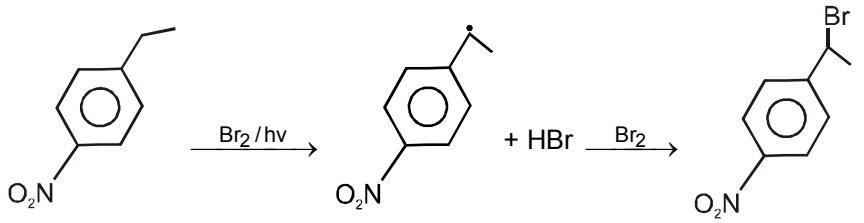
Solution of DPP # 9

TARGET : JEE (ADVANCED) 2015

Course : VIJETA & VIJAY (ADP & ADR)

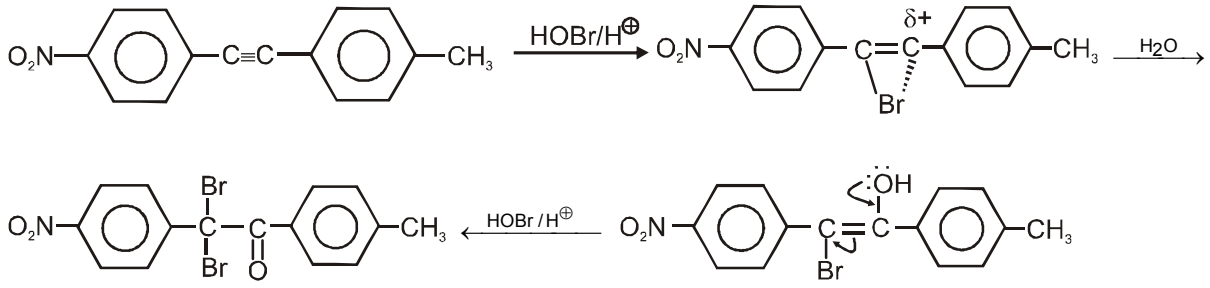
CHEMISTRY

1.



2. $CH_3–CH_2Cl \xrightarrow[(ii)\ LiAlH_4]{(i)\ KCN} CH_3CH_2CH_2NH_2$; $CH_3–CH_2Cl \xrightarrow[(ii)\ LiAlH_4]{(i)\ AgCN} CH_3CH_2–NH–CH_3$

3.



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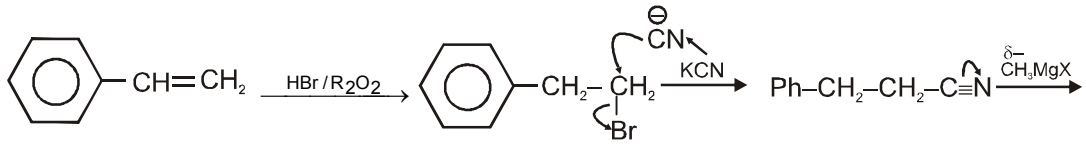
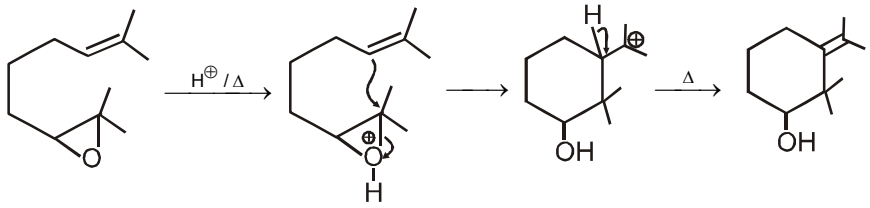


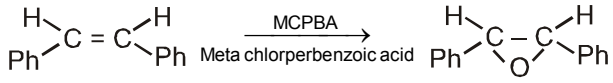
$Ph–CH_2–CH_2–\underset{\displaystyle O}{\overset{\displaystyle CH_3}{\overset{|}{C}}}=N–MgX \xrightarrow{H_2O} Ph–CH_2–CH_2–\underset{\displaystyle O}{\overset{\displaystyle CH_3}{\overset{|}{C}}}–CH_3$

5.



