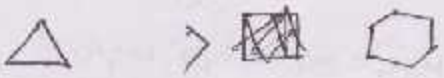
Solutions

Home Assignment - I

1. H_2/Ni catalytic Hydrogenation.

2. 

3. 

angle strain & torsional strain both are higher

4. $CH_3-CH_3 + Br_2 \xrightarrow[\text{light}]{\text{diff}}$ CH_3-CH_2-Br, + CH_3-CHBr_2 +

CH_3-CBr_3 + $CH_2(Br)-CBr_3$ +

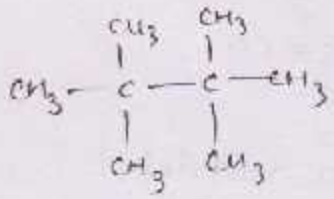
$CH(Br)_2-CBr_3$ + CBr_3-CBr_3 +

$CH_2(Br)-CH_2(Br)$ + $CH_2(Br)-CH(Br)_2$

$CH(Br)_2-CH(Br)_2$

5. C_8H_{18}

IHD = 0 saturated.



all 1° H are identical.

6. $C_nH_{2n+2} + \frac{(3n+1)}{2}O_2 \longrightarrow nCO_2 + (n+1)H_2O$

7. Bromination is selective. Hence slower rate

8. $CH_3^{(-)}Mg^{(+)}Br + HC\equiv C-CH_2OH \longrightarrow HC\equiv C-CH_2-O^-MgBr$

$\downarrow CH_3^-MgBr$

$MgBr^{(-)}C\equiv C-CH_2O^-MgBr$

1 mole of $HC\equiv C-CH_2OH$ requires 2 moles of CH_3MgBr.

9. Symmetrical alkane.

10. Refer page No. 10.

11. Ph_3SnH reduces all types of alkyl halides.

12. Bromination is ~~sele~~ selective.

13. $CH_3CO_2Na + NaOH \xrightarrow[\Delta]{CaO} CH_4\uparrow + Na_2CO_3$

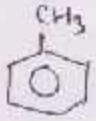
soda lime

14. CH_3-CH_3 $\quad$ $H_2C=CH_2$ $\quad$ $HC\equiv CH$

rotation restricted

Cl_3C-CCl_3 repulsion.

15. $CH_3-\overset{\downarrow 2^\circ}{CH_2}-CH_2-CH_3$ ($\uparrow 1^\circ$) — 2° preferred over 1° by Br.

16. n-heptane $\xrightarrow[Al_2O_3]{Cr_2O_3}$ $\underset{600^\circ C}{}$  Toluene

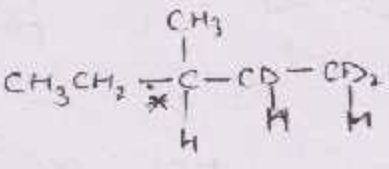
17. $CH_3CH_2MgBr + H-OH \longrightarrow CH_3CH_3 + Mg(Br)(OH)$

18. Reactivity order $F_2 > Cl_2 > Br_2 > I_2$

19. In halogenation process, free radicals are generated. Hence $Cl^\bullet$

20. Isomerisation take place.

21. (C–H) < (C–D) B.E of (C–D) is more than (C–H)

22. $CH_2=CH-\underset{H}{\overset{CH_3}{C}}-CD=CD_2 \xrightarrow{H_2/Ni}$ 

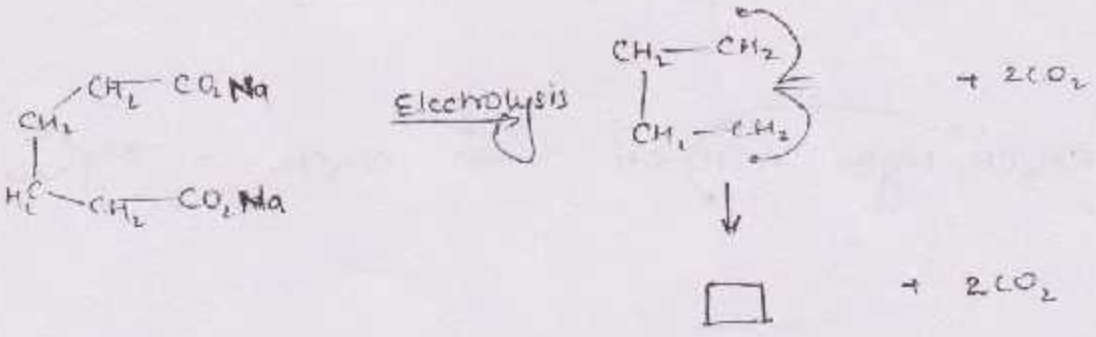
chiral.
optically active.

(A)

23 ≡

1·04 ml
at STP

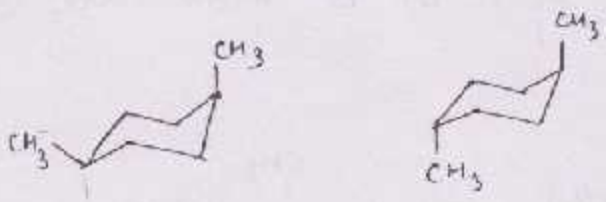
24 ≡



25 ≡

cis

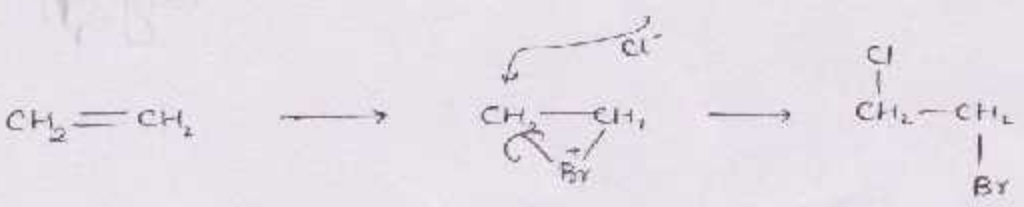
trans

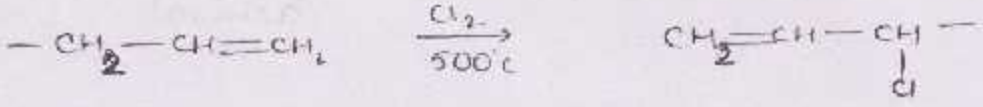


HOC $\propto \frac{1}{\text{Stability}}$

Solution:

Home - Assignment - 2

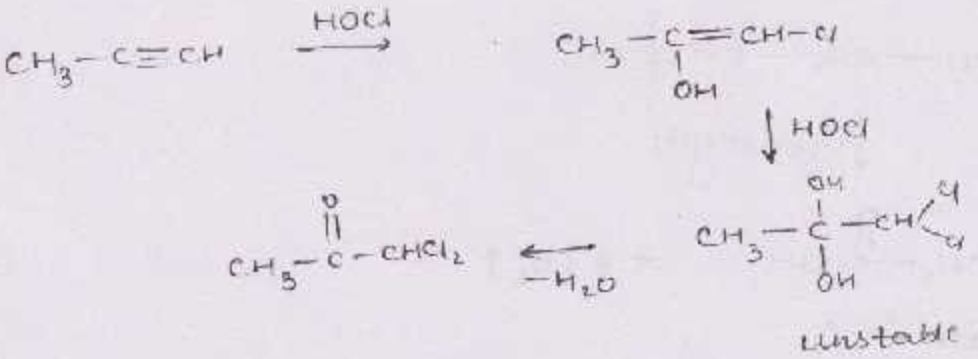
1. 

2. 

3.

4. IHD = 2

Hence double & triple bond both are not possible

5. 

6. E.N is 3rd.

7. substitution increases stability of alkene increases

8. $CH_3-\underset{\downarrow}{CH}(Br)-CH_2-CH_3 \xrightarrow[\Delta]{\text{alc. KOH}} CH_3-CH=CH-CH_3$

Saytzeff

9. $CH_3-CH=CH-CH_3 \xrightarrow[\text{Catalyst}]{H_2} CH_3-CH_2-CH_2-CH_3$

achiral.

10. $CH_3-CH(CH_3)-CH(Cl)-CH_3 \xrightarrow[\Delta]{\text{alc. KOH}} CH_3-C(CH_3)=C(H)-CH_3$

Saytzeff (Major)

11. less substituted alkene reacts fast.

12. $CH_2=C(CH_3)-CH_2-CH=C(CH_3)-CH_2$

$\downarrow$ Ozonolysis

$HO-C(=O)-CH_2-C(=O)-OH + 2CO_2\uparrow$

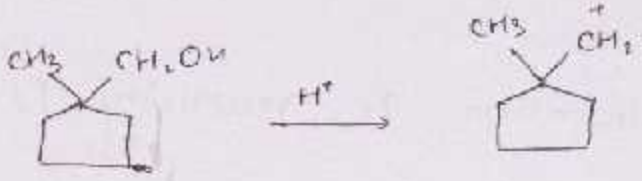
(Malonic acid)

13. $CH_3-CH=CH_2 \longrightarrow CH_3-CH_2-CH_2-OH$

B_2H_6 / alkaline H_2O_2

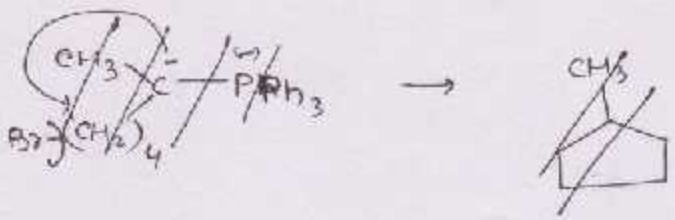
Anti-Markovnikov add.

14 ≈

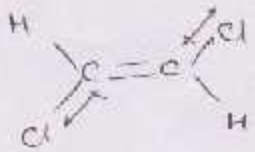


→ ring expansion. & more substituted alkene

15 ≈



16 ≈



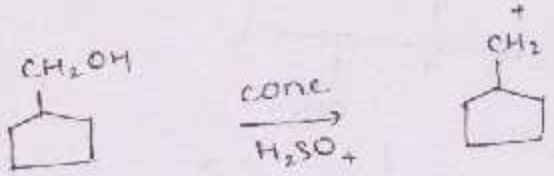
$\mu = 0$

17 ≈

$CH_3-CH_2CH_2-CH_2-Cl \xrightarrow[KOH]{alc.} CH_3-CH_1-CH=CH_2$

E_2

18 ≈



ring expansion.

19 ≈

$HOH \propto \frac{1}{\text{stability}} \propto$ no. of α-hydrogen.

21.

EDG increases reactivity towards EA reaction.

EWG decreases. ——" ——" ——

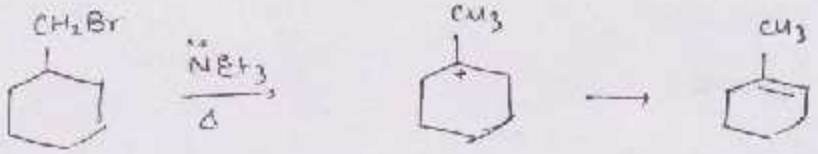
21. add^n of H_2O

stability of carbocation ↑s reactivity ↑s

22. stability of carbocation.

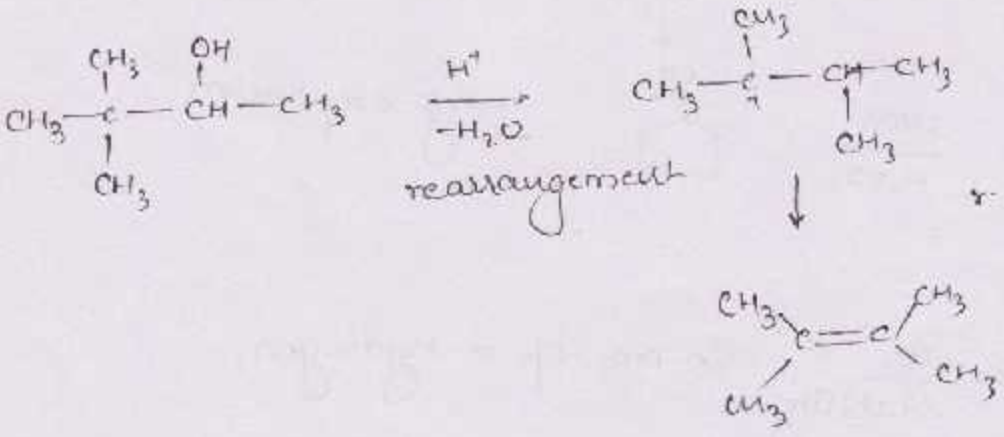
23.

24.



