CHEMISTRY MODULE-17 – SINGLE CHOICE SOLUTIONS

ALCOHOL AND ETHERS

1. Hydroxyl oxygen forms epoxide

2. B

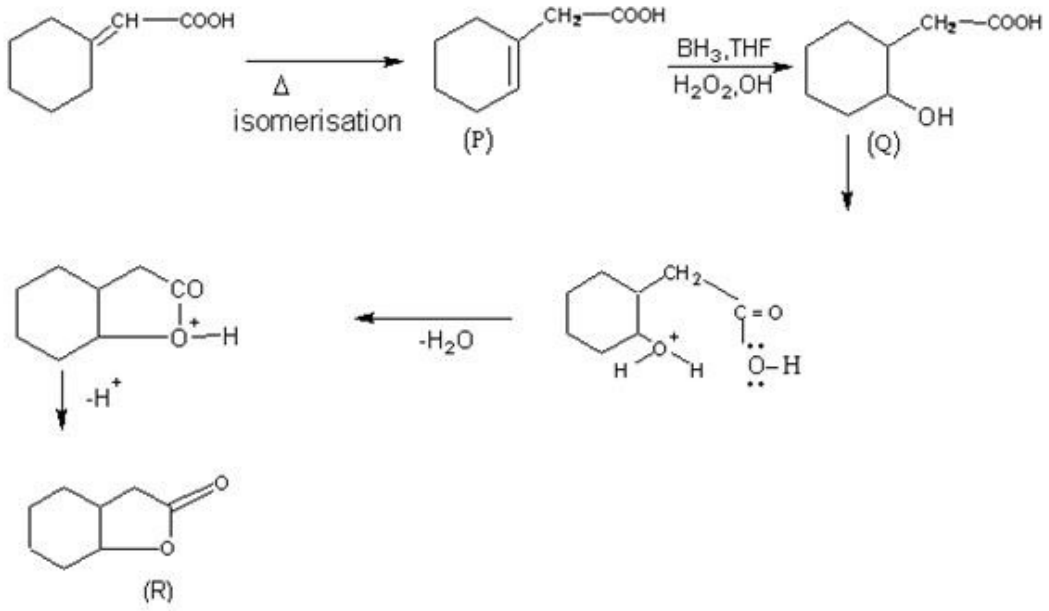
3. pyrolysis of esters gives hoffmann's product

4. $glycerol \xrightarrow{5HI} isopropyl\ iodide \xrightarrow{HI} n-propane$

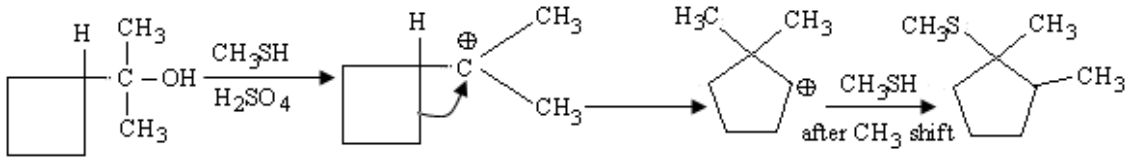
5. Every acylation molecular weight increased by 42 grams

6. C

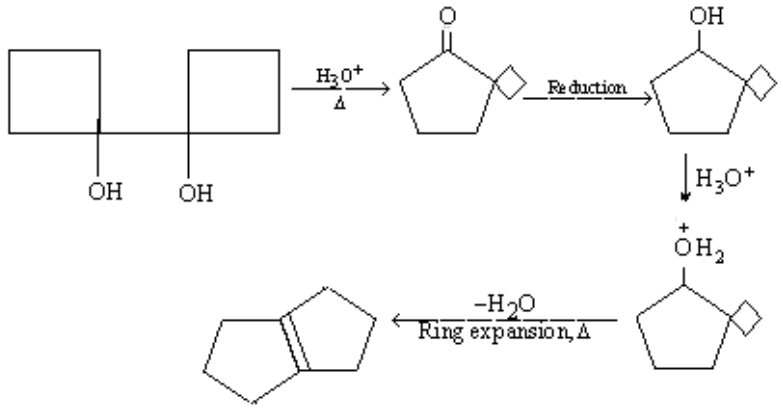
7. Claisen rearrangement



8. Order of migrating ability : p-anisyl > p-tolyl > phenyl > p-chlorophenyl >p-nitrophenyl

9. 

