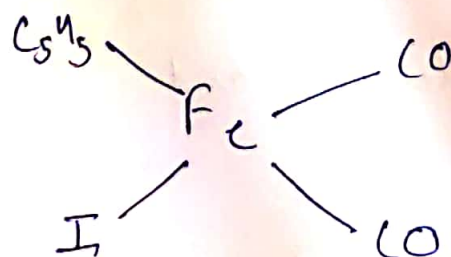
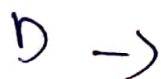
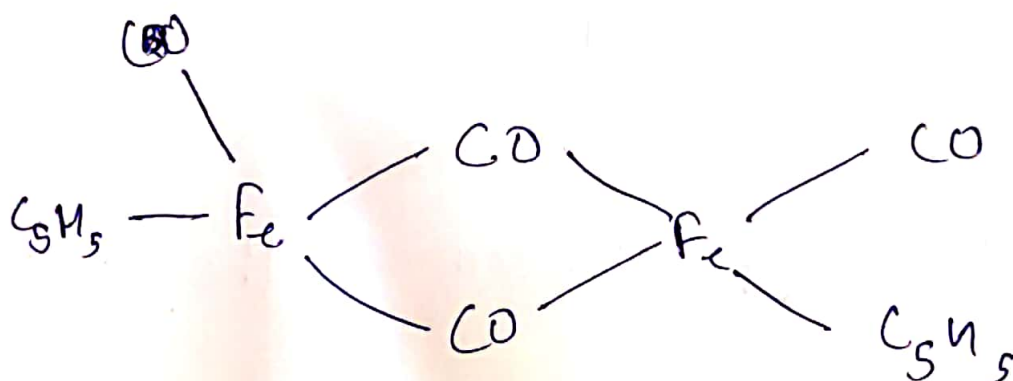
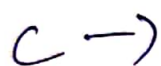
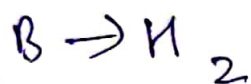
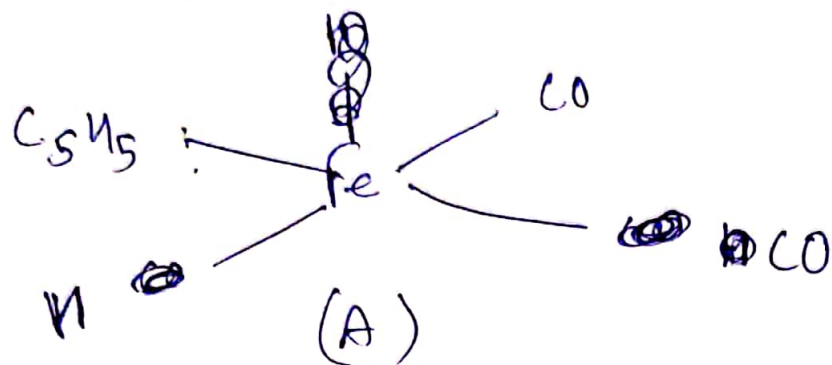
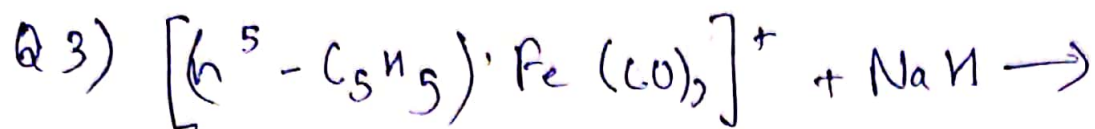


The intense colour of the thiocyanate complex is due to unpaired electron and formation of charge transfer complex.

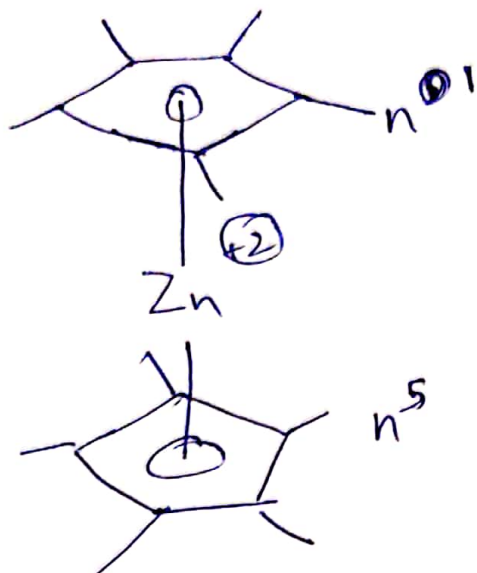
Iron(III) is a  $d^5$  system. Water is a weak field ligand. Hence Iron(III) is high spin. Both spin-selection and Laporte is forbidden, hence very weak colour.

However  $Fe^{3+}$  is an oxidant and  $SCN^-$  is reductant.