25

26



27

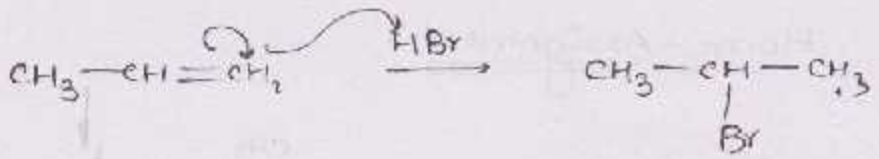
28. Refer booklet

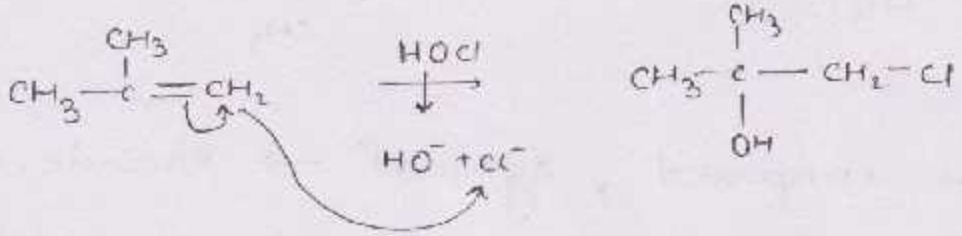
29. anti-addn , trans-product

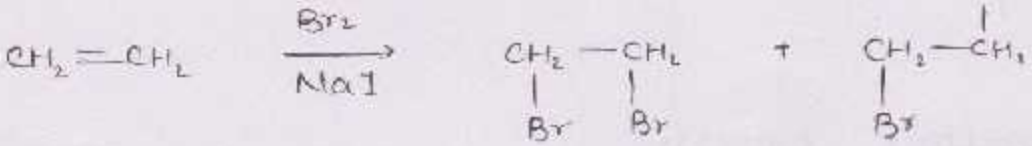
⇒ Na/NH_3

30 Dimerisation process

∴ acid (H_2SO_4)

7. 

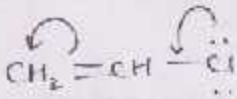
8. 

9. 

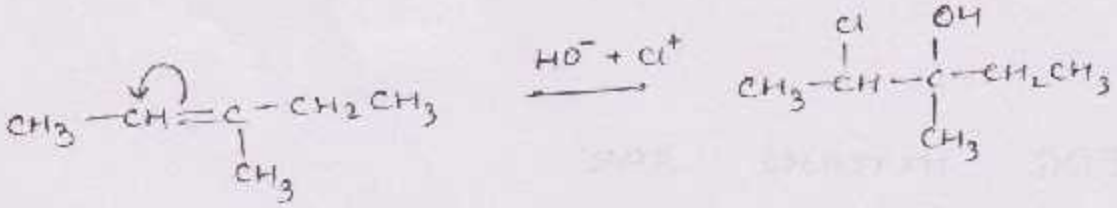
Nu⁻ (Br^- & I^-) both with react

10. unsaturated molecule decolourise $KMnO_4$ soln.

11.

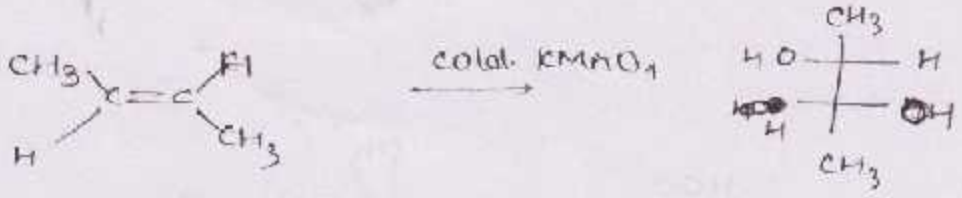
12. 

(Markc. Rule)

13. 

Solution - 3

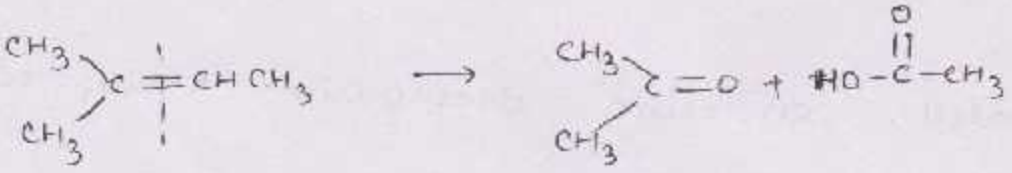
Home - Assignment 3

1. 

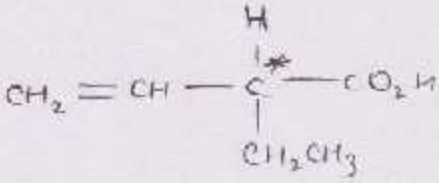
trans compound, syn add^n → Racemic mixture

2. cis compound + anti-add^n → racemic mixture

3. Endothermic process.

4. 

5. (X) $C_6H_{10}O_2$ (O.A) $\xrightarrow{H_2/Pt}$ O.I



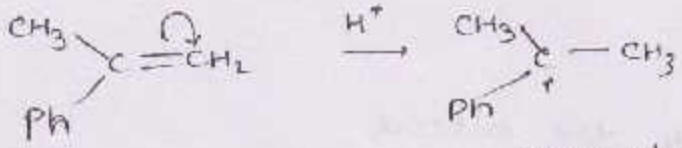
, after hydrogenation it becomes opt inactive.

6. EDG increases EAR

14. Markowon. Add^n
No rearrangement

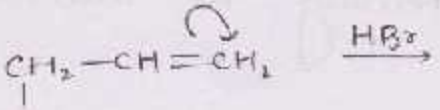
15. Mark. Rule & Carbocation formation

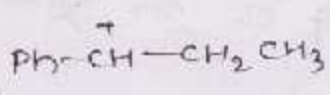
16.



more stable
(C^{+ve})

17.



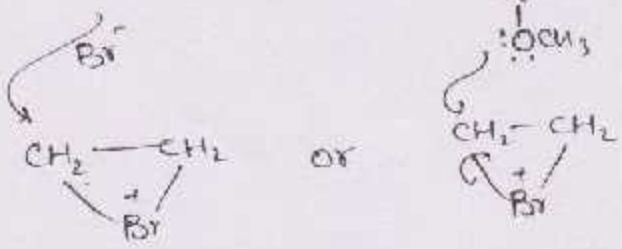


rearranged
carbocation.
(more stable)

18. OsO_4 → syn add^n of (–OH)

19. ~~C6H6~~ 2 degree of unsaturation.
∴ ring + π-bond

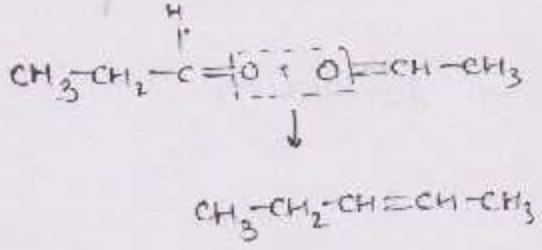
20.



both will react with bromonium
intermediate

21 In absence of peroxide, it means Markov. Add^n

22.



23 EWG attached to the alkene

24 addition of Cl_2 on $>C=C<$ having Br another Nu

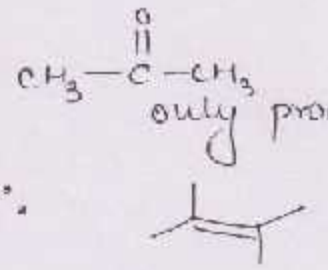
25. $HOCl \longrightarrow HO^- + Cl^+$

26. carbocation rearrangement will occur.

27 symmetrical alkene

28 1-4 addition product in conjugated diene

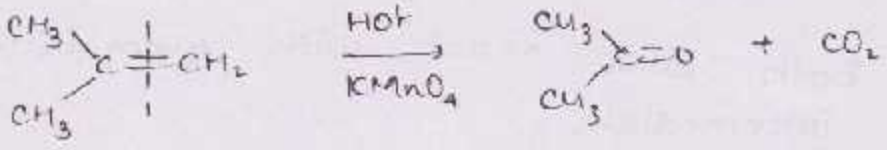
29



only product

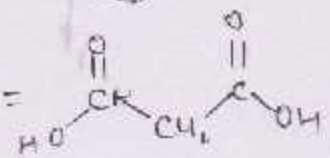
∴

30



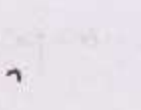
31.

A = 

B =  (2 moles)

(β- keto acid)

on heating liberates CO_2 ↑



C = 2 $CH_3-C(=O)-OH$ + 2 CO_2

32.

8-membered ring

33. Add^n through MR and carbocation rearrangement

34. syn add^n by alk. $KMnO_4$, hence meso product.

35. CAR rule.

36.

37

. EWG is attached
so carbocation is least stable at α-position
AMR add^n :-

38 Anti-Mar. add^n.

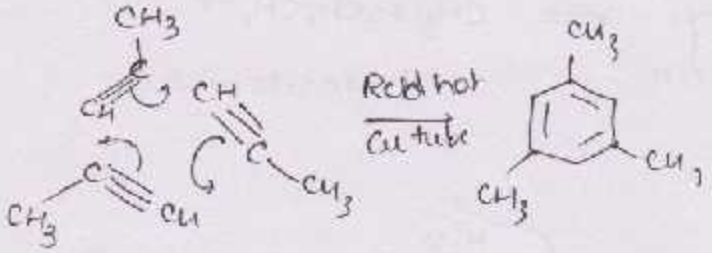
39 Anti-Mar. add^n

40 EDG > neutral > EWG
order for stability of carbocation.
Hence reactivity order towards HCl

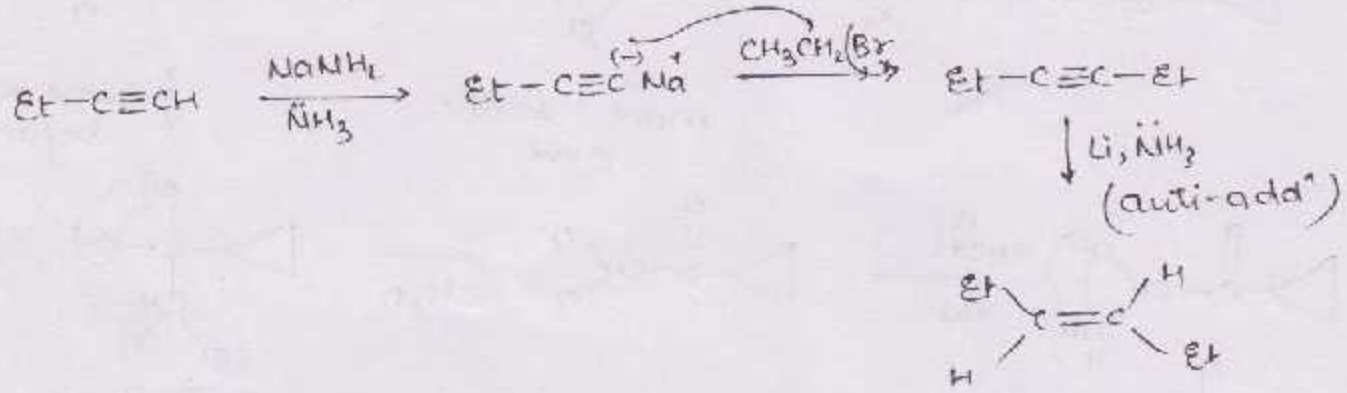
Solution

Home Assignment-4

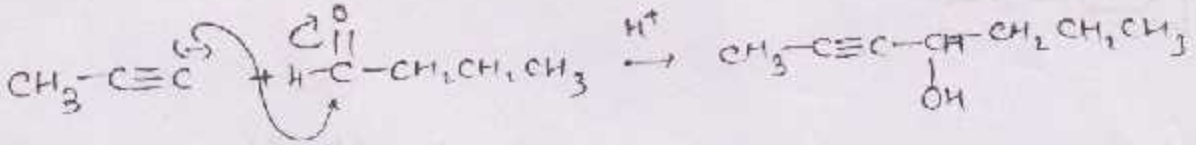
1.



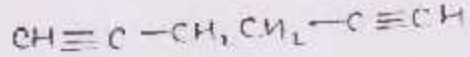
2.



3.



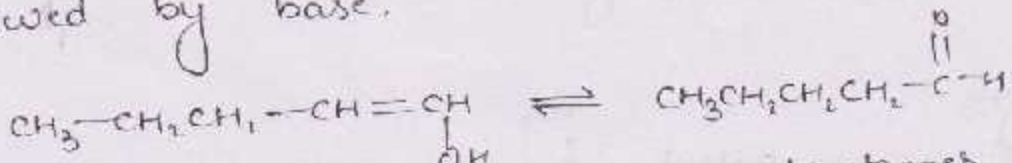
4. Removal of 4(HBr)



5. both have same no. of π-bonds

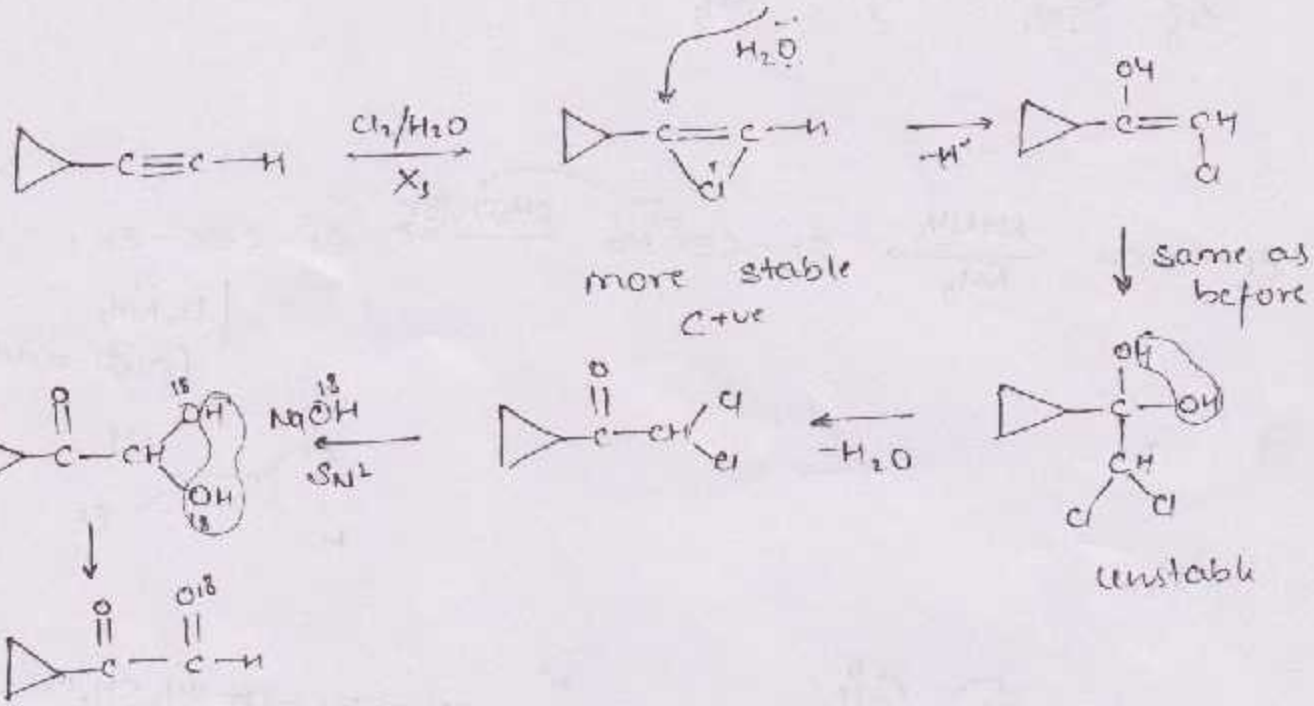
6. Add^n of peroxide on double-bond system.

