HYDROCARBON

1. निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

$$CH_3CH_2CH=CH_2 \xrightarrow[\text{Rh catalyst}]{H_2/CO}$$

(1) $CH_3CH_2CH=CH-CHO$

(2) $CH_3CH_2\underset{\underset{CHO}{|}}{C}=CH_2$

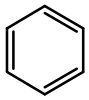
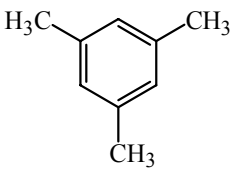
(3) $CH_3CH_2CH_2CH_2CHO$

(4) $CH_3CH_2CH_2CHO$

2. दी गयी अभिक्रिया के लिए 'A' क्या है ?

$$HC(CH_3)=CHBr \xrightarrow[\text{2. Red hot iron tube , 873 K}]{\text{1. } NaNH_2} \underset{\text{(मुख्य उत्पाद)}}{(A)}$$

(1) $CH_3CH_2CH_2NH_2$ (2) $CH(CH_3)=CH-NH_2$

(3)  (4) 

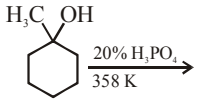
3. निम्नलिखित में से कौन सा लिंडलर उत्प्रेरक है ?

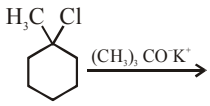
(1) ज़िन्क क्लोराइड तथा HCl

(2) $KMnO_4$ का ठंडा तनु विलयन

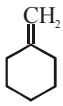
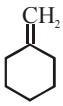
(3) सोडियम तथा द्रव NH_3

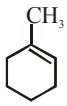
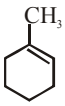
(4) आंशिक रूप से असक्रिय किया पैलेडियमित चारकोल

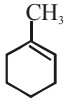
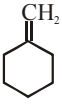
4.  "A" (मुख्य उत्पाद) ,

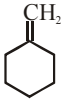
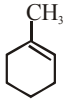
 "B" (मुख्य उत्पाद) ,

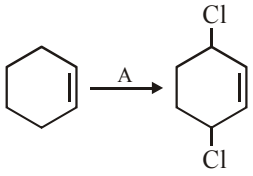
उपरोक्त अभिक्रियाओं में निर्मित उत्पाद "A" तथा "B" है :

(1) A-  B- 

(2) A-  B- 

(3) A-  B- 

(4) A-  B- 

5. 

अभिक्रिया के लिए अभिकर्मक(कों) 'A' तथा स्थिति को पहचानिए :

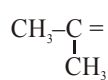
(1) A = HCl ; निर्जलीय $AlCl_3$

(2) A = HCl ; $ZnCl_2$

(3) A = Cl_2 ; UV प्रकाश

(4) A = Cl_2 ; अंधकार, निर्जलीय $AlCl_3$

6. एक असंतप्त हाईड्रोकार्बन X, ओजोनी अपघटन पर A देता है। यौगिक A को अमोनियाकत सिल्वर नाइट्रेट के साथ गर्म करने परीक्षण नली की सतह पर एक चमकदार सिल्वर दर्पण बन जाता है। असंतप्त हाइड्रोकार्बन X है :

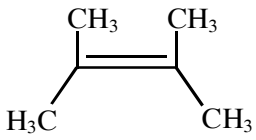
(1) $CH_3-C(CH_3)=C(CH_3)-CH_3$ (2) $CH_3-C(CH_3)=$ 

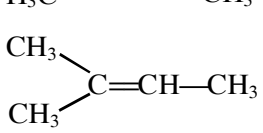
(3) $HC\equiv C-CH_2-CH_3$ (4) $CH_3-C\equiv C-CH_3$

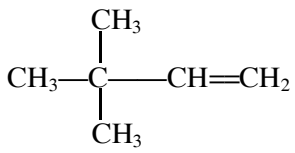
7. निम्नलिखित अभिक्रिया का मुख्य उत्पाद है:

$$CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH(OH)-CH_3 \xrightarrow[\text{a few drops}]{\text{conc.}H_2SO_4} \text{मुख्य उत्पाद}$$

(1) $CH_3-\underset{\underset{CH_3}{|}}{C}=CH-CH_2CH_3$

(2) 

(3) 

(4) 

8. निम्न में से कौन सा अभिकर्मक युग्म क्रियात्मक ग्रुप के अपचायक के रूप में कार्य **नहीं** करेगा ?