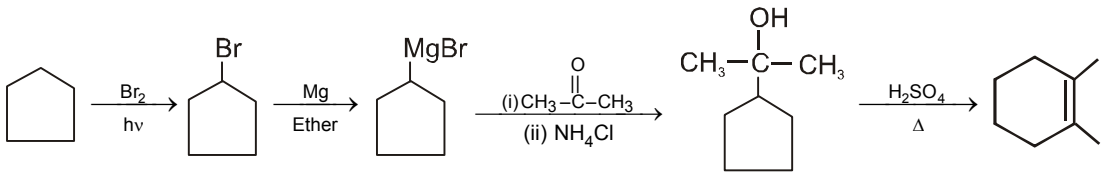
6. Chlorination is less reactive so 2° chloroproduct is major as per calculation
Bromination is more selective so 3° bromo product is major.

7.



(Meso)

8.

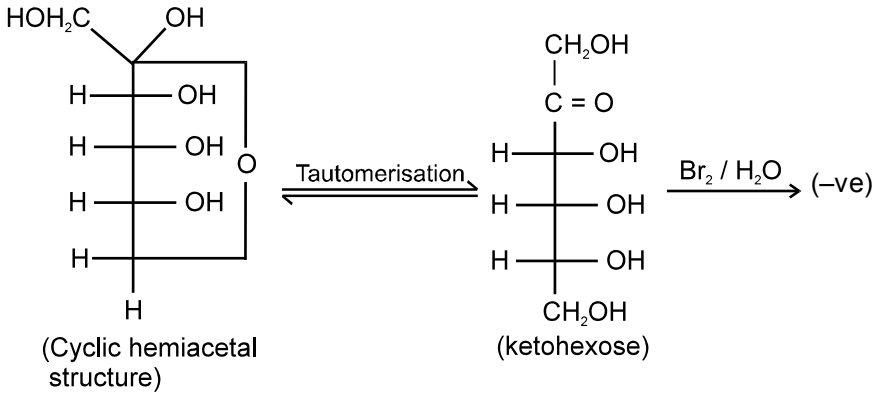


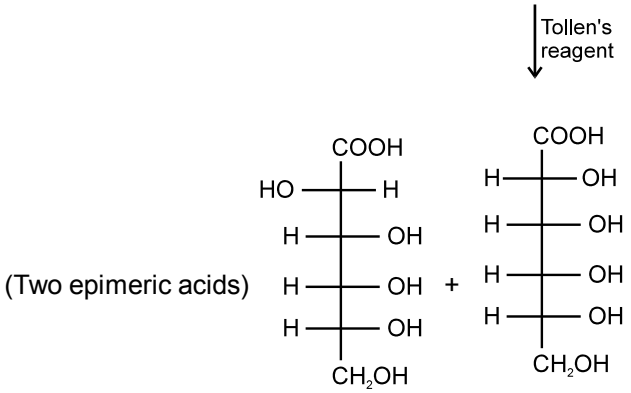
11. Sucrose has 8 –OH groups so forms octaacetate.

12. (B) Phe—Val—Asp—Glu—His $\xrightarrow{H_3O^{\oplus}}$ Phe—Val + Val—Asp + Asp—Glu + Glu—His