7. Addⁿ of BH_3/THF is acc. to anti-mark. rule.
followed by base.



tautomer.

8.



9. Silver mirror test by terminal alkyne.

12. X = $CH_3CH_2CH_2C\equiv C^{(-)}Li$

Y = $CH_3CH_2CH_2C\equiv C-CH_3$

Z = $CH_3CH_2CH_2-\underset{\underset{O}{\|}}{C}-CH_2CH_3$

W = $CH_3CH_2CH_2CH_2-\underset{\underset{O}{\|}}{C}-CH_3$

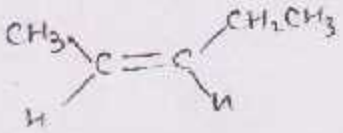
13 A = $C_{13}H_{27}C\equiv C^{\ominus}\,Li^{\oplus}$

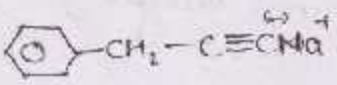
B = $C_{13}H_{27}C\equiv C-C_8H_{17}$

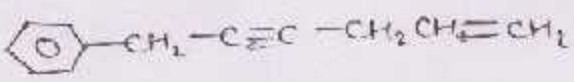
C = $C_{13}H_{27}-CH=CH-C_8H_{17}$

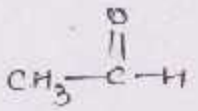
(cis)-alkene

14 A = $CH_3C\equiv C-CH_2CH_3$

B =  (syn add^n)

15 S = 

T = 

16 A = 

B = CH_3CO_2H

17. Na/NH_3 → anti-add^n

B = trans

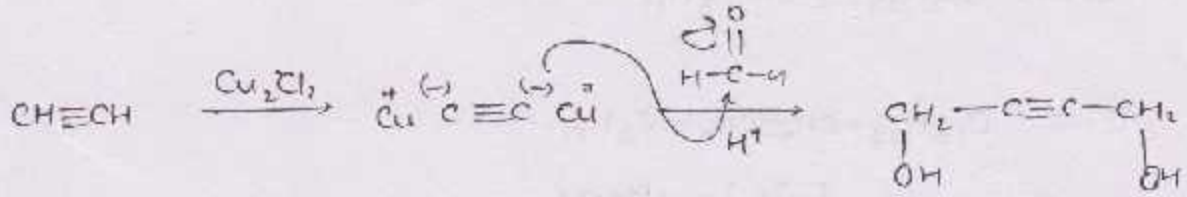
H_2 / Lindlar's catalyst → syn add^n

A = cis

18. anti-add^n :— Li/NH_3

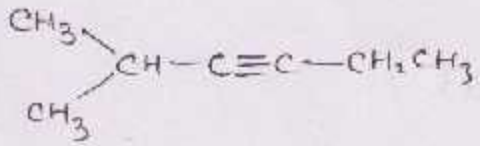
∴ both will be trans alkene

19.

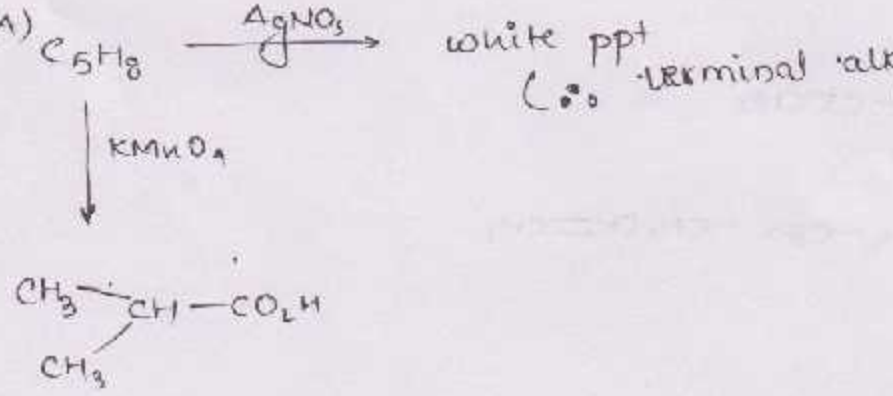


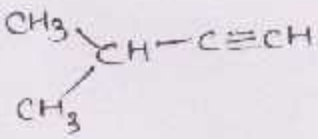
20. same as (17 que)

21.



22.



∴ A = 

23. Cu_2^{2+} can't give reaction with non terminal alkyne.

24.

25. BH_3/THF give anti-mark. add^n
$HgSO_4/H_2SO_4$ give Mark. add^n.

26. terminal alkyne reach with Cu_2Cl_2 sol^n

$Cu-C\equiv C-Cu$

27. terminal alkyne test by Ammonical $AgNO_3$
⇒ silver mirror test

28. $CH\equiv CH \xrightarrow{AgNO_3}$ Silver mirror test
acetylene

29. $CH_3-CH_2-C\equiv CH \xrightarrow[H_2SO_4]{HgSO_4}$ $CH_3-CH_2-\underset{\displaystyle OH}{\overset{|}{C}}=CH_2$

(Mark. Add^n) ⇌

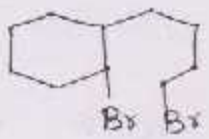
$CH_3-CH_2-\overset{\displaystyle O}{\overset{\|}{C}}-CH_3$

30. Terminal alkyne ($HC\equiv CH$) reacts with $AgNO_3$.

Miscellaneous Exercise

1. Anti-Markv. Add^n

2. at low temp, kinetically controlled product
at high temp, thermodynamically ⟶

3. A = 

(anti-markv. add^n)

B =  (Removal of Br_2)

4. syn-add^n of Bayer's reagent.

5. Anti-markv. add^n

6. Anti-markv. add^n
1st D will add followed by OH^-
both will add by syn-add^n.

7. formation of carbene

8. syn-add^n of H & OH. OH adds according to AMR.

9. same as que 8

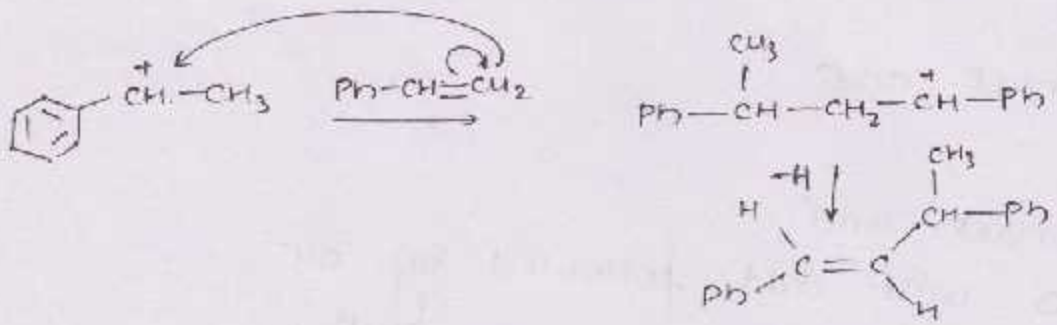
10. OH & H adds by anti-add^n, according to MR. without rearrangement

11. same as que. 10

12. Anti-add^n of two OH group with rearrangement

13. carbene formation $:CBr_2$

14.



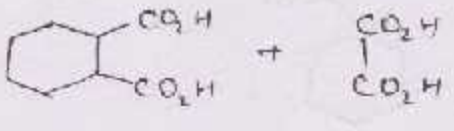
15. EWG decreases reactivity
EDG increases reactivity

16. terminal alkyne gives reaction.

17.

17 A $\xrightarrow[CCl_4]{Br_2}$ decolourises

A $\xrightarrow{H_2/Ni}$ deccalin

A $\xrightarrow{\text{warm } KMnO_4}$  +

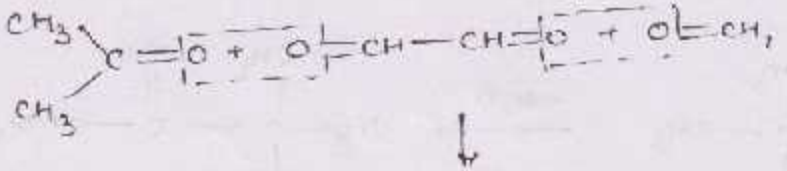
A = 

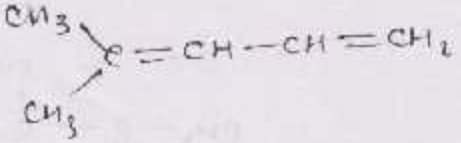
18. A =  (:CH_2 .carbene)

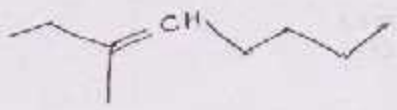
B =

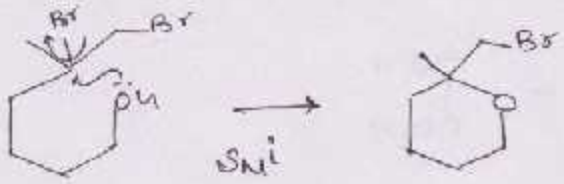
19 CAR

20 C is compound, syn-add^n ⟶ meso product

21 

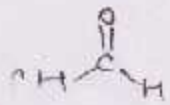


22 A = 

23 

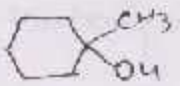
24 A $\xrightarrow[Pt]{2(H_2)}$ $C_{10}H_{16}$

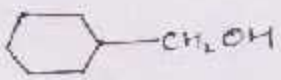
$\downarrow O_3/Zn$ (AcOH)

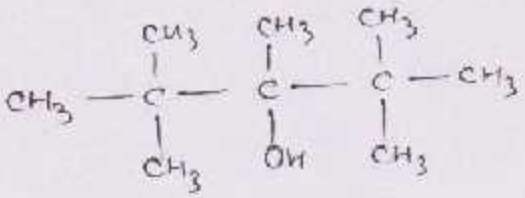
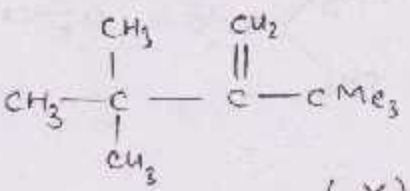
 + (B)

(C)

A = 

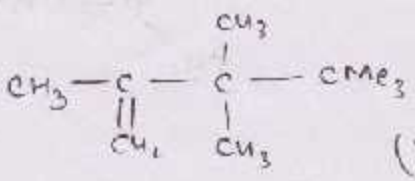
25 A = 

B =  (AMR)

26  $\xrightarrow{-H_2O}$ 

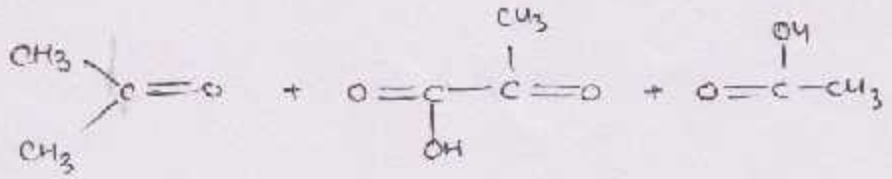
(X)

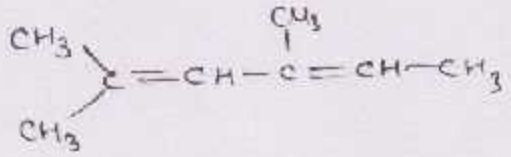
+



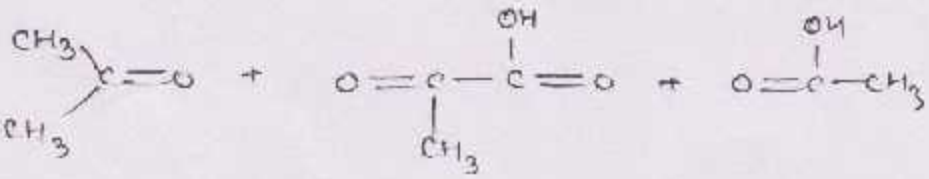
(Y)

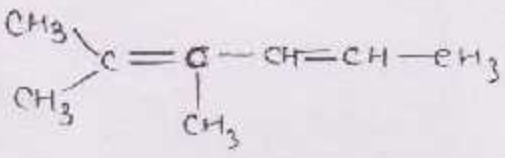
27.