(1) Pt-C/H_2 (2) Na/H_2

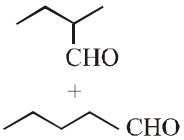
(3) Pd-C/H_2 (4) Zn/H_2O

SOLUTION

1. Official Ans. by NTA (3)

Sol. OXO PROCESS (Hydroformylation) :

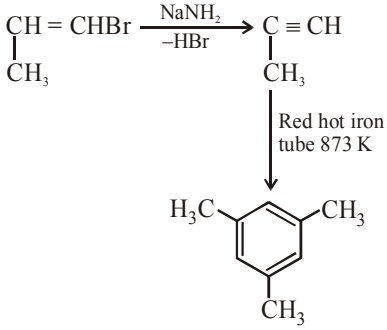
$$CH_3-CH_2-CH=CH_2+CO+H_2 \xrightarrow[\text{catalyst}]{Rh}$$



(Major)

2. Official Ans. by NTA (4)

Sol.

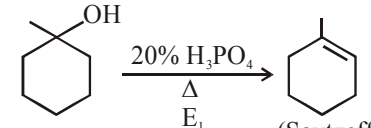


3. Official Ans. by NTA (4)

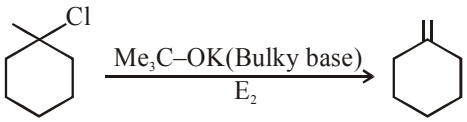
Sol. Partially deactivated palladised charcoal (H_2/pd/$CaCO_3$) is lindlar catalyst.

4. Official Ans. by NTA (3)

Sol.



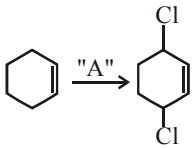
(Saytzeff product)



(Hoffmann product)

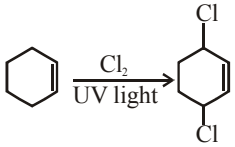
5. Official Ans. by NTA (3)

Sol.



For substitution at allylic position in the given compound, the reagent used is Cl_2/uv light.

The reaction is free radical halogenation.



6. Official Ans. by NTA (3)

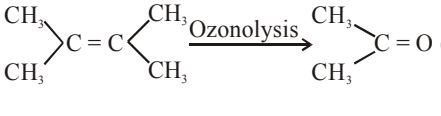
Sol. (X) Unsaturated Hydrocarbon $\xrightarrow{\text{Ozonolysis}}$ (A) $\xrightarrow[AgNO_3]{\text{Ammonical}}$ (Tollen's regent) $Ag\downarrow$ silver mirror

As (A) compound given positive tollen's test hence it may consist –CHO (aldehyde group). or it can be HCOOH

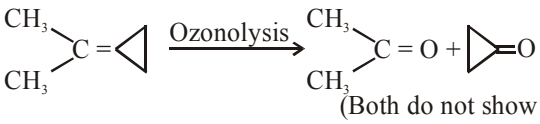
So for the given option :

(3) $CH_3-CH_2-C\equiv CH \xrightarrow{\text{Ozonolysis}} CH_3CH_2COOH + HCOOH$ (A) +ve tollen's test

and for other compounds (options):

(1) 

(Does not show tollen's Test)

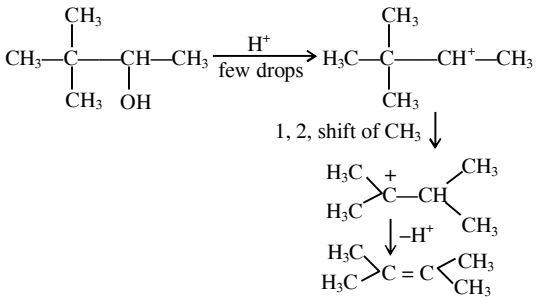
(2) 

(Both do not show tollen's test)

(3) $CH_3-C\equiv C-CH_3 \xrightarrow{\text{Ozonolysis}} 2CH_3-COOH$ (Does not show tollen's test)

7. Official Ans. by NTA (2)

Sol.



8. Official Ans. by NTA (2)

Sol. Solution NaH_2 is not reducing agent