13. The compound is sucrose which on hydrolysis gives equimolar mixture of glucose and fructose.

14. (X) = Tagatose =





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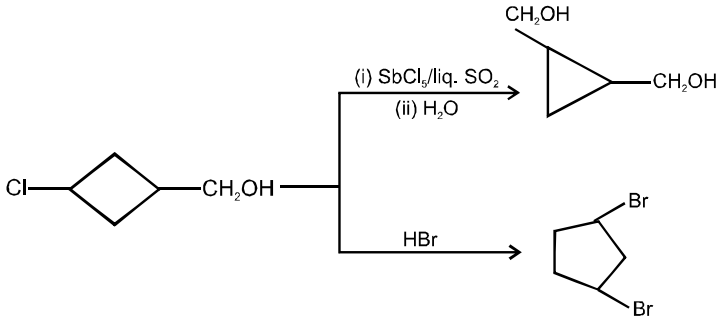
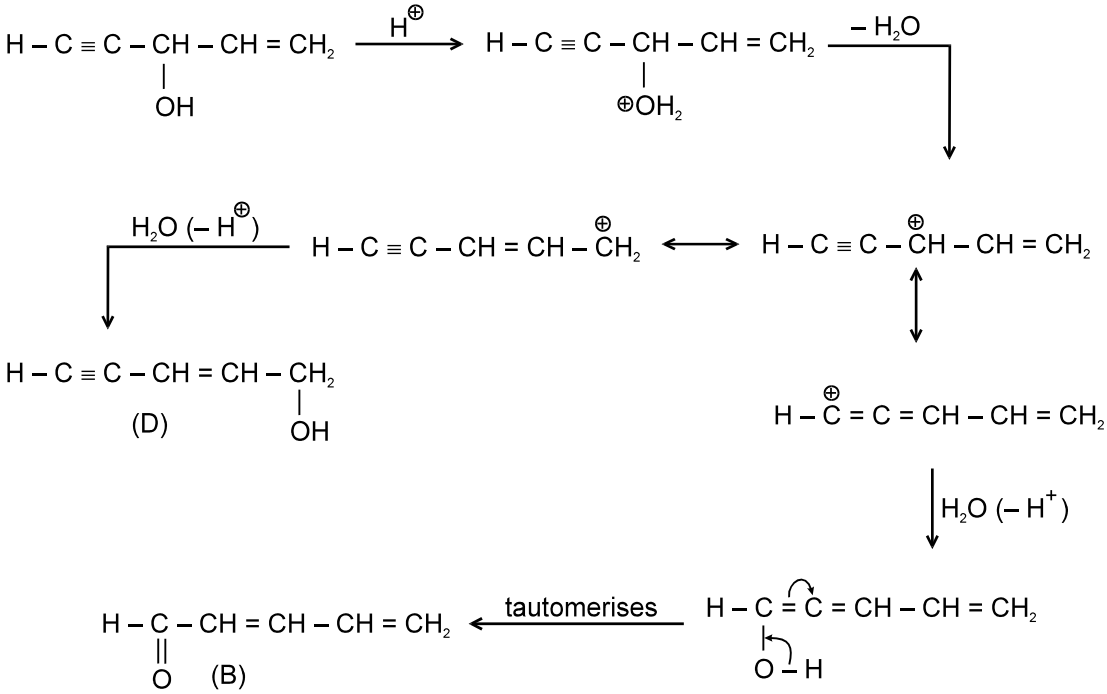


16. $CH_3-C(=O)-O-C(CH_3)=CH_2 \xrightarrow[2.\ H_3O^{\oplus}]{1.\ MeMgBr} CH_3-C(=O)-CH_3 + HO-C(CH_3)=CH_2 \longrightarrow CH_3-C(=O)-CH_3$

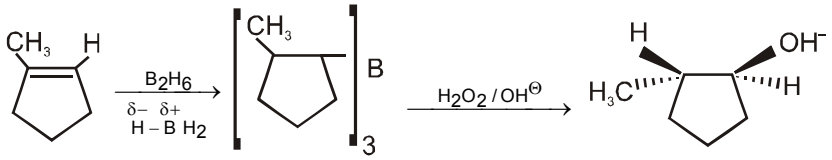
17.



18. chain propagation steps are

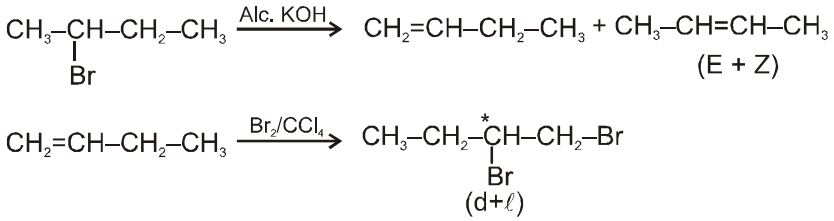
$R\dot{O} + CH_4 \longrightarrow ROH + \dot{C}H_3$; $\dot{C}H_3 + Cl_2 \longrightarrow CH_3Cl + \dot{C}l$

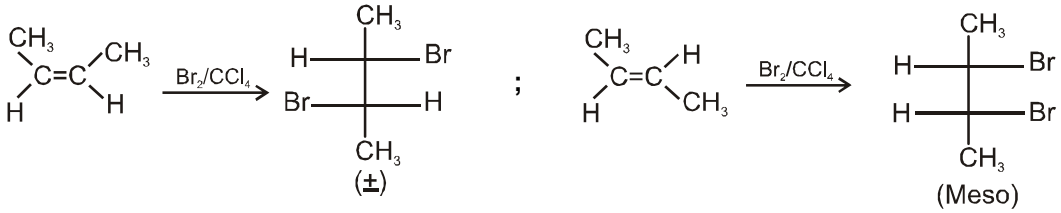
20.



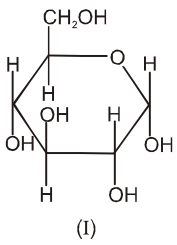
Stereospecific **syn** addition ; BH_3 act as electrophile

21.