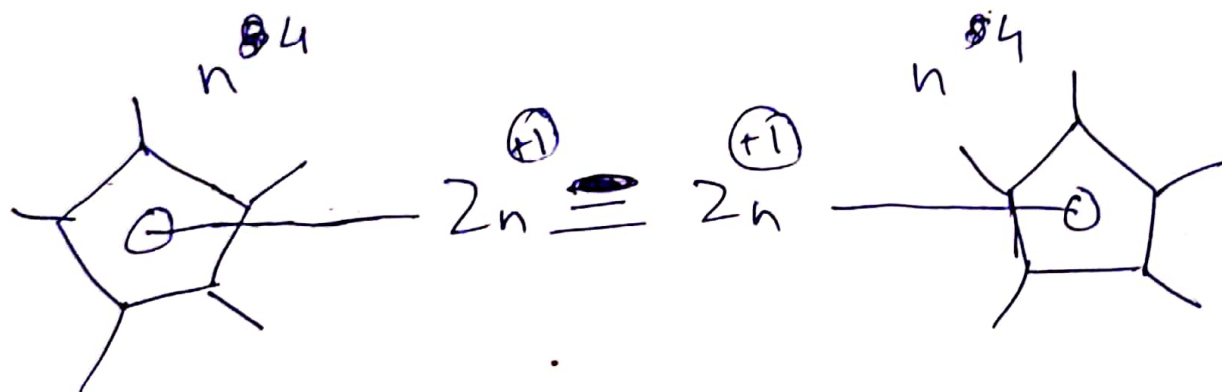
So ~~there is~~ a charge transfer occurs.  $[LMC \cdots T]$  transition is non favourable hence the intense colour.



Q 4)



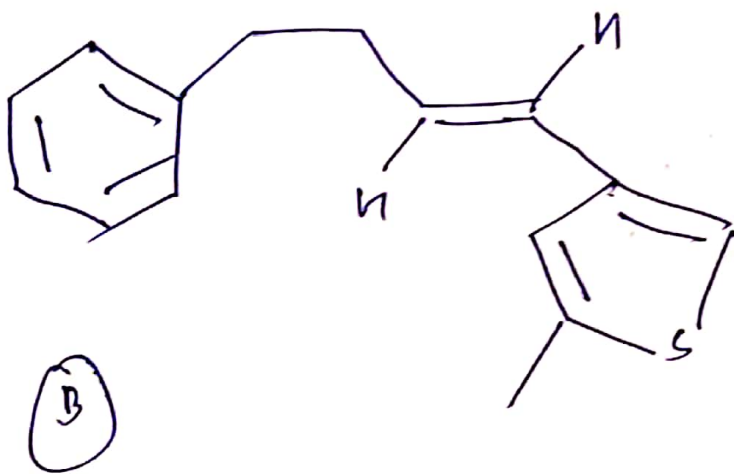
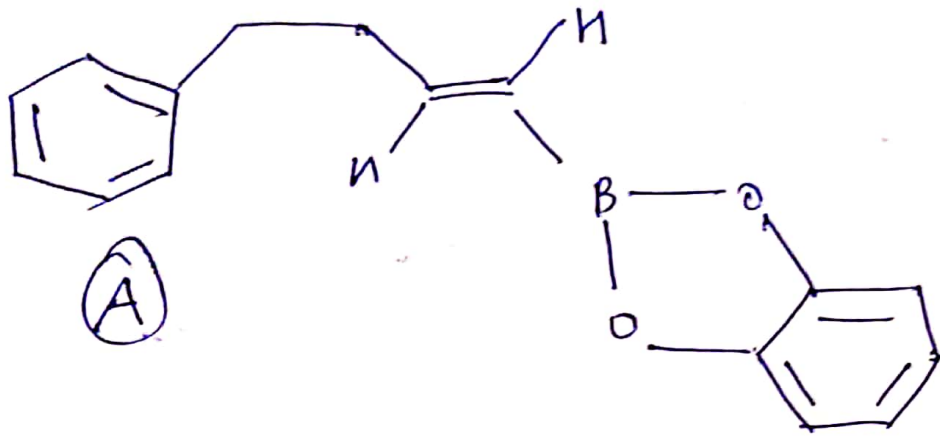
(A)



Q 5)