10.



11. Conceptual – b gives alkene

12. Conceptual – it needs Anti markonikov's addition

13. Conceptual – SeO_2 - Allylic hydroxylation

14. Conceptual – sterically less hindered alcohols have higher rate of esterification.

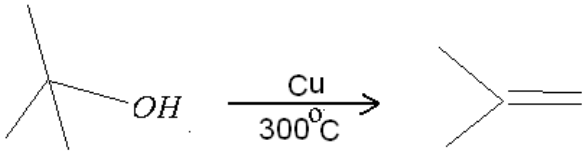
15. Primary alc. group will give HCHO, while both the secondary alc. groups and CHO will give HCOOH.

16. B

17. Conceptual

18. migrating aptitude Ph > CH_3

19.

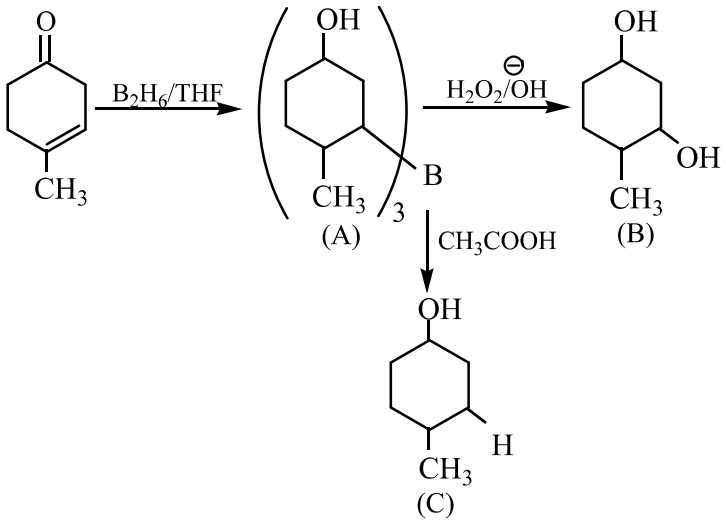


20. (b) is a tertiaryalcohol and hence undergoes dehydration at the fastest rate.

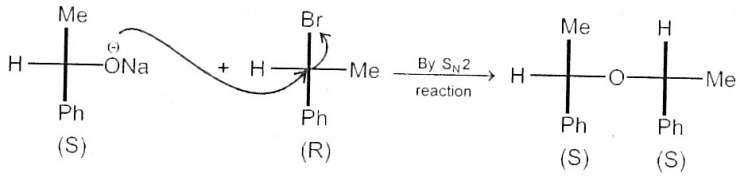
21. Conceptual

22. I – Resolvable racemic mixture
II – Optically active product due to SN^2 attack only one product
III – Three optical isomers are possible out of which one is meso compound due to centre of symmetry and other two comprising a racemic mixture.
IV – Two product cis & trans

23. B_2H_6/THF also reduces $(C=O)$ group to $(-CHOH)$ group and $(-COOH)$ group to (CH_2OH) along with reacting at $(C=C)$ bond to form alcohol (anti-Markovnikov's rule).



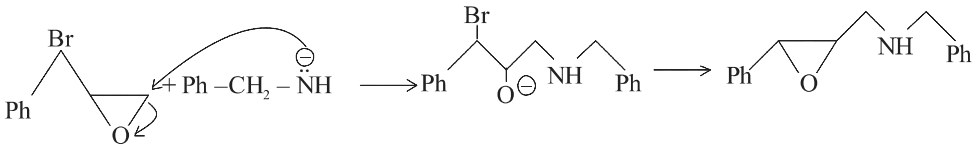
24.