OR





28. R_1 = anti-add^n reagent ($KMnO_4$)

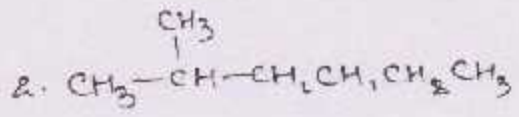
R_2 = syn-add^n reagent ($HCO_3H + H_3O^+$)

Subjective type

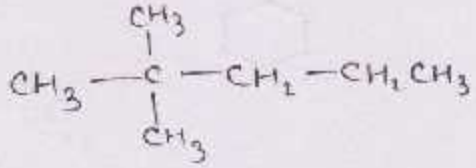
1 (a) C_7H_{16} IHD = 0

1. $CH_3-CH_2-CH_2-CH_2-CH_2-CH_2CH_3$

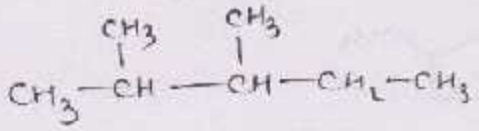
n-heptane

2. 

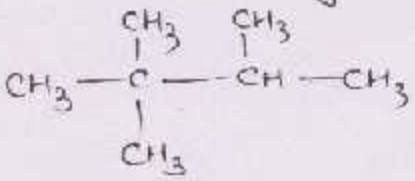
2-Methylhexane

3. 

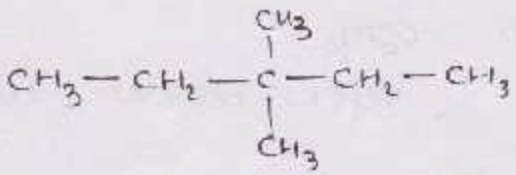
2,2-Dimethylpentane

4. 

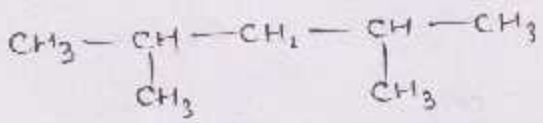
2,3-Dimethylpentane

5. 

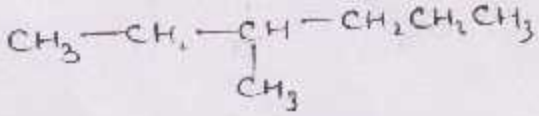
2,2,3-Trimethylbutane

6. 

3,3-Dimethylpentane

7. 

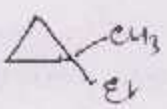
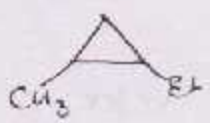
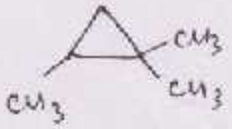
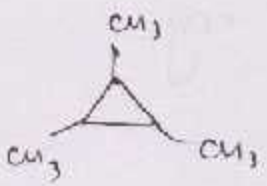
2,4-Dimethylpentane

8. 

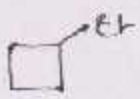
3-Methylhexane

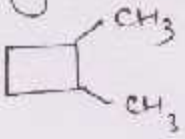
(b) 3-membered ring :-

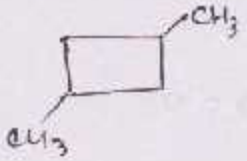


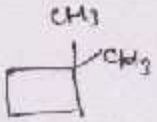





4- membered ring:-



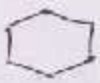






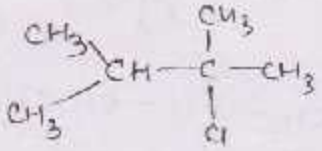
5- membered ring:-

6- membered ring:-

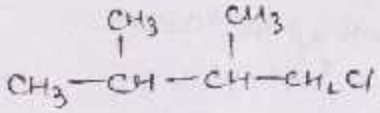


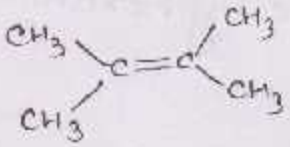
Q (a) refer booklet answer key

(b)

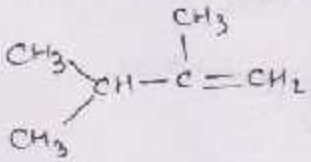


or





or

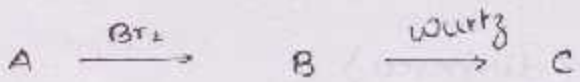


Q refer booklet answer key

Q refer booklet answer key

Q refer booklet answer key

Q.



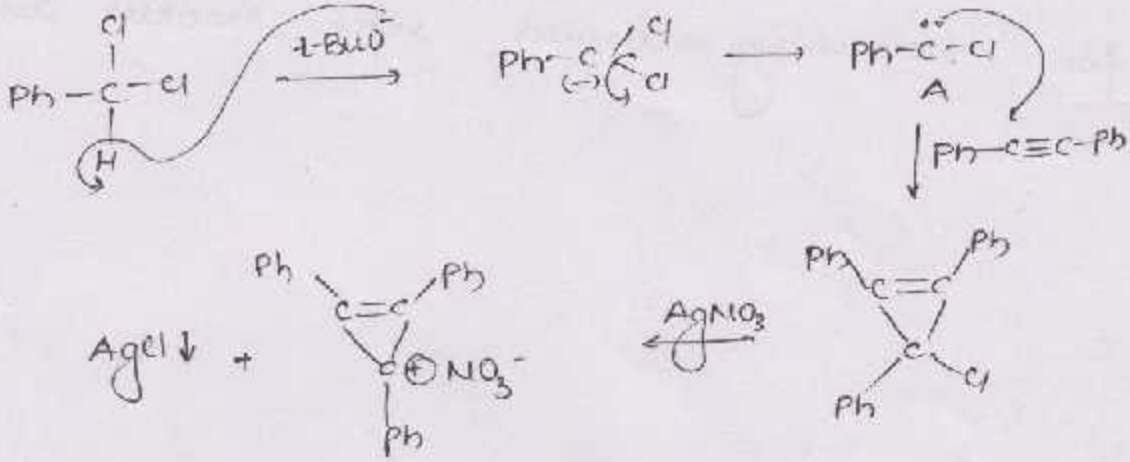
Hydrocarbon (R–Br)

A = CH_4 B = CH_3Br C = CH_3CH_3

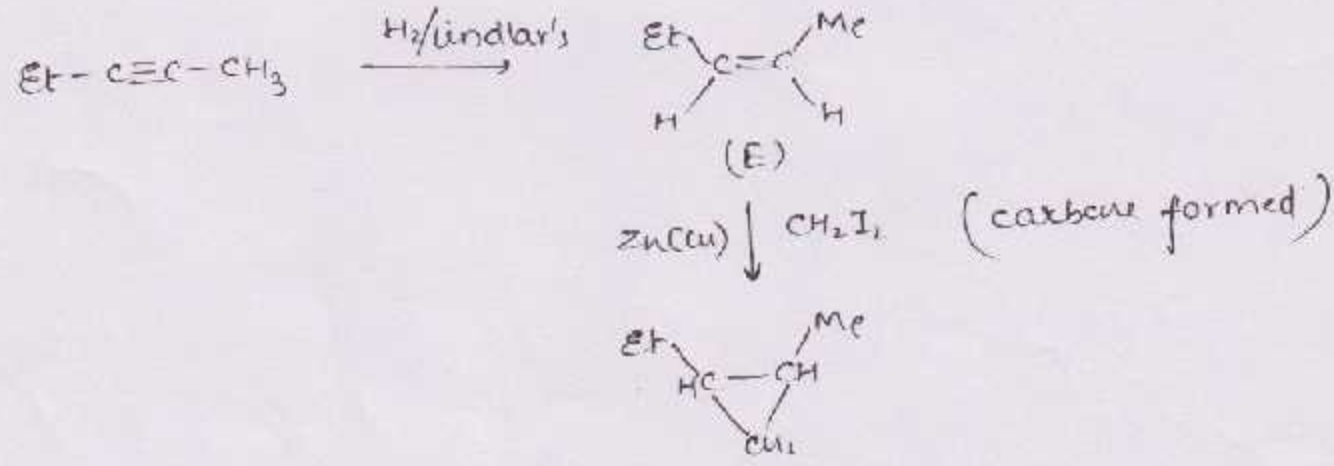
Q.

A = $CH_3-CH_2-\underset{CH_3}{CH}-Br$ B = $CH_3CH_2\underset{CH_3}{CH}-D$

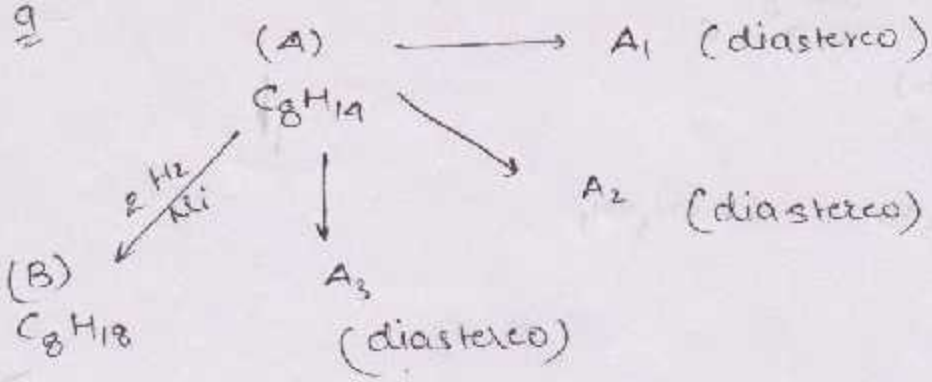
Q. (a)



Q. (b)



9



A = donot react with $AgNO_3$ or Br_2

∴ no terminal alkyne

for remaining answer refer booklet answer key

7. $HC\equiv CH \xrightarrow{AgNO_3} Ag^{\ominus}C\equiv C^{\ominus}Ag$

8. See POC

9. Refer GOC

10. POC

11. $HC\equiv CH + NaNH_2 \longrightarrow HC\equiv C^{\ominus} \xrightarrow{CH_3CH_2I} CH\equiv C-CH_3$

$CH\equiv C-CH_3 \xrightarrow{NaNH_2} CH_3-C\equiv C^{\ominus}Na^{\oplus} \xrightarrow{CH_3CH_2I} CH_3-C\equiv C-CH_2CH_3$

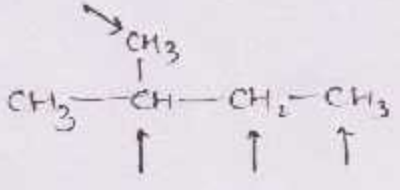
12. A = $HC\equiv CH$

B = $H_2C=CH-OH$

C = CH_3CH_2OH

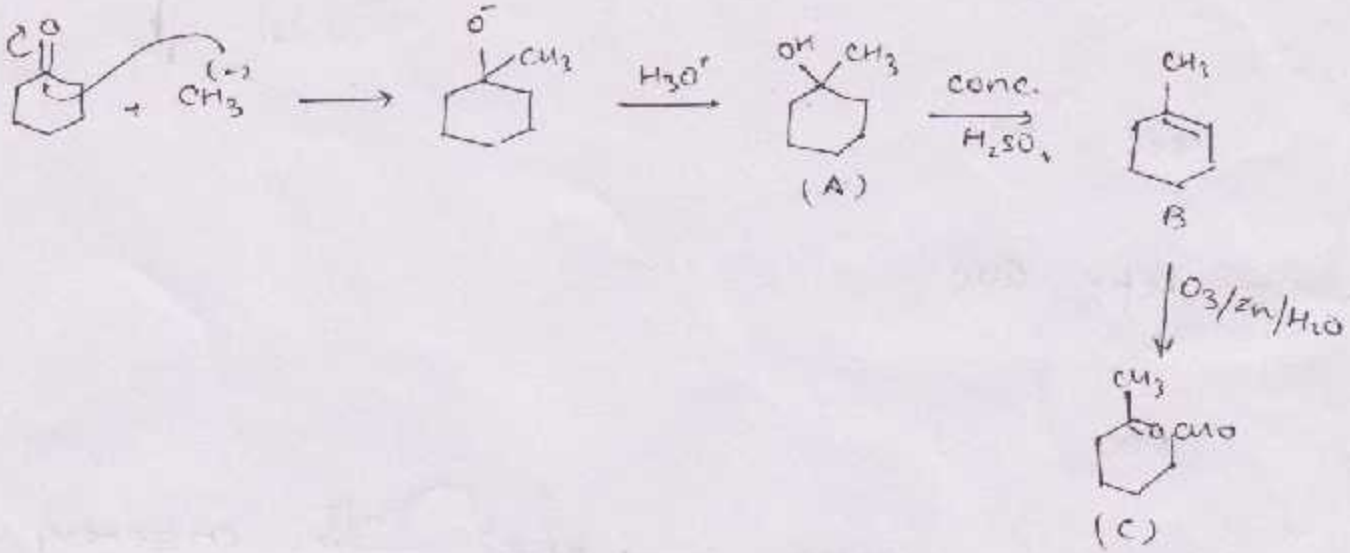
13. anti-add^n of $Li/liq\ NH_3$

14.