Narshit manwade

2020CS10348

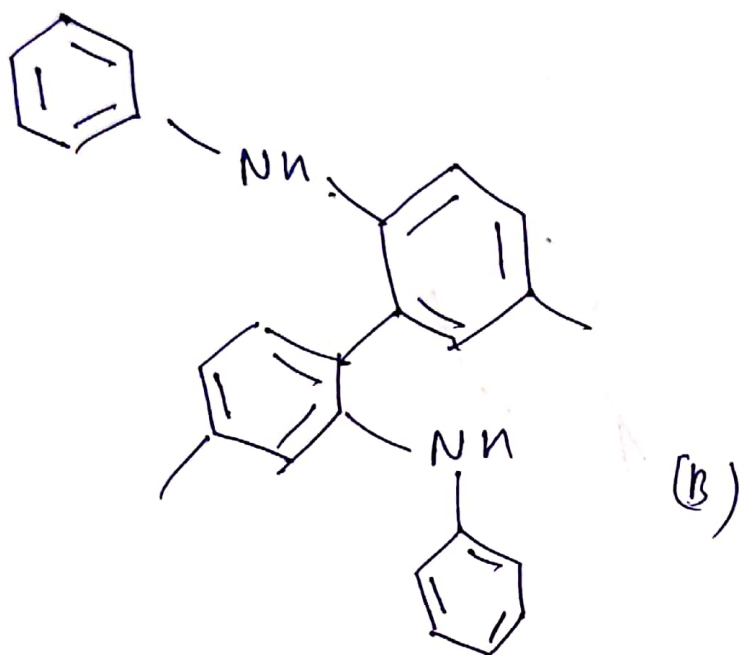
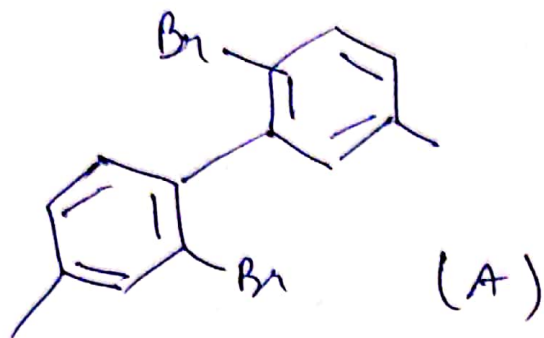


2020 CS10348

Naresh

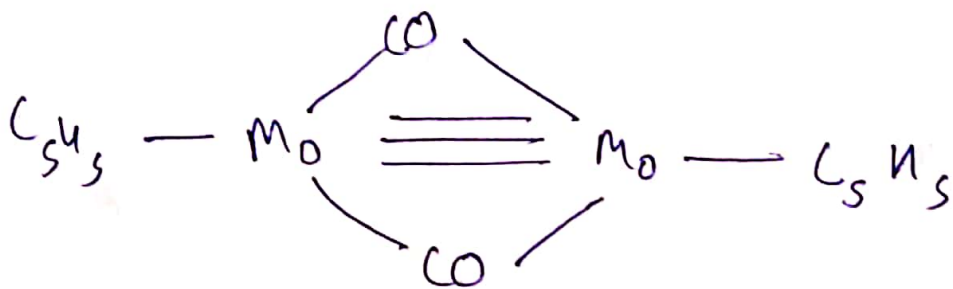
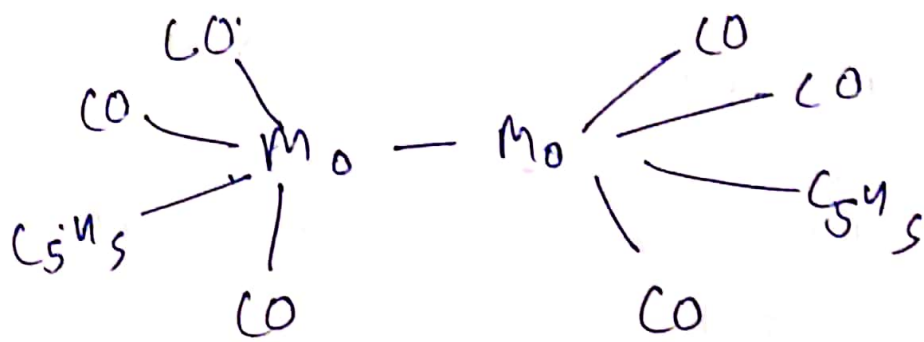
Munawar

Q6)



Q 7)

A)

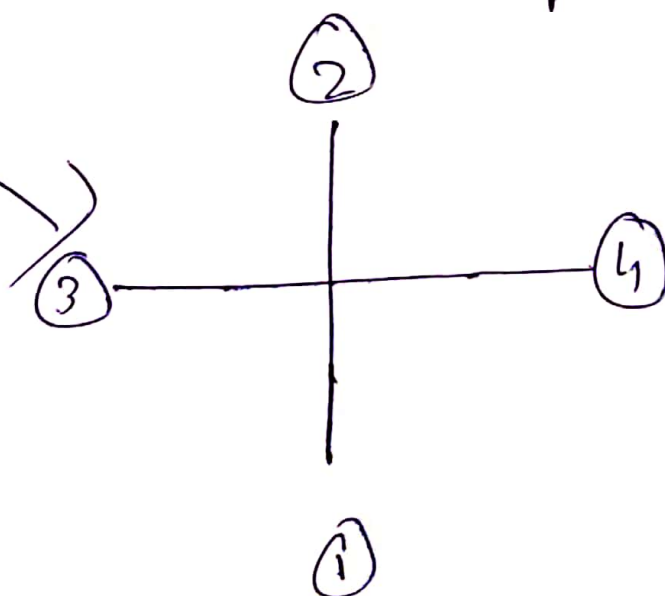
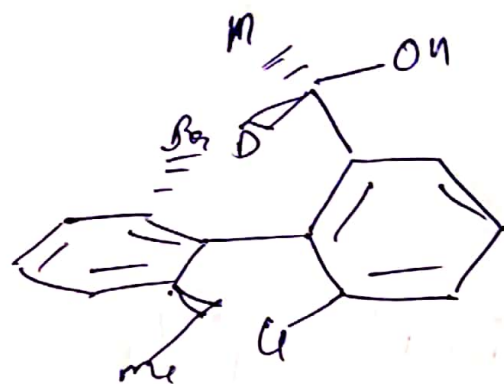
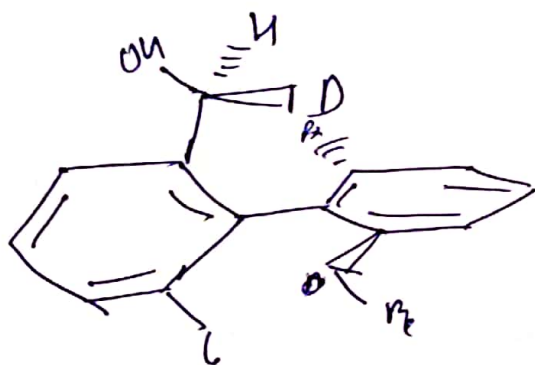