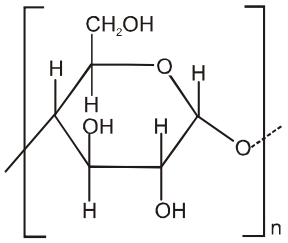


24.



It has a hemiacetal structure

26.



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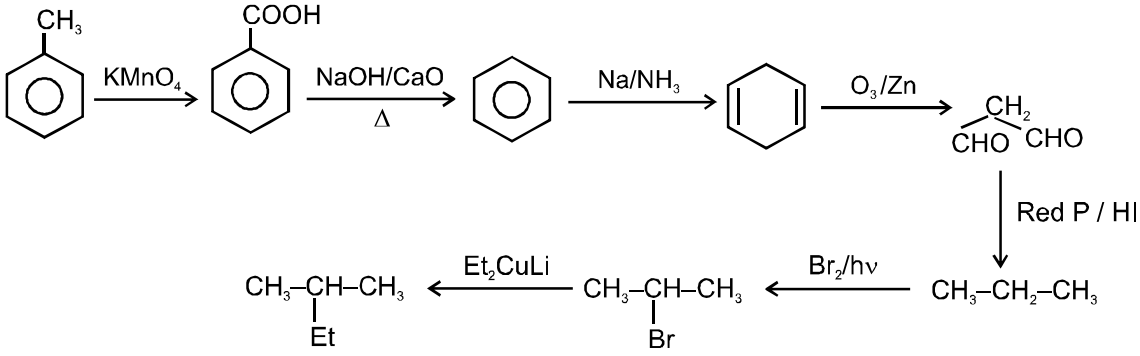

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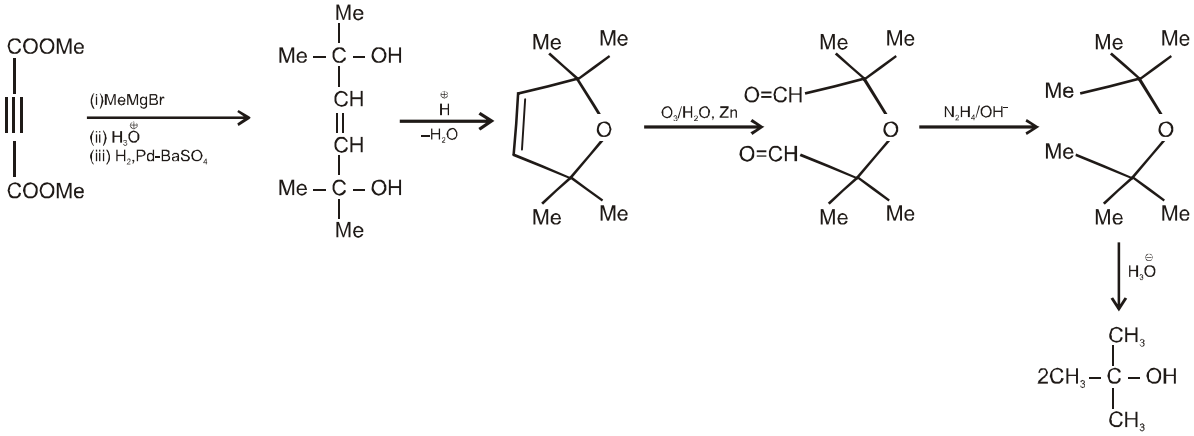

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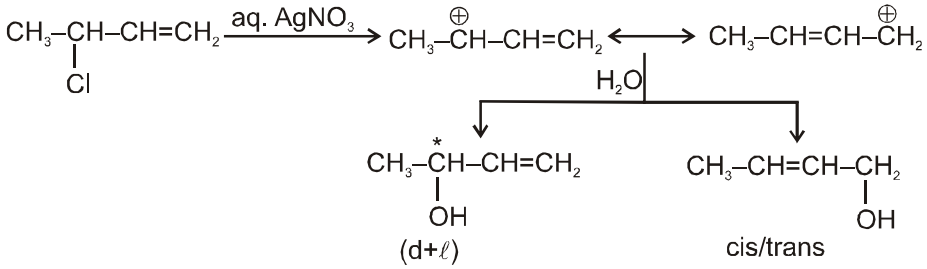
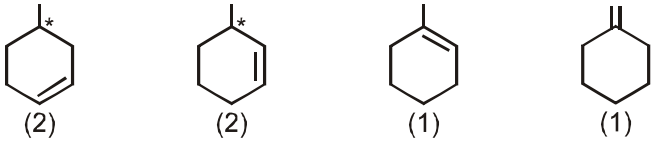


Structural = 2
diastereomers = 2

34.