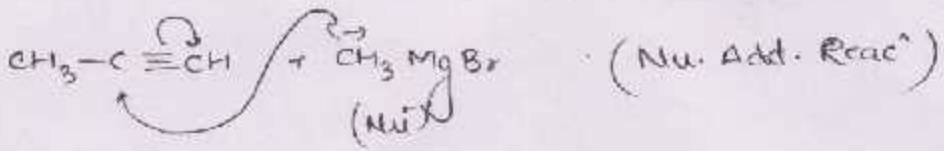
15. 

out of 4 isomers
2 are chiral
∴ total 6 isomers.

Get equipped for 11T-JEE

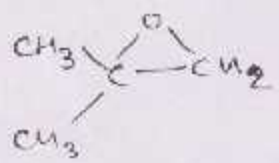
1. 

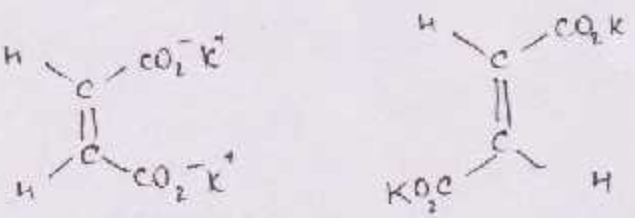
2. syn-addⁿ of cold. alk. $KMnO_4$
product is meso, non-resolvable

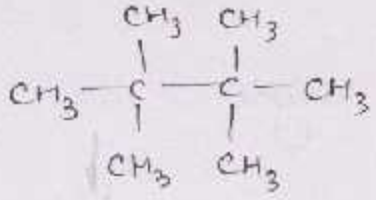
3. 

4. D and OH will add by syn-addⁿ. ✓

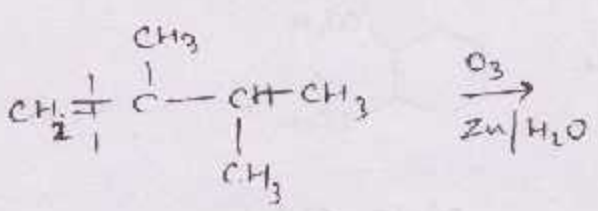
5. A = $CH_3-\underset{CH_3}{\overset{}{C}}=CH_2$

B = 

6. 

16 

all 1° Hydrogen ~~carbon~~ are identical

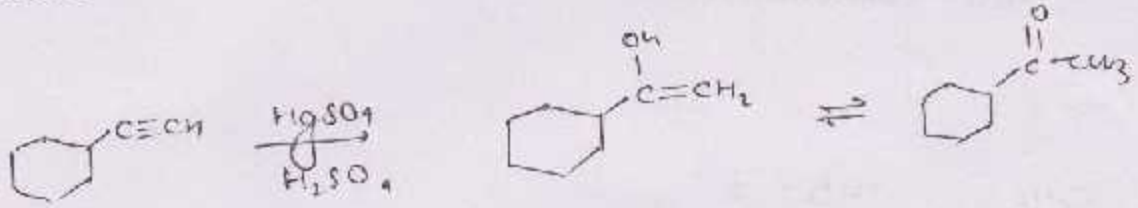
17 

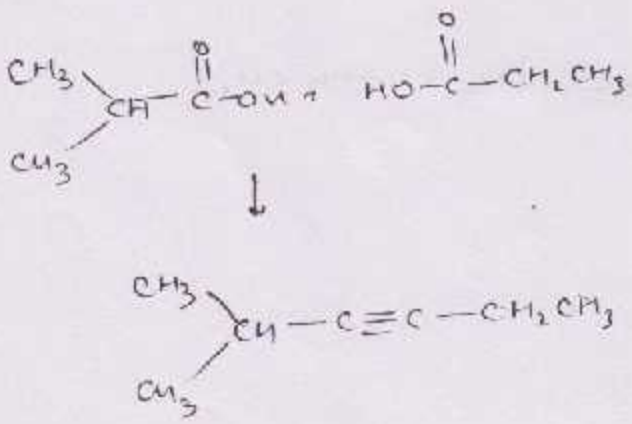
18 Alkene + Br_2 ⟶

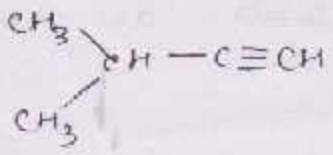
2.8g 8g

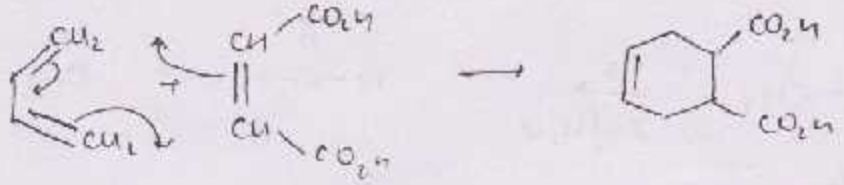
19 @ E.N of basic atoms.

20 basicity least acidic, more basic

21 

22 

23.  terminal alkyne

24. 

Diels Alder

25. $Br^{-} + \overset{(+)}{C}Cl_3$; 1,4-add^{n} pdt

26. anti-add^{n} of Br_2 ∴ racemic mixture

27. syn-add^{n} of OsO_4/H_2O_2 ∴ meso

28. anti-elimination.

29. C_4H_6 IHD = 2

C_4H_8 IHD = 1

(A) = $CH_3-C\equiv C-CH_3$ B = $CH_3-CH=CH-CH_3$

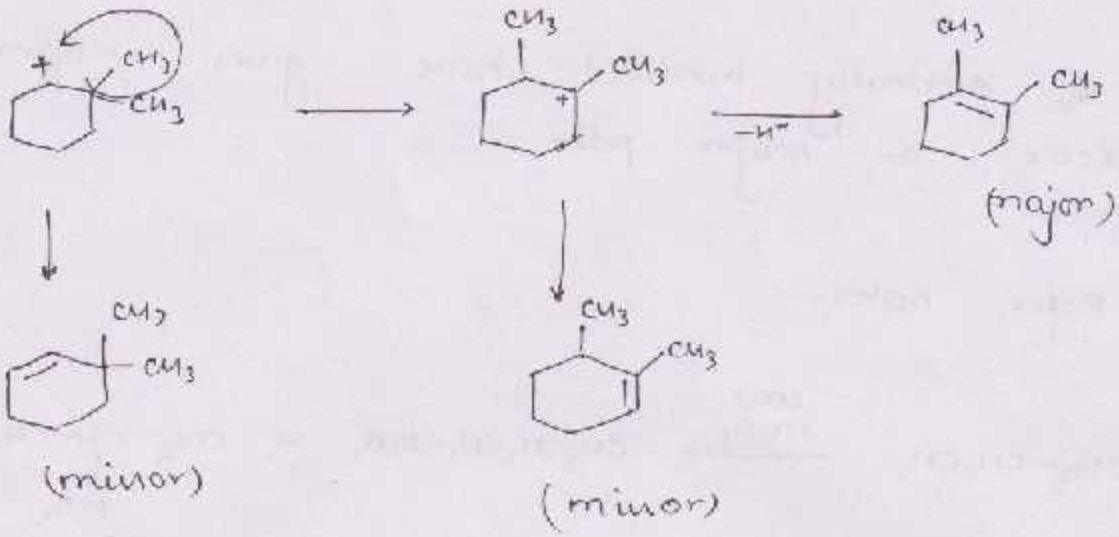
30. Symmetrical alkene.

31. Elimination reacⁿ

Saytzeff pdt ; more stable alkene

Hoffmann pdt ; less stable alkene

32.



33. Reducing reagent

35. carbocation rearrangement

36.

37. sp^3 carbon atom should 4 different groups.

38. 2 same atoms or groups on the same sp^2 carbon atom cant show G.I.

39. E_2 sterically hindered base gives Hoffmann alkene as major pdt.

40. Refer notes.

41. $CH_3-CH_2CH_3 \xrightarrow{\text{conc. } HNO_3} CH_3CH_2CH_2-NO_2 + CH_3-\underset{\underset{NO_2}{|}}{CH}-CH_3$

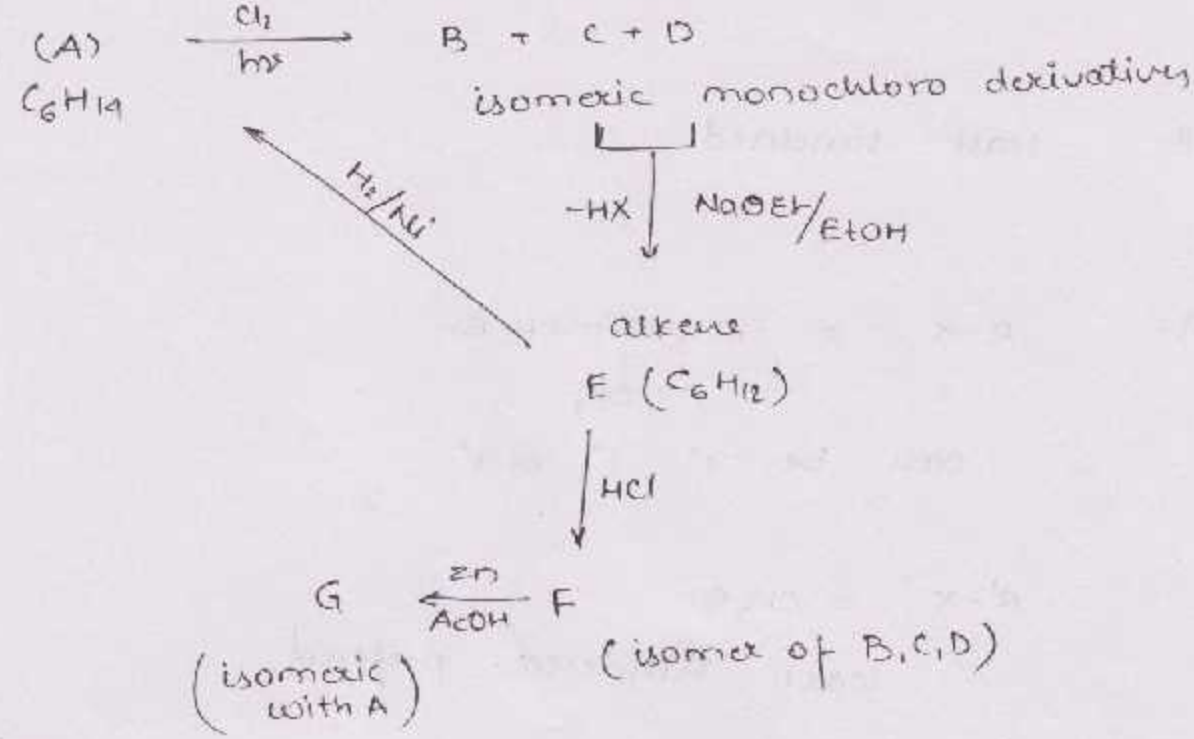
$+ CH_3-CH_2-NO_2 + CH_3-NO_2$

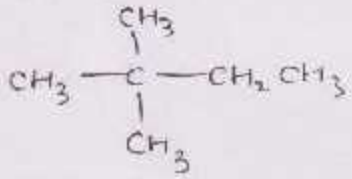
42. $CH_2=\underset{\underset{CH_3}{|}}{C}-CH_3 \xrightarrow{\text{dil } H_2SO_4} CH_3-\overset{\overset{CH_3}{|}}{\underset{+}{C}}-CH_3 \xrightarrow{H_2O} CH_3-\underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$

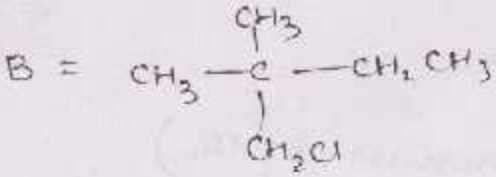
43. Refer booklet theory.

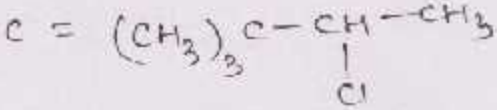
comprehension

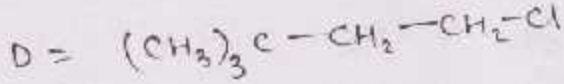
44-46

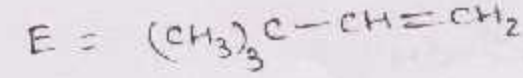


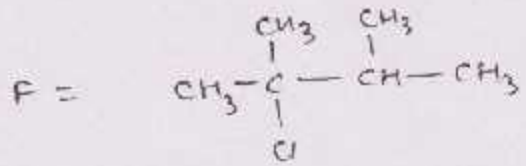
A = 

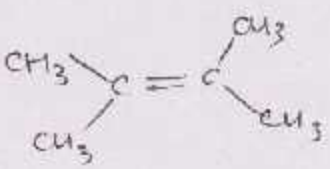
B = 

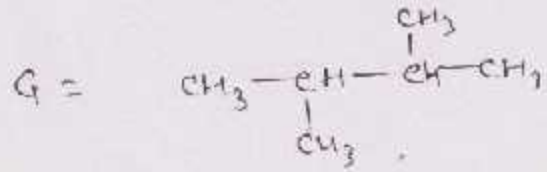
C = 

D = 

E = 

F = 



G = 

47 $R'-X$ should $1^\circ > 2^\circ > 3^\circ$

48. least hindered

49. $R-X = CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2Br$

can be 1°, 2° or 3°

$R'-X = CH_3Br$

least hindered. preferred

50-52.