- b) i) 1-2 migratory insertion  
 ii) Migratory insertion

Q8)

The configuration is 'S'

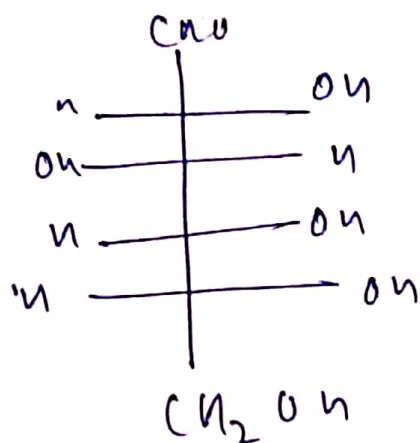
The stereochemical relation between H (red) and ~~H~~.H (blue) is diastereotopic since the mirror images would be non superimposable if we replace one 'H' with 'D'



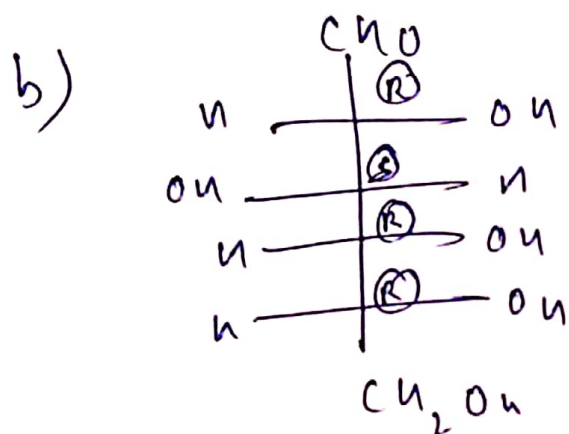
Viewing from right side



a)