(Due to inversion at chiral alkyl halide)

25. 3^0 allylic carbocations is more stable than 2^0 allylic.

26.



27. Conceptual

28. With aq.KOH, alkyl halides give alcohols and the reagent becomes alcoholic KOH, as a result elimination also takes place

29. Conceptual

30. I – gives $CH_3-\underset{\displaystyle OH}{\underset{|}{C}}H-CH_3$

II – gives $CH_3-\underset{\displaystyle OH}{\underset{|}{C}}H-CH_3$

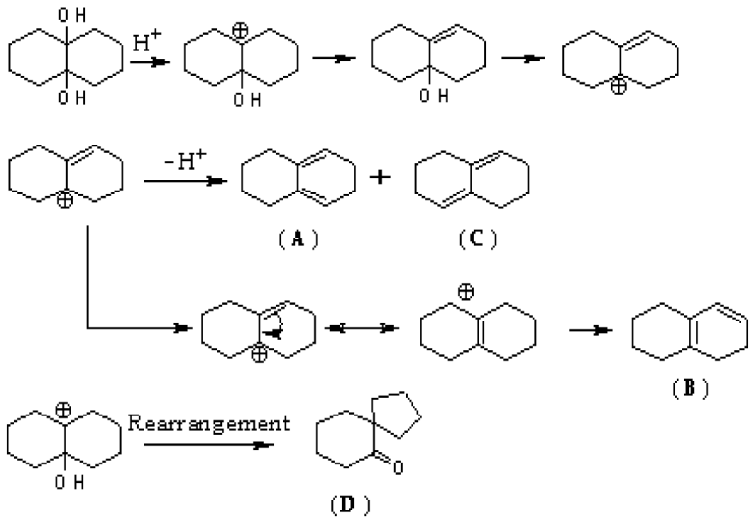
III – gives CH_3-CH_2-OH

IV – gives CH_3-CH_2-OH

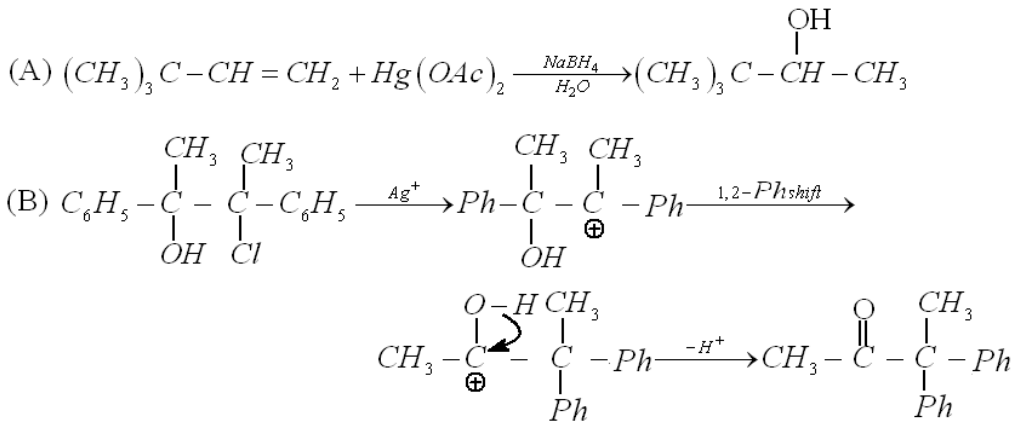
CHEMISTRY MODULE-17 – MULTIPLE CHOICE SOLUTIONS

ALCOHOL AND ETHERS

1.