A $\xrightarrow[H_2SO_4]{K_2Cr_2O_7}$ 2 moles (X) ↑

↓ lime water

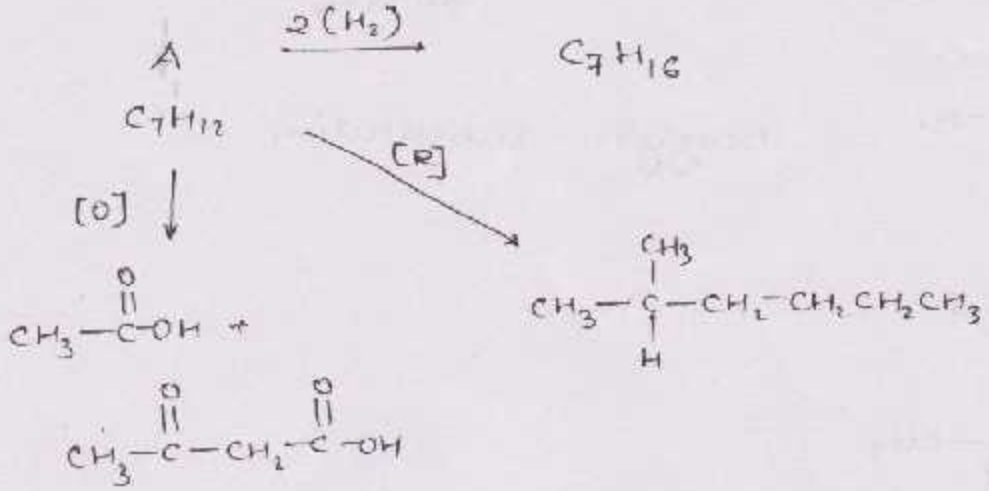
milky (presence of CO_2)

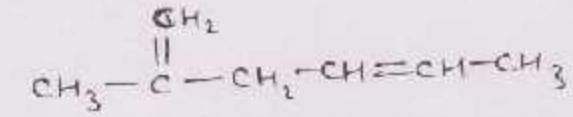
A = $CH_2=CH_2$

B = $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2 \xrightarrow{[O]} CH_3-\overset{\overset{O}{\|}}{C}-OH + CO_2$

C = $CH_3-\underset{\underset{OH}{|}}{CH}-CH-CH_3 \xrightarrow{[O]} 2\,CH_3-\overset{\overset{O}{\|}}{C}-OH.$

53

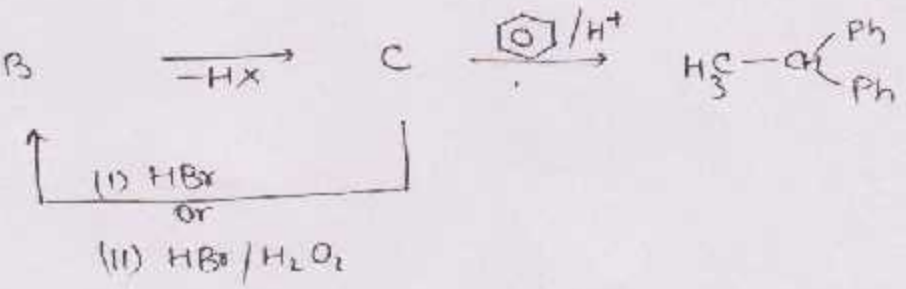


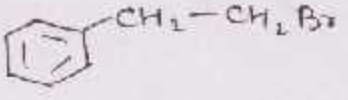
A = 

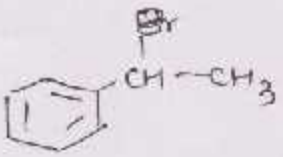
54 isomeric structure.
more stable.

55 least sterically hindered. alkene reduces.

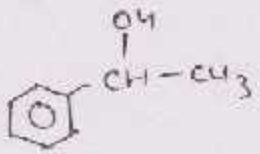
56



A = 

B = 

57



58. $A \xrightarrow{NBS} M \xrightarrow{2\ NaNH_2} X \xrightarrow[dil\ H_2SO_4]{HgSO_4} P(U)$

M = $Ph-\underset{\underset{Br}{|}}{CH}-CH_2-Br$ Benzylic substitution

X = $Ph-C\equiv CH$

P(U) = $Ph-\overset{\overset{O}{||}}{C}-CH_3$

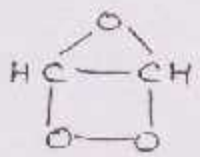
Integer Type

59. $C_{10}H_{12} \xrightarrow{H_2/Ni} C_{10}H_{16}$

$$IHD = \frac{10\times2 - 12 + 2}{2} = 5$$

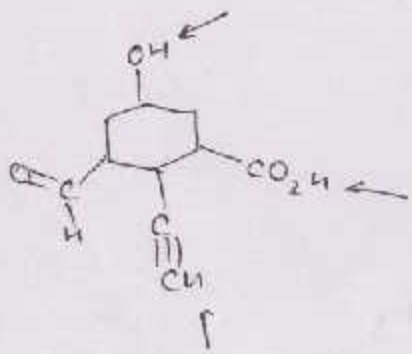
$\therefore x = 5$

60.



3 oxygen atoms.

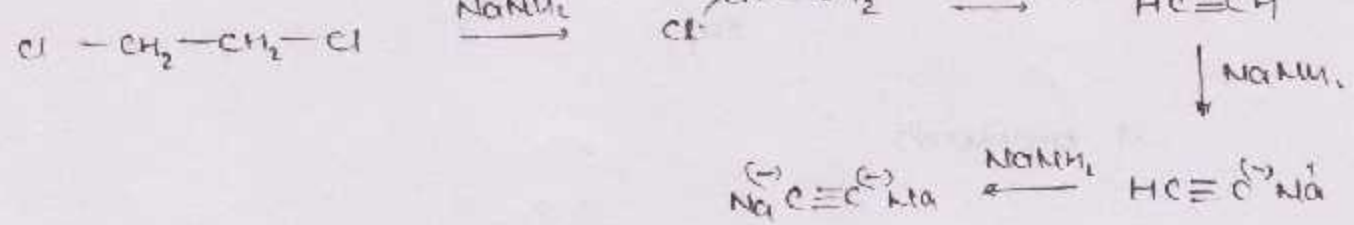
61.



3 acidic Hydrogen

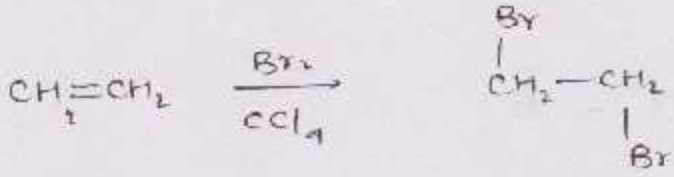
so 3 moles of $CH_4 \uparrow$

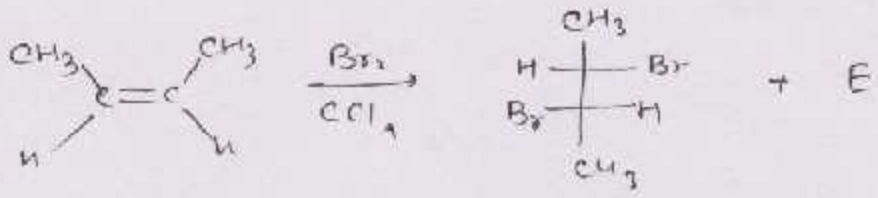
62.

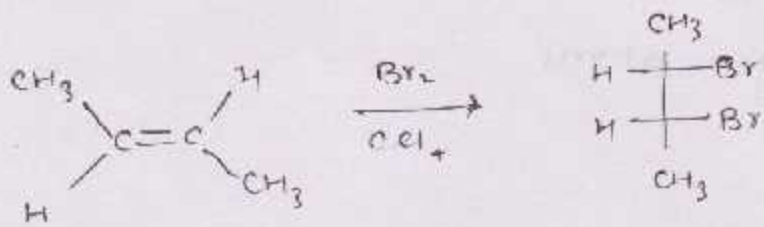


4 moles of $NaNH_2$

63.

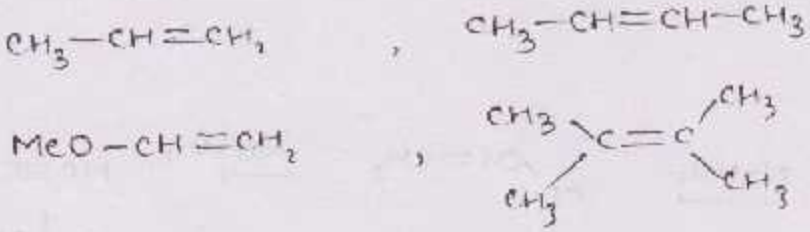






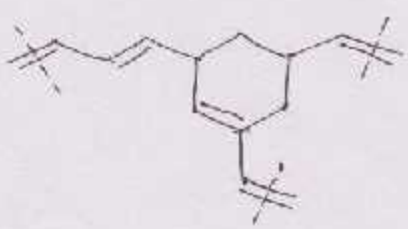
6 products

64.



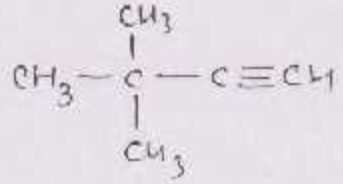
4 products

65.

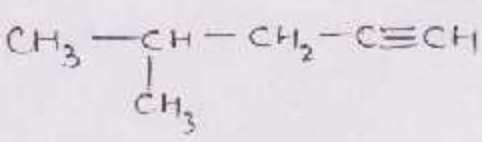


3 moles of $Ca(OH)_2$

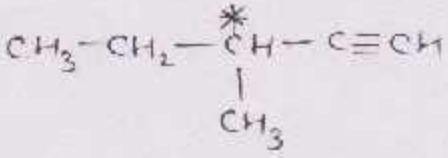
66 C_6H_{10} IHD = 2



, $CH_3CH_2CH_2CH_2C{\equiv}CH$



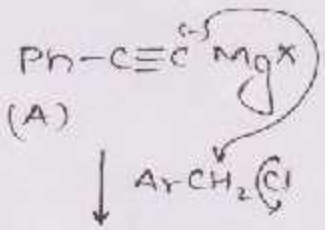
,



chiral.

5 isomers.

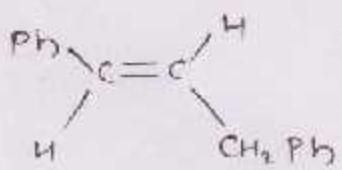
67. $Ph{-}C{\equiv}CH + CH_3MgX \longrightarrow$



$+ CH_4\uparrow$

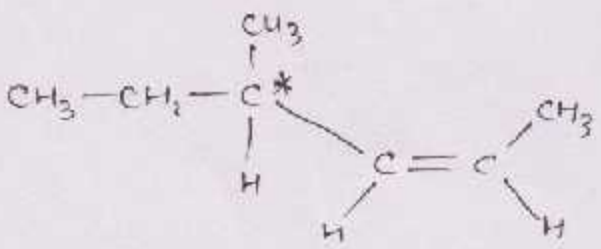
$Ph{-}C{\equiv}C{-}CH_2{-}Ph$ ←

(B)



(C) 9 (DU)

68



7 carbon atoms.

69. stability of C^{+ve} increases, hydration of alkene increases.

70. syn add^{n} of BH_3

72. molozonide is formed before ozonide (see mechanism)

73 no rearrangement, cyclic concerted mechanism

74. Li/AlH_3 is an ~~ae~~ anti-add^{n} reagent

76 Anti-mark. Rule, 1st Cl is added to the alkene in chain propogation step.

81. BD_3/THF provides D first, then CH_3CO_2H gives H to alkyne

while

BH_3/THF adds H

CH_3CO_2D adds D

83. Reductive ozonolysis give $-CHO$ or $>C=O$ group

Matrix Match

84. (A) Mark add^n w/o rearrangement
OH and H groups will add.