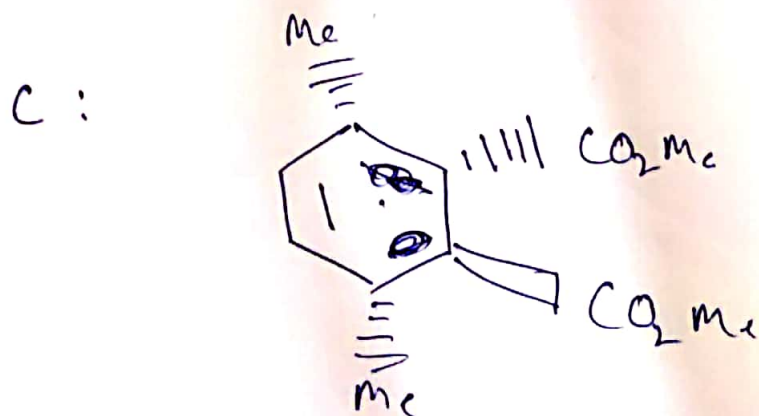
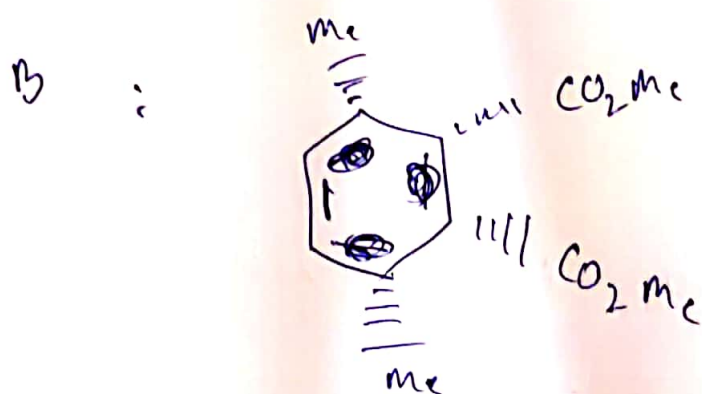
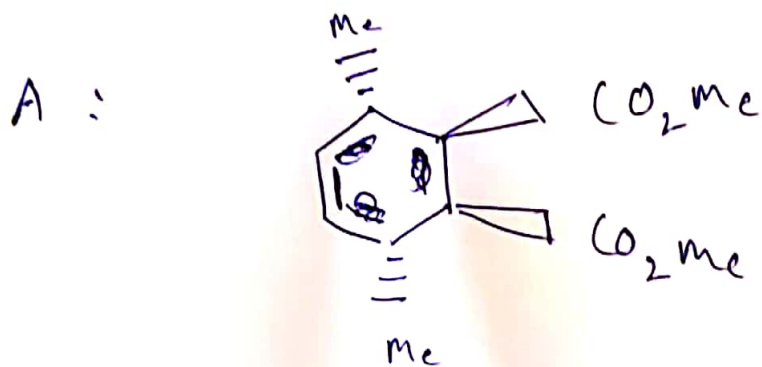
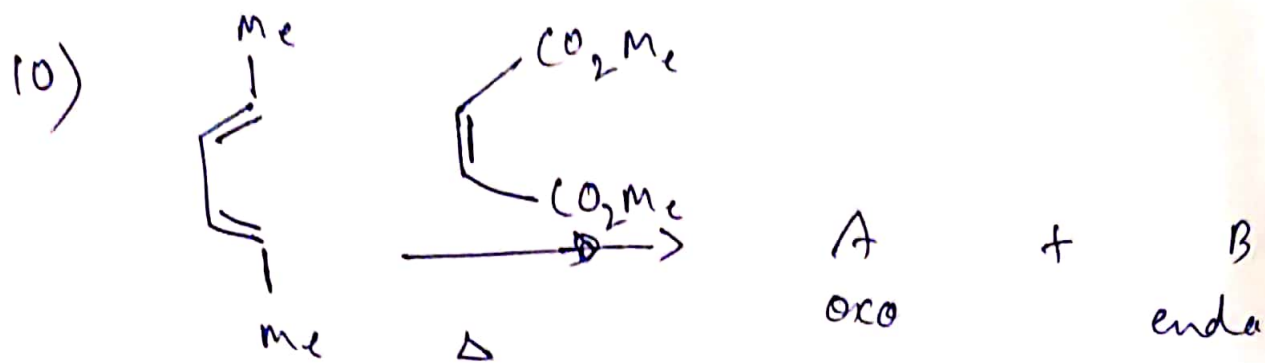


a)



c) Lyxose is D-isomer



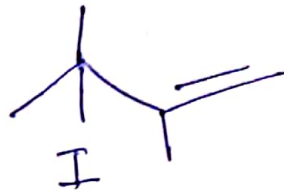


b)

