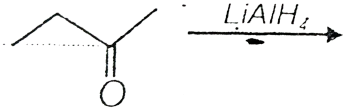
CHEMISTRY

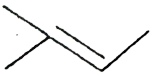
JEE MAIN AND ADVANCED

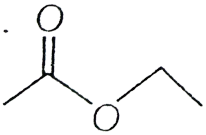
ALCOHOLS, PHENOLS AND ETHERS

Example

1. Give IUPAC name of the expected pruduct in the following reactions

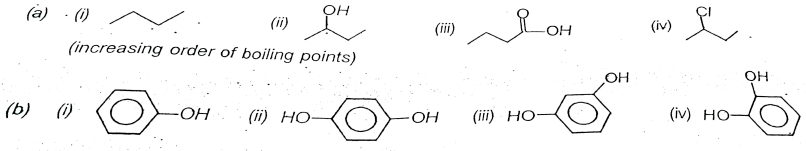
(i)  $\xrightarrow{LiAlH_4}$

(ii)  $\xrightarrow[H_2O\ (ii)]{H_2SO_4/\Delta\ (i)}$ major product

(iii)  $\xrightarrow{Pd/H_2}$

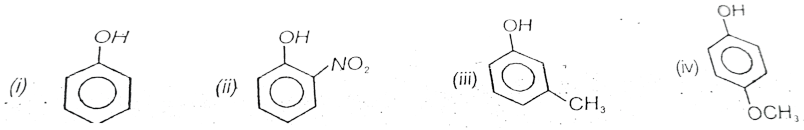
Watch Video Solution

2. Arrange the following as mentioned



Watch Video Solution

3. Arrange the following in decreasing order of acidic nature of



Watch Video Solution

4. a : When 3° alkyl halide is used in Williamson 's synthesis what will be the major product and why ?

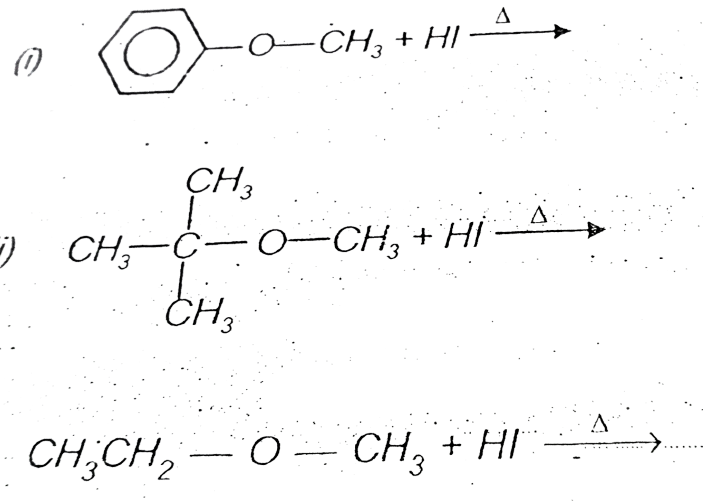
b : When 3° alkoxide is used in Williamson's synthesis what will be the major product and why ?

Watch Video Solution

5. a : What is the reactivity order if given halogen acids towards ethers ?

HCI, HBr, HI

b : What will be final products ?

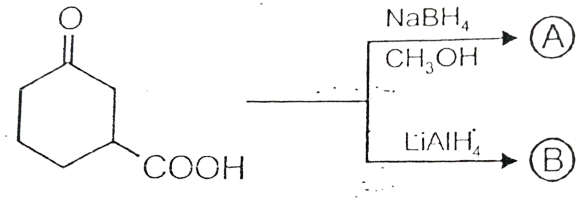


Watch Video Solution

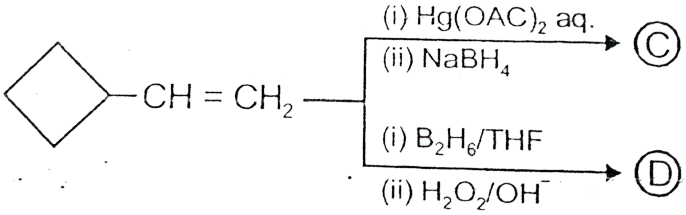
Illustration

1. What is the major product of the following

(1)