(B) Anti-Mark. add^n w/o rearrangement
H and OH group

(C) Mark. add^n with rearrangement
add^n of H and OH

(D) CH_3O and H will add on alkene
by Mark. add^n w/o rearrangement

85

(A) aromatisation

(B) refer booklet theory

(C) —"— —"— —

(D) —"— —"— —

86

(A) Reaction of terminal alkyne :

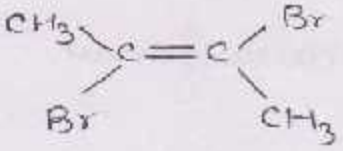
(B) $CH_3-C\equiv C-CH_3 \xrightarrow[H^+]{KMnO_4} 2\,CH_3-\overset{O}{\overset{\|}{C}}-OH$

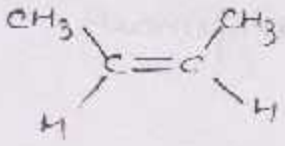
(C) $CH_3-\underset{H}{C}=CH_2 \xrightarrow{"} CH_3-\overset{O}{\overset{\|}{C}}-OH$

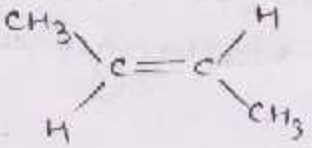
(D) $CH_3-C\equiv CH \xrightarrow{"} CH_3-\overset{O}{\overset{\|}{C}}-OH + CO_2$

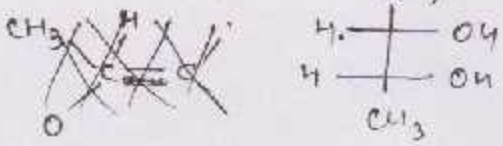
87 refer named reaction.

88

(A)  ; anti-add^n

(B)  ; syn add^n

(C)  ; anti-add^n

(D)  ; syn-add^n

1. Removes HX ; dehydrohalogenation

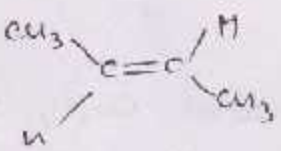
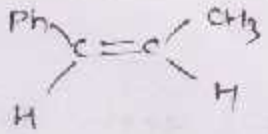
2. presence of π-bond

3. ~~Elimination~~ E_2 mechanism

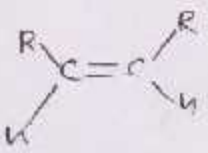
4. $HC \equiv C - CH = CH_2$ (sp, sp^2)

5. $CH \equiv C - CH_2CH_3 \xrightarrow{\text{OMDM}}$ $CH_3 - \overset{O}{\overset{\|}{C}} - CH_2CH_3$ (keto form)

6. density is less

7.  

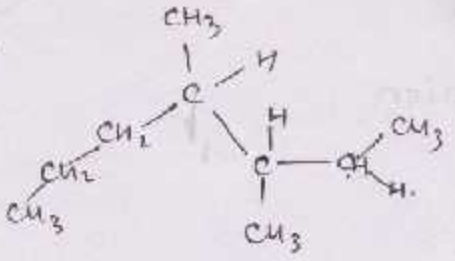
8. $\overset{1}{CH_2} = \overset{2}{CH} - \overset{3}{CH_2} - \overset{4}{CH_2} - \overset{5}{C} \equiv \overset{6}{CH}$ (sp^2, sp^3)

9.  , less-substituted as well as less steric hinderance

10. terminal alkyne reaction with $AgNO_3$

11. endothermic reac^n.

12.



13. $HOCl \longrightarrow HO^- + Cl^+$

Mark. add^n

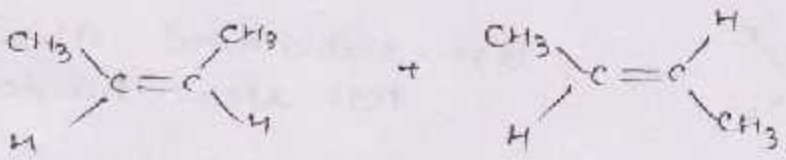
14.

15. more stable free radical

16. terminal alkyne test by Ammonical Cu_2Cl_2 sol^n.

17. Mark. Add^n w/o rearrangement followed by tautomerism

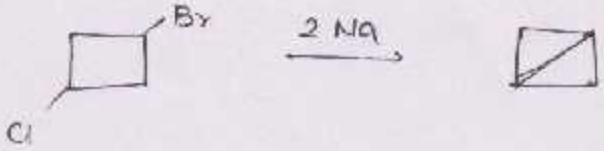
18. $X =$



$CH_3-CH_2-HC\equiv CH_2$

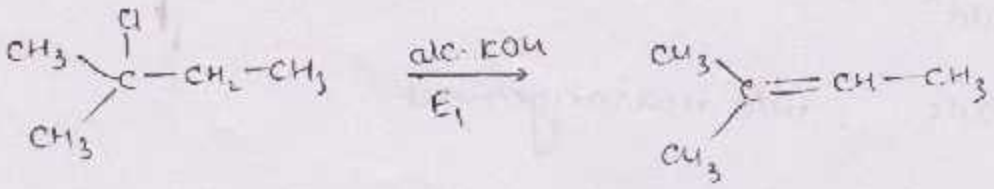
19. anti-addⁿ by Li/Liq NH_3

20 $PhMgBr + CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{C}}}}-OH \longrightarrow \underset{\text{~~ROH~~}}{Ph-H} + Me_3C-O^{-}Mg^{+}Br$

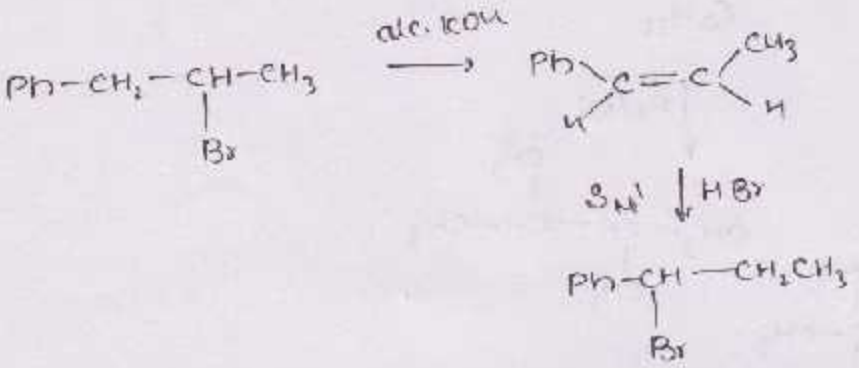
21 

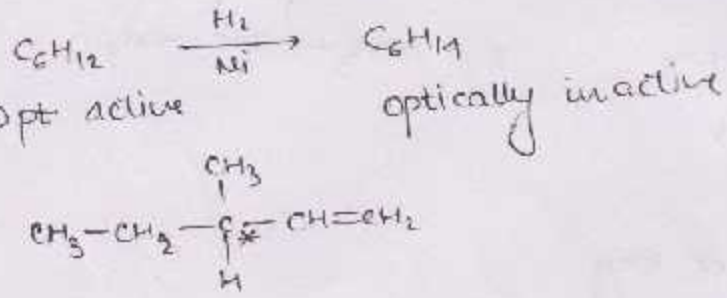
22 dehydrating reagent.

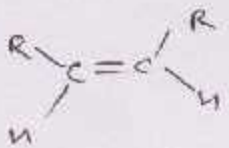
Subjective type

1. 

Saytzeff

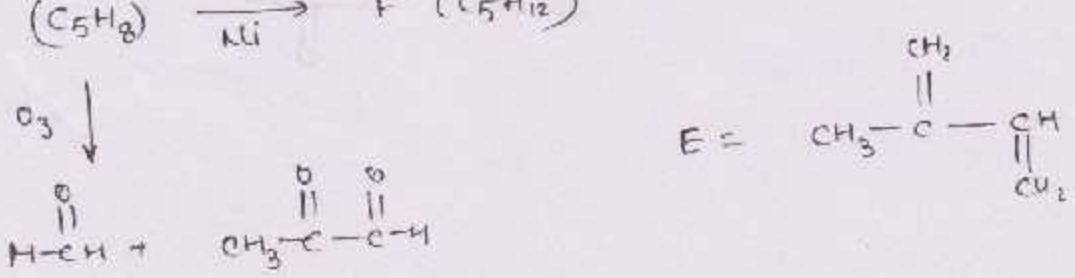
2. 

3. 

4. 

. syn add^n

5. cis compound + anti-add^n ⟶ racemic pdt

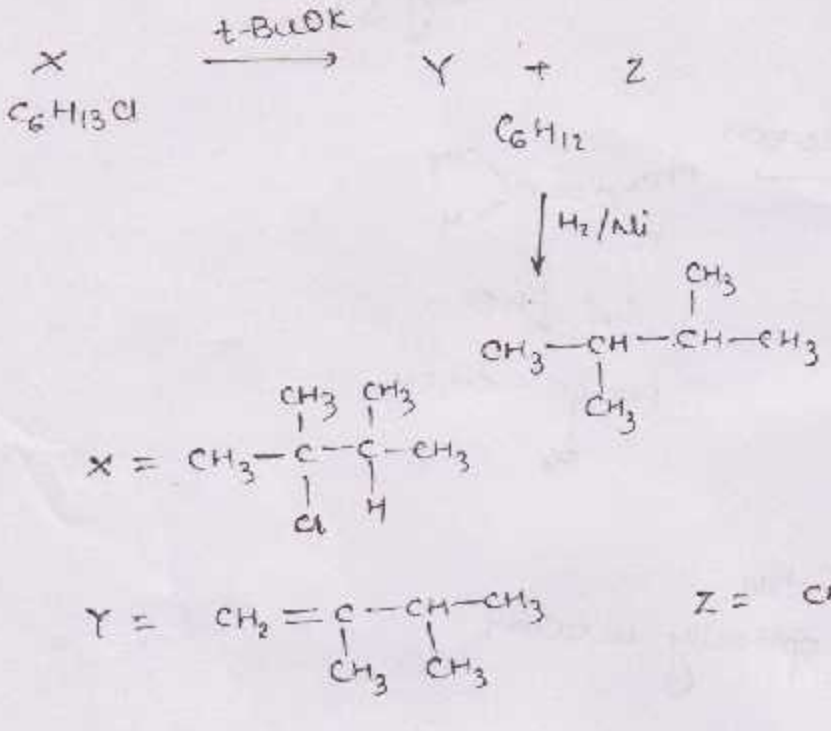
6. 

7. a) anti- mark. Rule

b) Anti- add^n

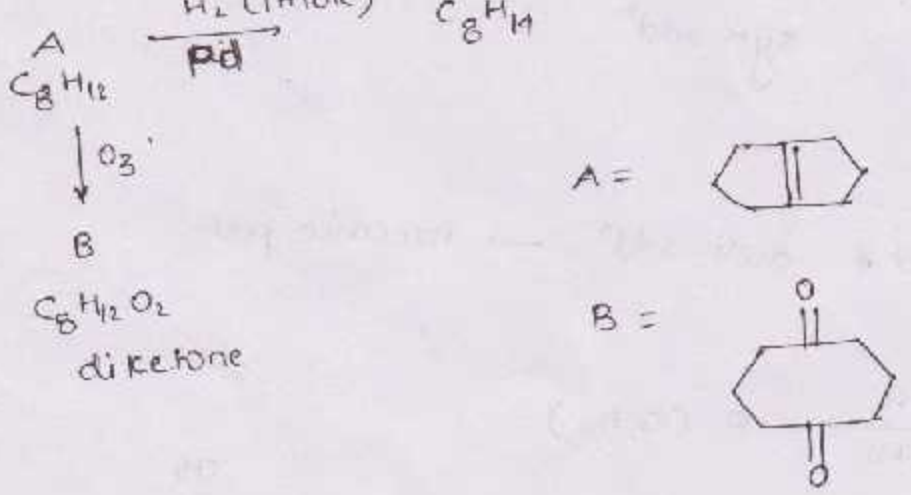
c) Mark. Rule , w/o rearrangement

8.



9. refer booklet answer key

10.



11. A (C_6H_{12}) (symmetry) $\xrightarrow[CCl_4]{Br_2}$ decolorises. (π-bond is present)

$\downarrow$ alk. $KMnO_4$

B. (~~symmetrical~~ only 1 pdt)

DU = 1

$\therefore$ A = $CH_3-CH_2CH=CH-CH_2CH_3$

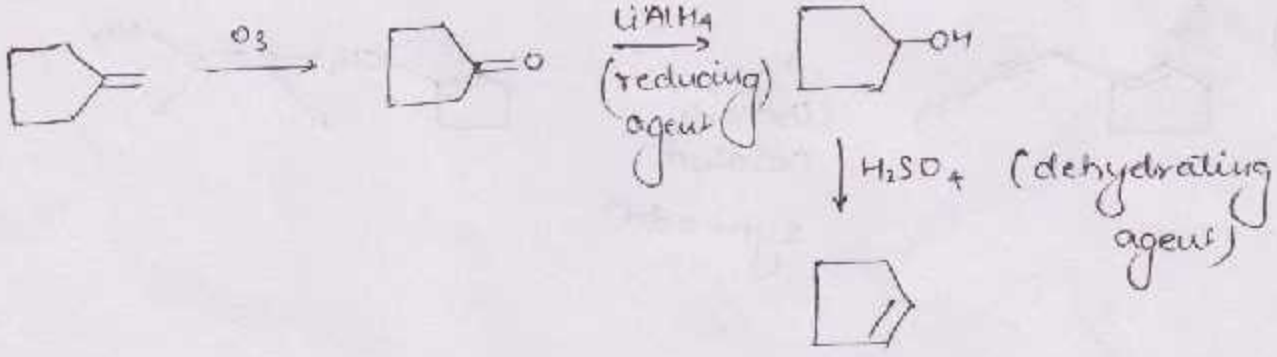
B = CH_3CH_2COOK

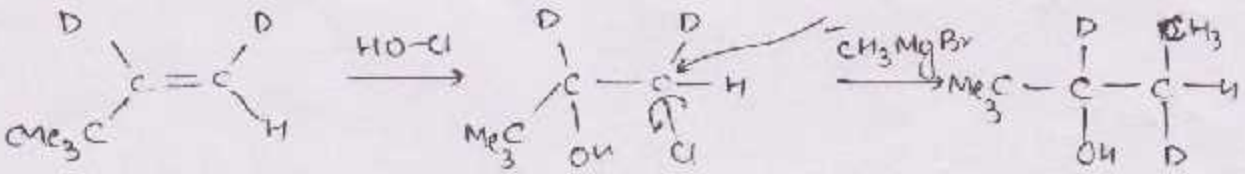
12. due to resonance.