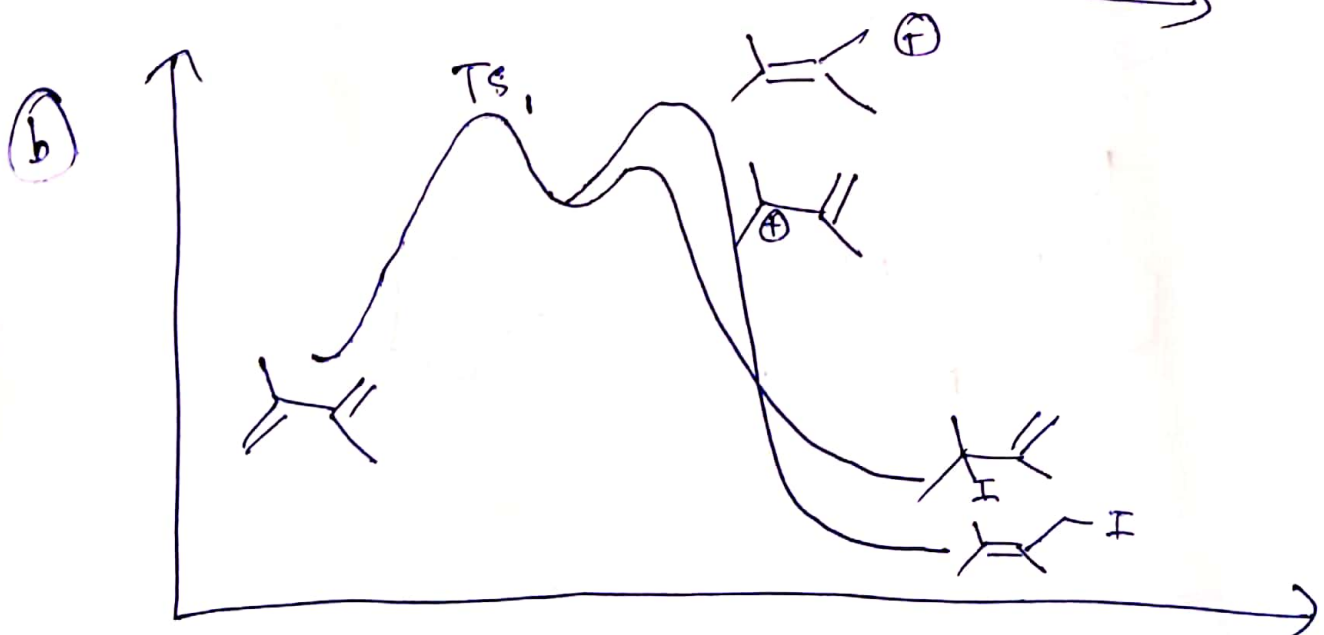
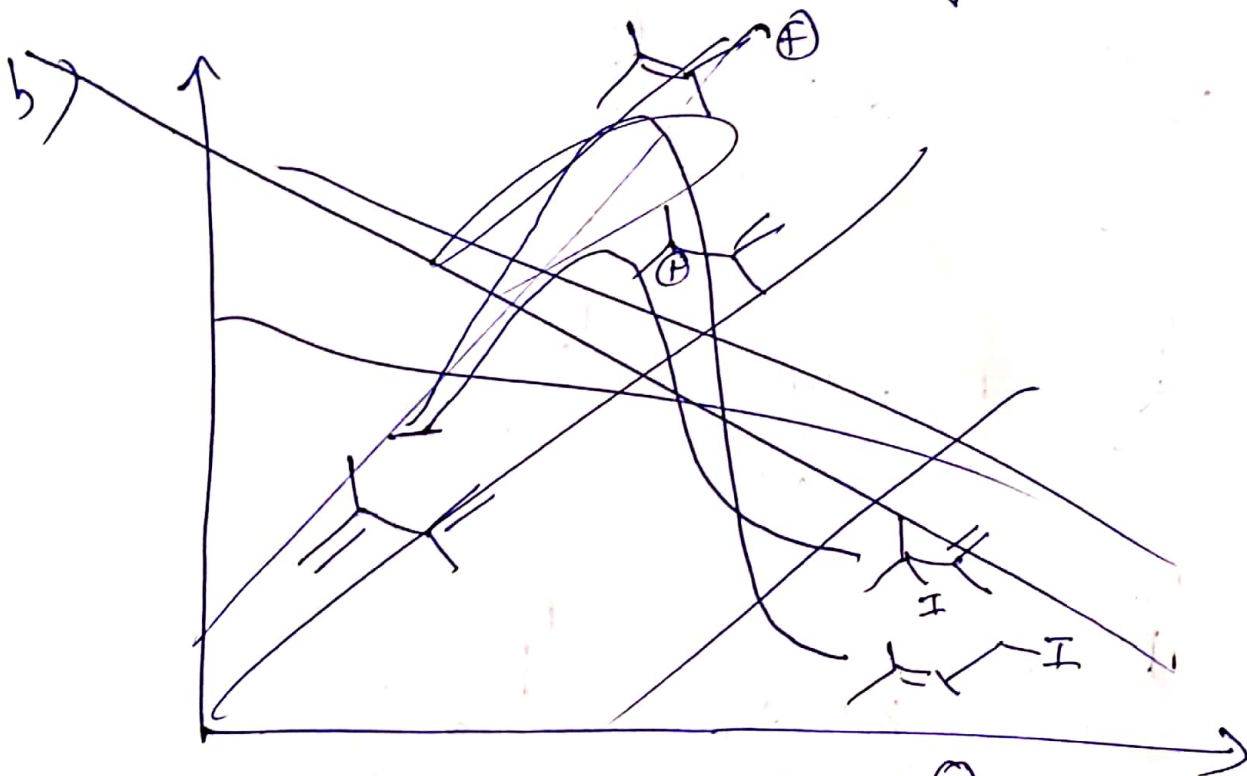
A : Thermodynamic  
 B : Kinetic