2. Nucleophilic substitution.
3. ABC
4.



5. SN^2 reaction
6. hydration leads to rearrangement
   HBO gives anti markonikov's product
7. Conceptual
   Cis + Cis → MeSO

Cis + Trans → Racemic
Trans + Cis → Racemic
Trans + Trans → Meso

8. $CH_2 = CH - O - CH_2 - CH_3\,(x) \xrightarrow{H_3O^+} CH_{3(y)}CHO + CH_3CH_{2(z)}OH$

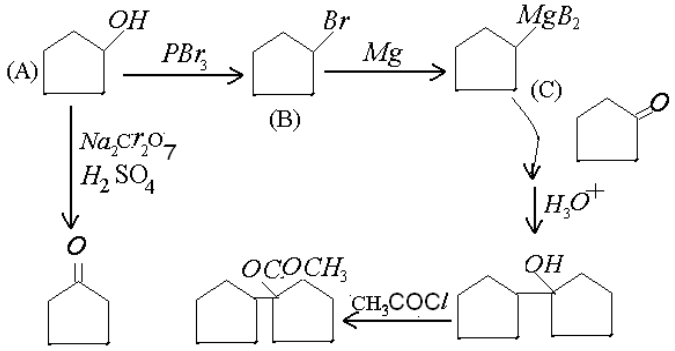
9. Conceptual
10. due to more stable carbocation
11. A – both have 3º alkyl ∴ 3ºC⁺ forms and favours in elimination
    B – vinyl c⁺ is unstable
    C – aryl halides are less reactive due to +M of X.
12. Conceptual
13. Conceptual
14. SOL: as in pinacal pincolone rearrangement NH_2 group is diazotised and N_2 is lilerated and alkyl shift takes place and ketone is formed
15. Conceptual

CHEMISTRY MODULE-17 – PARAGRAPH TYPE SOLUTIONS
ALCOHOL AND ETHERS

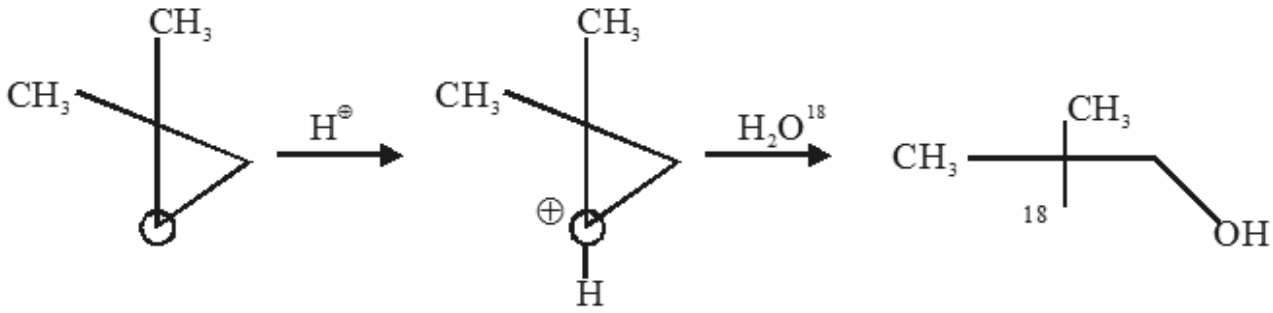
Comprehensions solutions

1. D
2. A
3. D
4. C

5,6



7.



8. Conceptual
Baeyer villiger oxidation ketone.

CHEMISTRY MODULE-17 – MATRIX MATCH SOLUTIONS
ALCOHOL AND ETHERS

Matching solutions

1. Conceptual

2. Conceptual

3. Ether formation & Nucleophyllic substitution

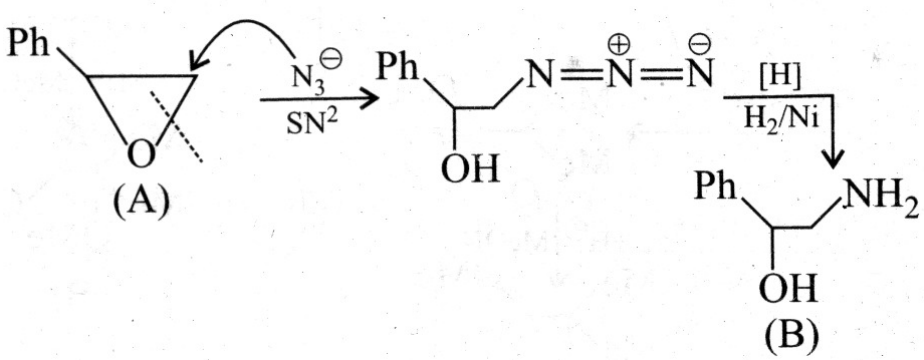
CHEMISTRY MODULE-17 – INTEGERS TYPE SOLUTION