13. refer booklet answer key.

14. refer booklet answer key.

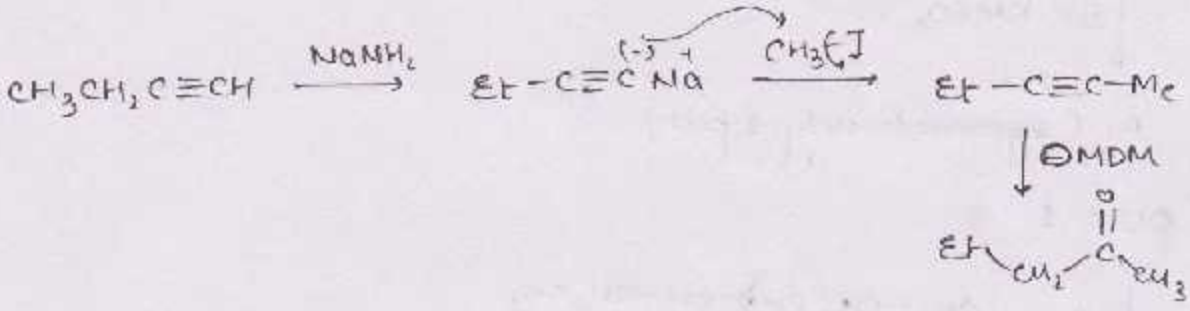
15. refer booklet answer key

16. 

17. 

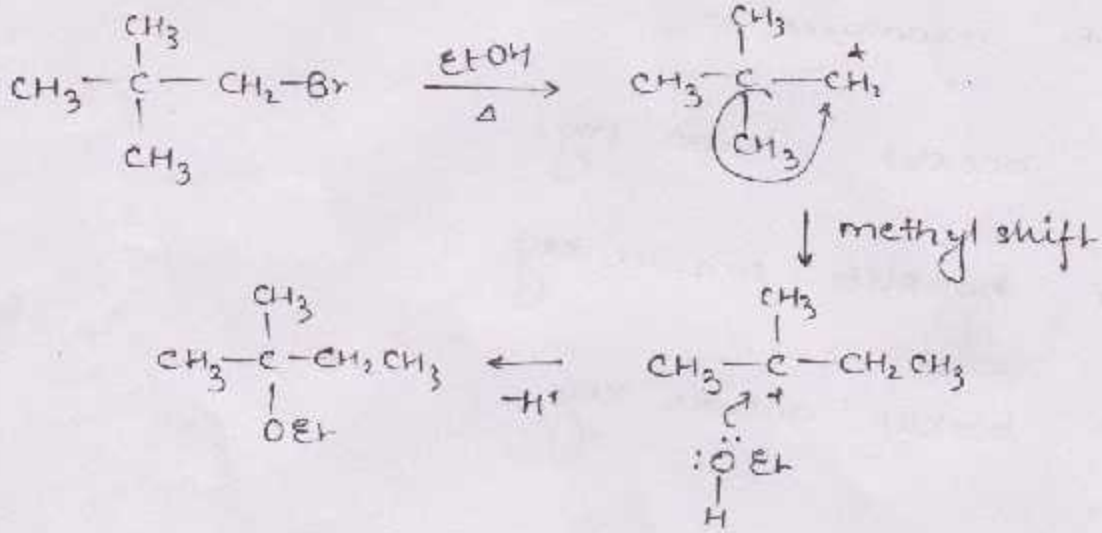
18. Refer booklet answer key

19.

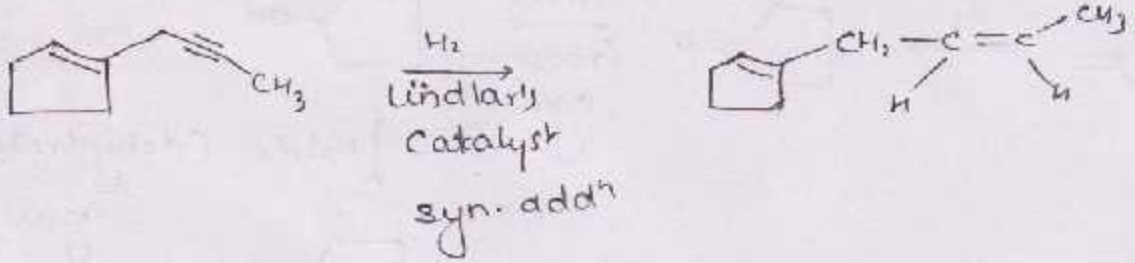


20. e·N ↑'s basicity ↓'s

21. (i)



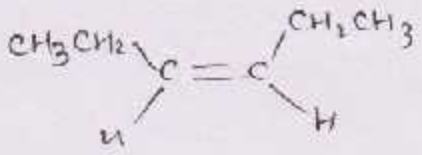
ii)



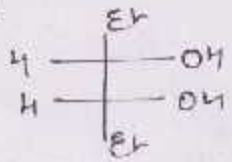
22.

Q3 X = $CH_3CH_2C\equiv C-CH_2CH_3$

Y = syn-addⁿ pdt



Z = syn. addⁿ of alk. $KMnO_4$



Q4

$C_{16}H_{30}O \xrightarrow[Li]{H_2}$ A ($C_{16}H_{34}O$)

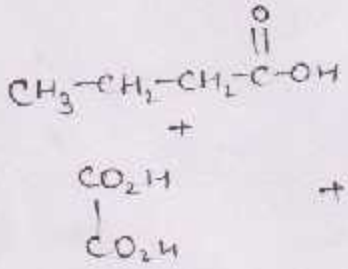
↓ acetic anhydride

ester

↓ acetic anhy.

ester

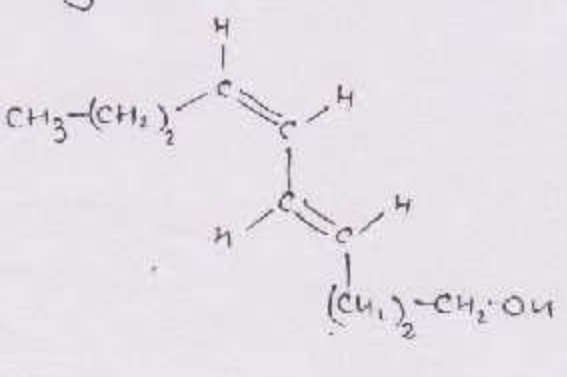
↓ O_3/H_2O_2



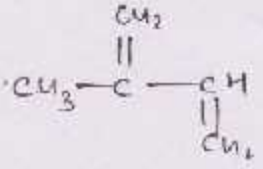
IHD of $C_{16}H_{30}O = \frac{2\times16-30+2}{2} = 2$

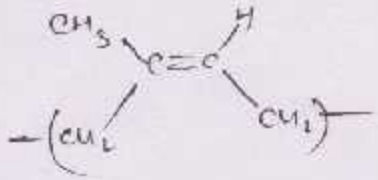
2 – π bonds are present

$\Rightarrow 2^2$ geo. isomers.

Bombykol = 

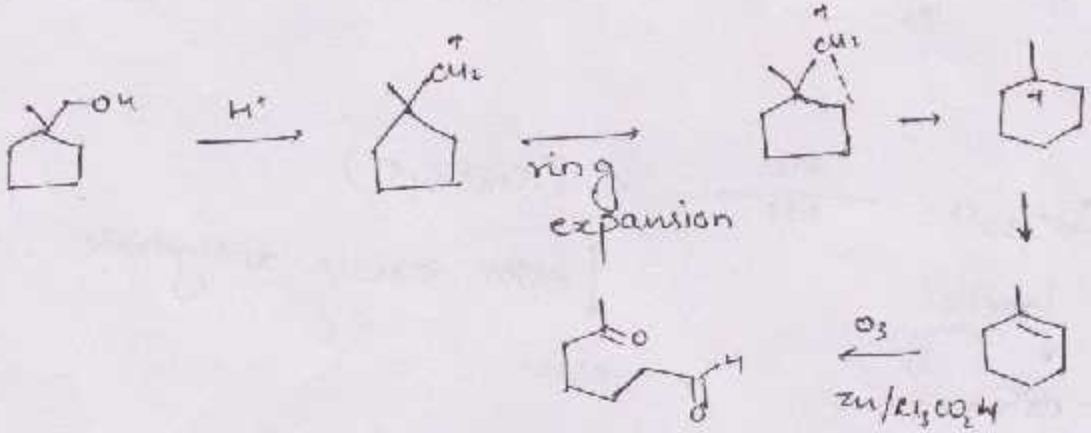
25

∴  polymer.



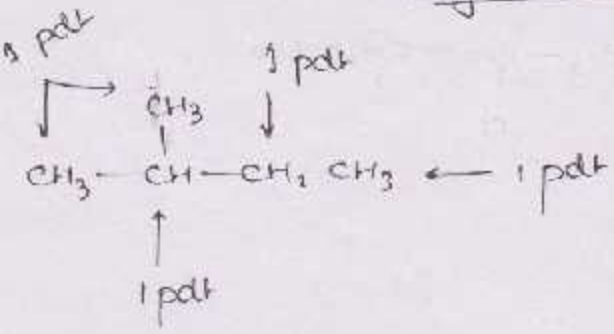
cis-isomer

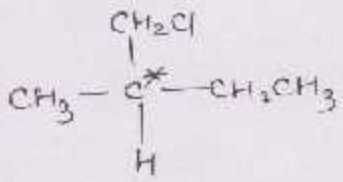
26



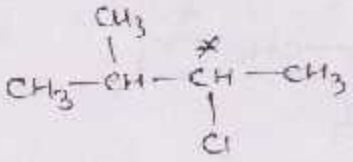
Objective type

27 //





(O·A)



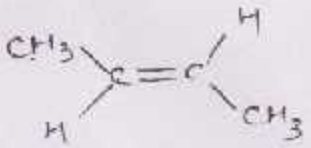
(O·A)

∴ 6 pdts

2 are optically active & 4 are diastereomers.

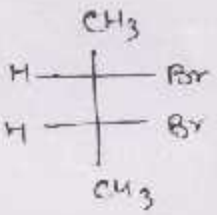
28 // Elemination Reaction

29 //



trans

Br_2 → anti-add^n

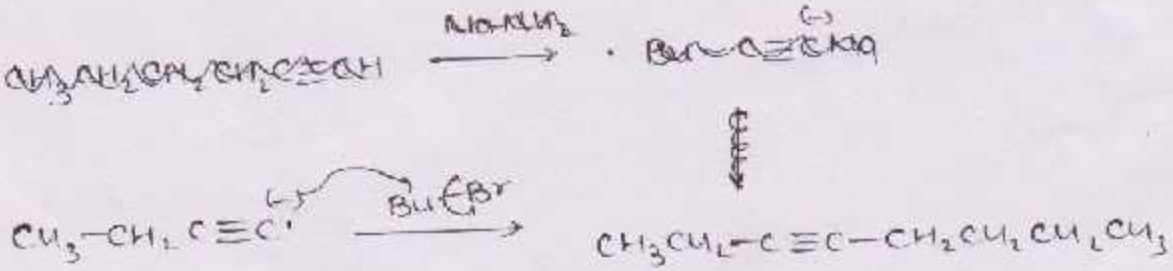


Meso

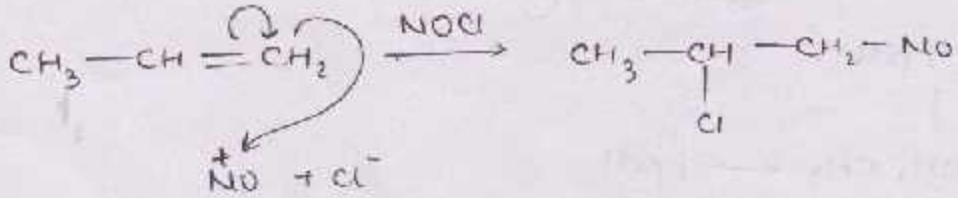
30 //

$R-Br + NaNH_2$ + alkyne ⟶

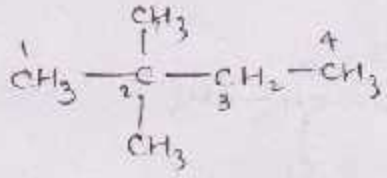
3-octyne



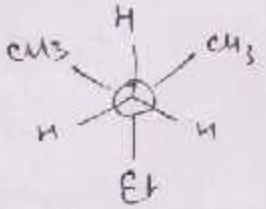
81)



82)

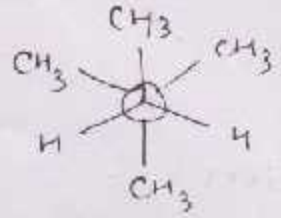


conformer about C_1-C_2



X = H Y = Et

conformer about C_2-C_3



X = CH_3 Y = CH_3