11) a) Nareshit mawandia  
Kinetic  $\Rightarrow$

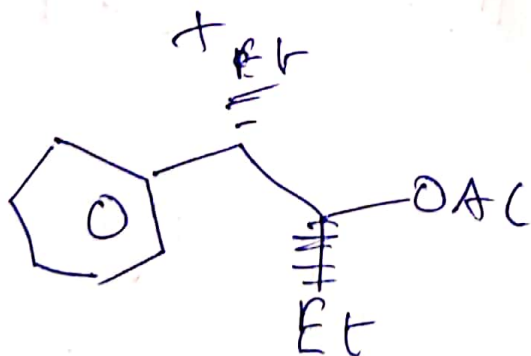
2020 CS10248



Thermodynamic  $\Rightarrow$



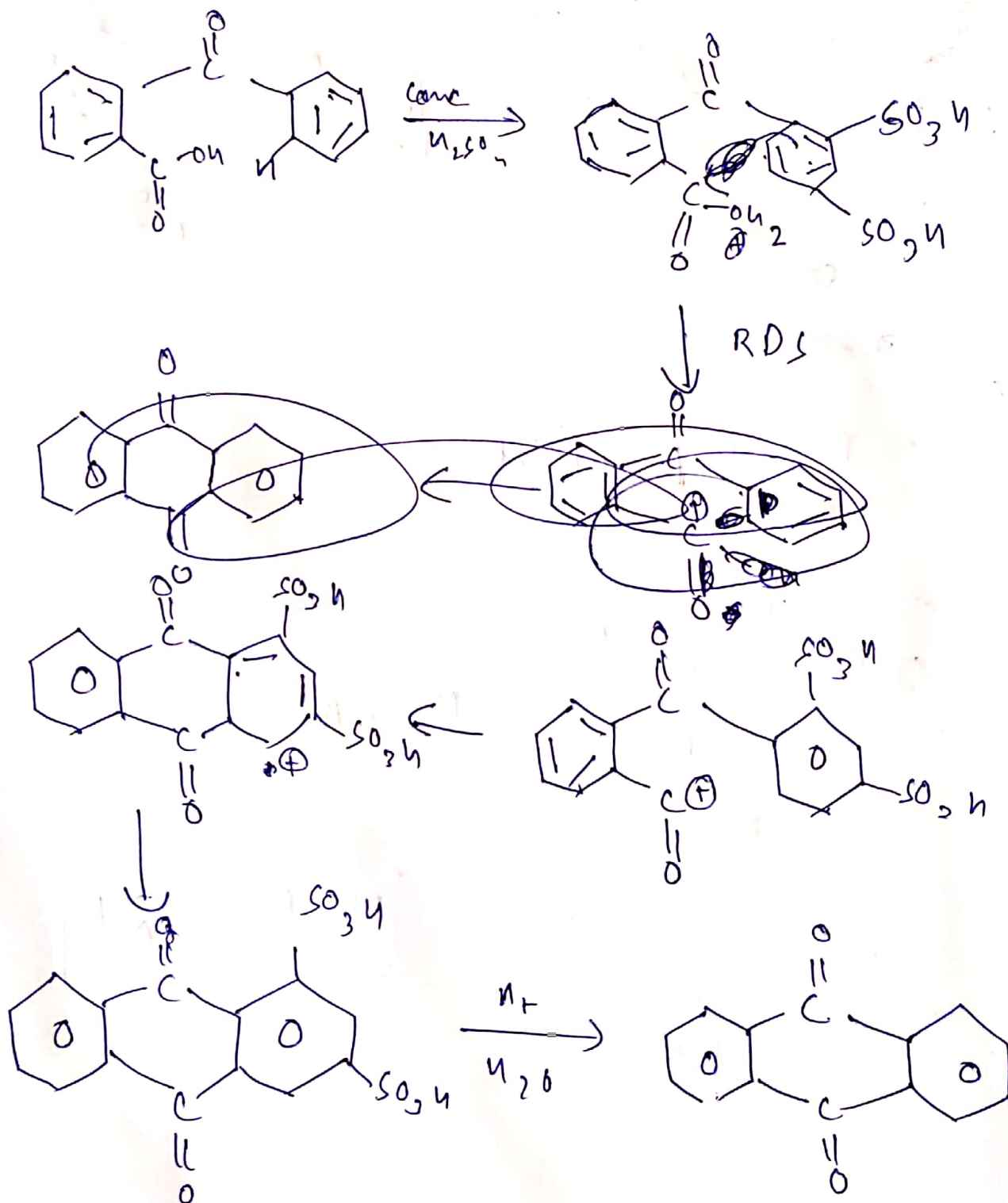
Neerhut Man and da



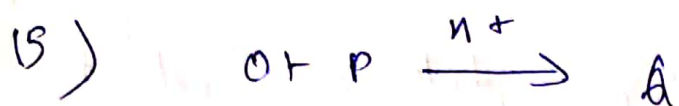
Scanned with CamScanner

14) a)  $KIE = \frac{K_H}{K_D} = \frac{1.56 \times 10^{-4}}{1.34 \times 10^{-4}} = 1.16$

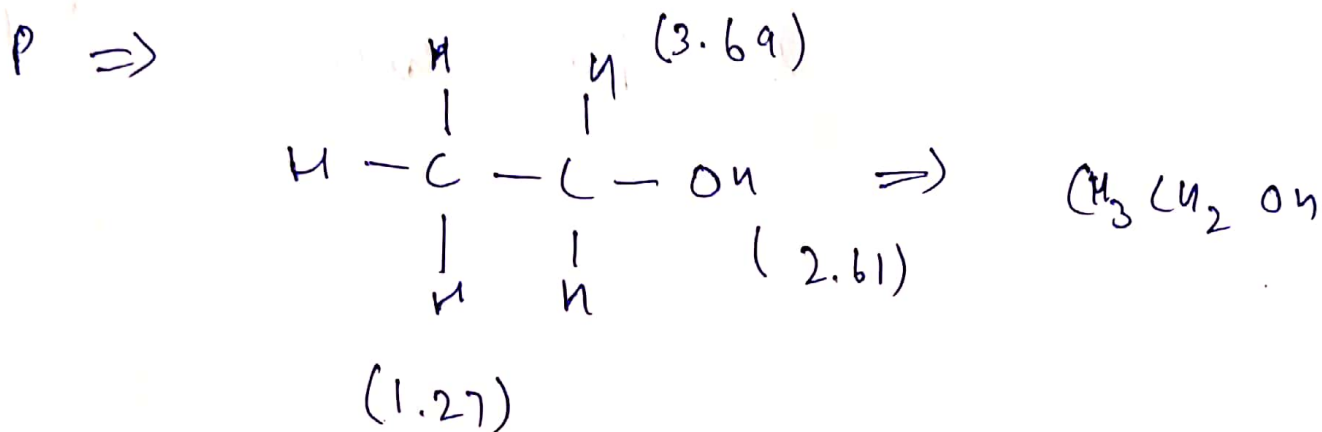
b) KIE value tells that the C-H bond does not break in RDS.