ALCOHOL AND ETHERS

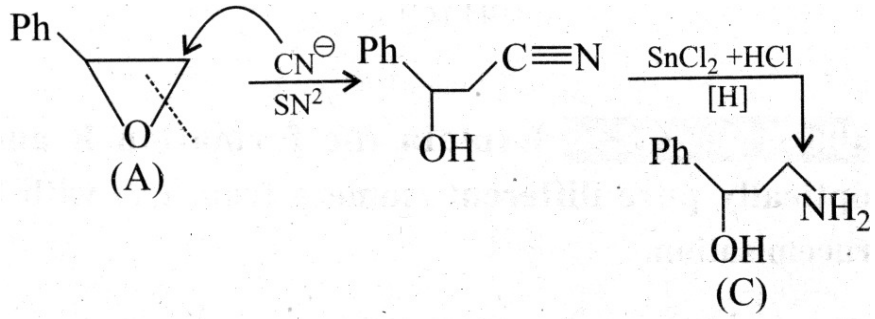
1. All the cleavages of propene oxide are the S_{N2} type, irrespective of the medium. Even in acidic medium cleavage is S_{N2} type. This is due to the fact that transition state of ring opening in acidic medium cleavage is not possessing sufficient carbocationic character. If there were sufficient carbocationic character in the T.S of ring opening in acidic medium, then the mechanistic path would have been mixed i.e. S_{N2} + S_{N1} [S_{N1} product would have been possible]. In fact ring opening phenomena of propene oxide in acidic medium is in reversal of what we have expected. So in the given list all reactions are showing S_{N2} mode of ring opening, which means least sterically hindered carbon must be selected.

2.

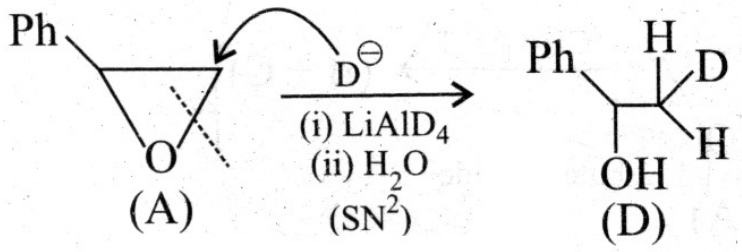
A)



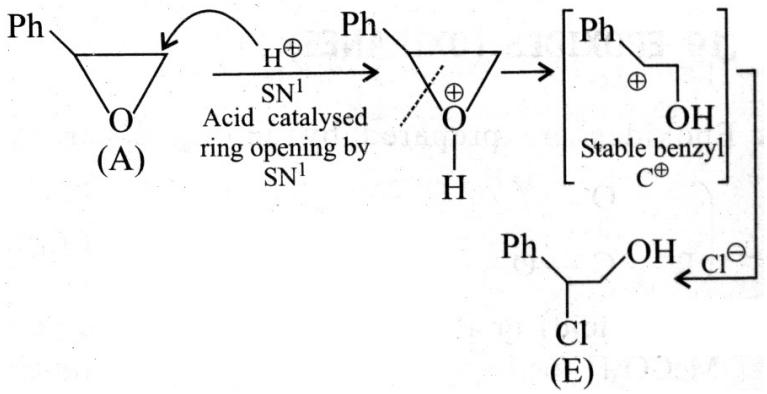
B)