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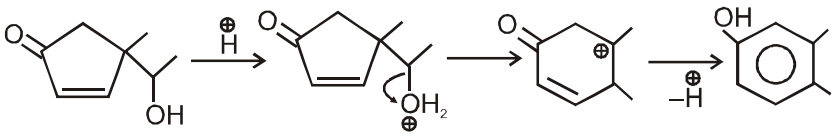

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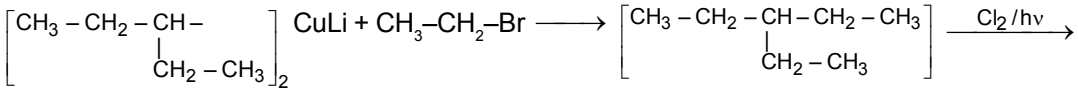
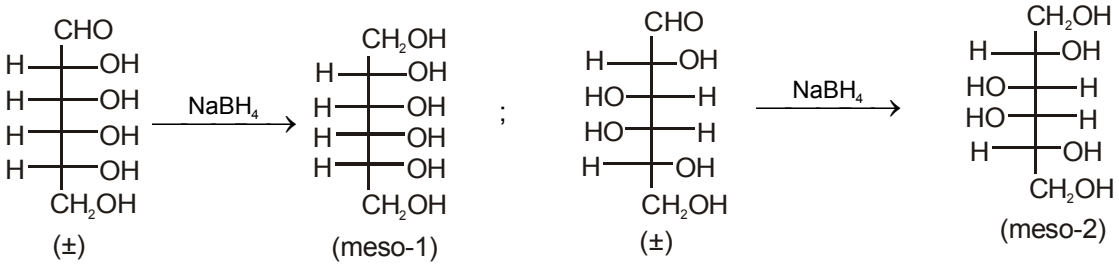


(X)

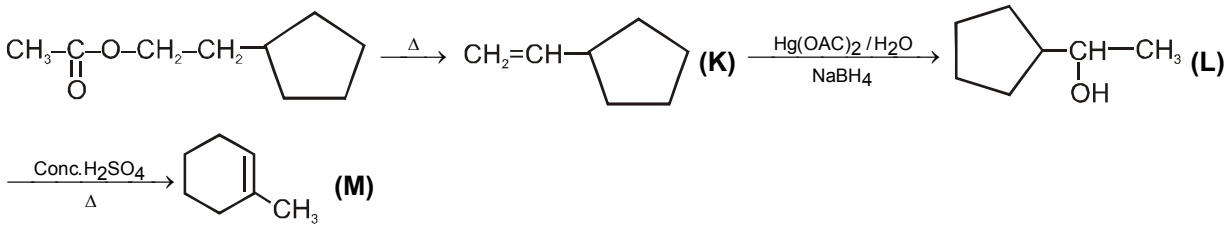
4 isomers (with one dℓ pair) $\xrightarrow{\text{Fractional distillation}}$ 3 fractions

37.



so in total 4 stereoisomers are reduced to meso products.

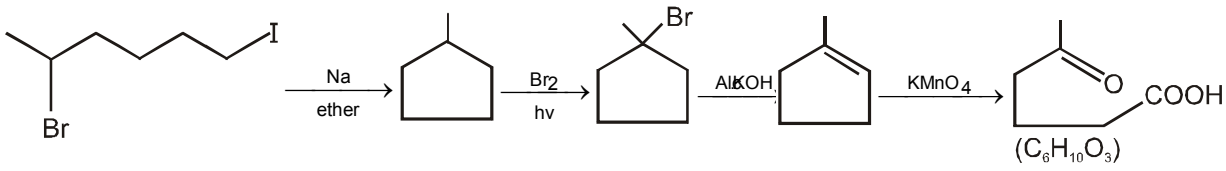
39.



40. $CH_3–CH=CH_2 \longrightarrow \underset{(A)}{CH_3-CH=O} + \underset{(B)}{CH_2=O} \xrightarrow[2.H^{\oplus}]{1.\ NaOH} (D)\ C(CH_2OH)_4 + HCOOH$

Answer : 136/4 = 34

41.



Mol. wt. of $C_6H_{10}O_3$ = 72 + 10 + 48 = 130/10 = 13