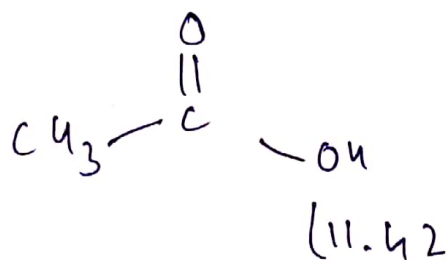




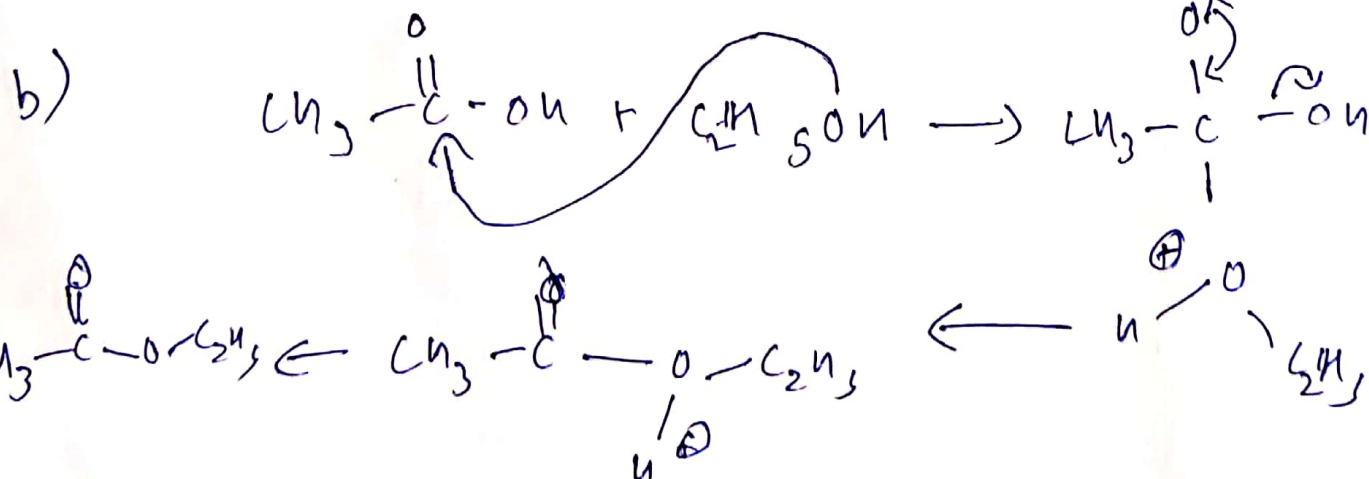
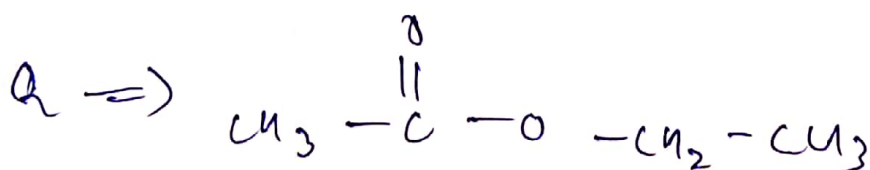
a)  $\text{P} \Rightarrow$  Alcohol as IR has peak on  $3300 \text{ cm}^{-1}$



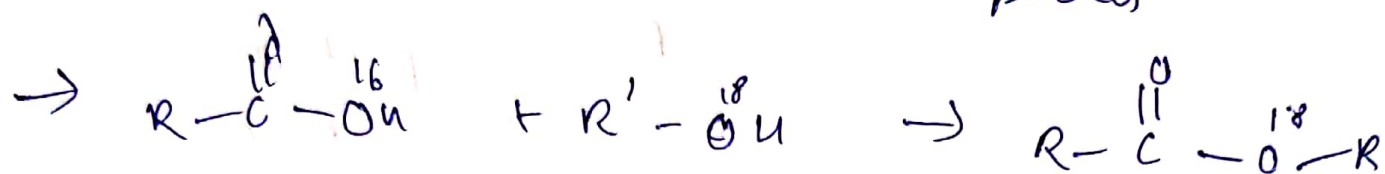
$\text{O} \Rightarrow$



IR suggests C-H and =O bands



Using labelled oxygen we can determine which oxygen attacks on the other species



So  $\text{R}-\text{O}^{18}\text{H}$  have given attacks.