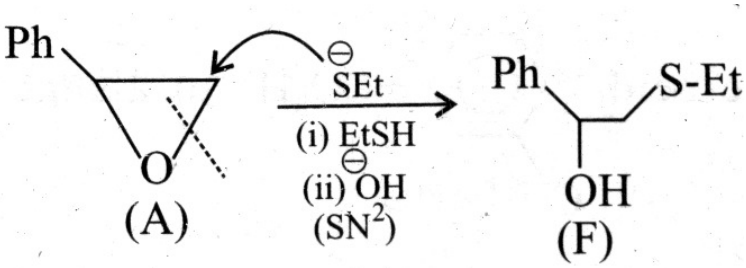
C)



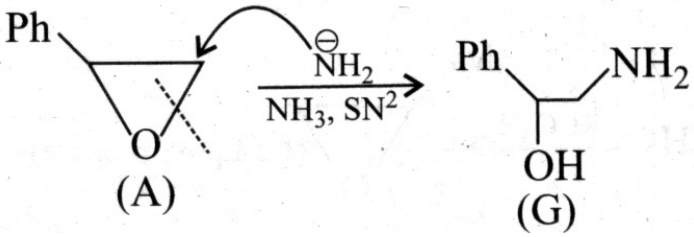
D)



E)



F)



3. Iodoform reaction of ethanol

4.

$CH_3 — CH = CH — O — CH_2 — CH_3$

↓ dil acid

$CH_3 — CH = CH — OH$ + $CH_3 — CH_2 — OH$

X Y

$CH_3 — CH_2 — CHO$

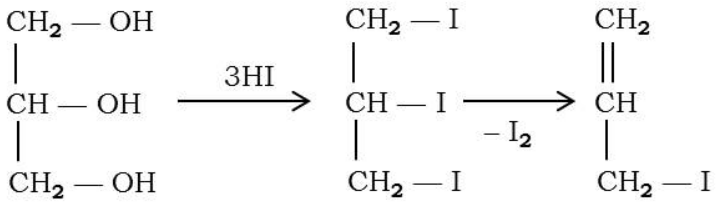
$CH_3 — CH = CH — OH$

$CH_2 — \overset{\overset{O}{\|}}{C} — CH_3$

$CH_2 = CH — OCH_3$

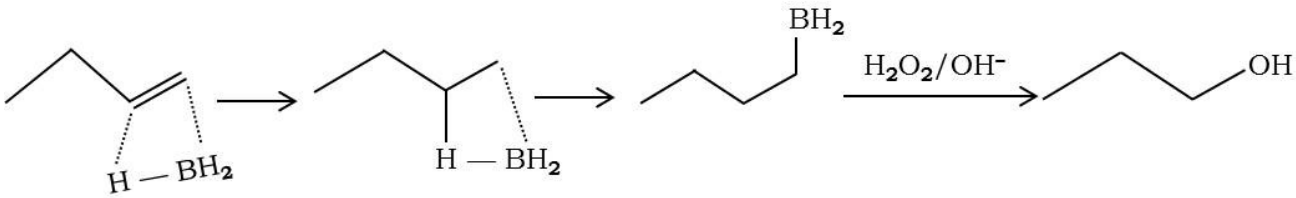
5. 4

6.



7. 4

Hydroboration – oxidation is required.



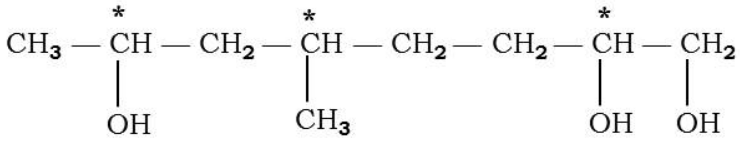
8. 6

No. of moles HIO_4 required = no. of glycolic linkages.

9. -

For an unsymmetrical chiral molecule .

No. of optical isomers (a) = 2^n - no. of chiral centers



n = 3

10. Conceptual

11. Conceptual

12. Conceptual

13 Conceptual

14. Conceptual

15. Conceptual