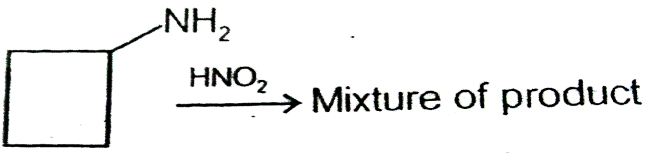
(2)



Watch Video Solution

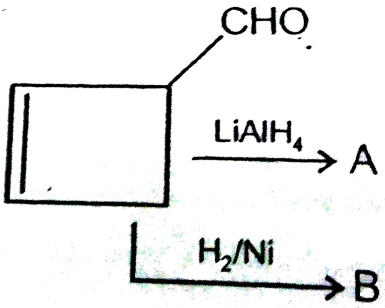
2. Complete the following reaction

(i)



Illustrate all possible product.

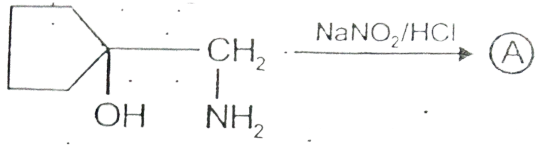
(ii)

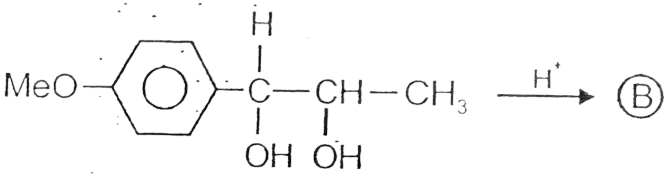


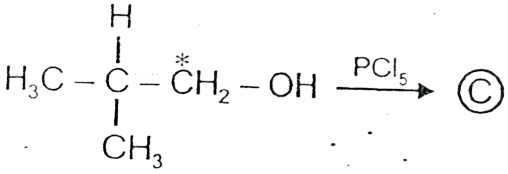
Identify A and B.

Watch Video Solution

3. Predict the major products (A) , (B) & (C)

(1) 

(2) 

(3) 

Watch Video Solution

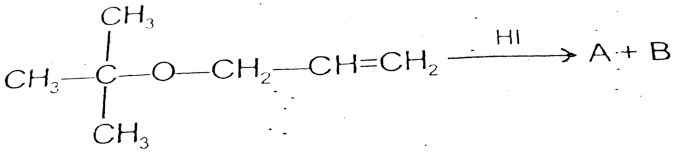
4. Predict the major products when reagents react with 2- phenyloxirane

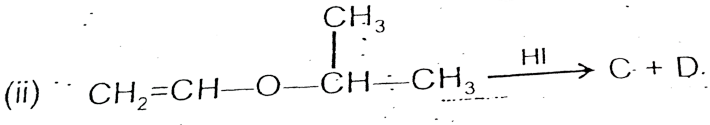
$(a) sodiumphen \otimes ide$ $(b) HBr$

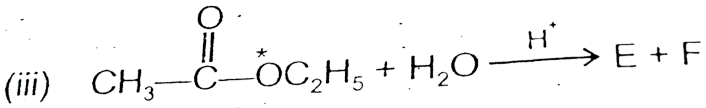
`

Watch Video Solution

5. Complete the following reactions

(i) 

(ii) 

(iii) 

Watch Video Solution

Assignment Section A Competition Level Questions

1. IUPAC name of $CH_2OH - CH_2OH$ is

A. Ethylene glycol

B. Ethane -1,2- diol

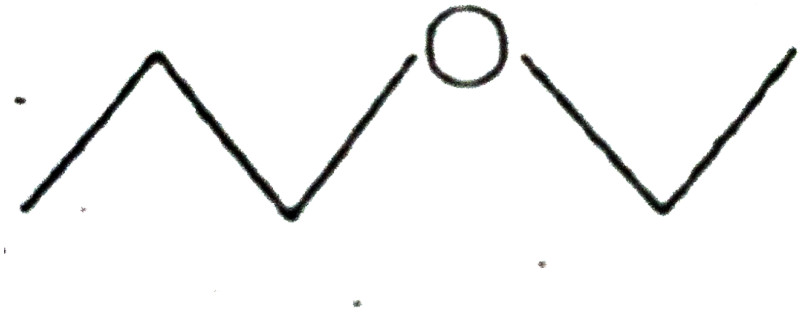
C. Ethyl -1,2- diol

D. Ethylene diol

Answer: B

Watch Video Solution

2. IUPAC name of



is

A. Ethyl propl ether

B. Propyl ethoxide

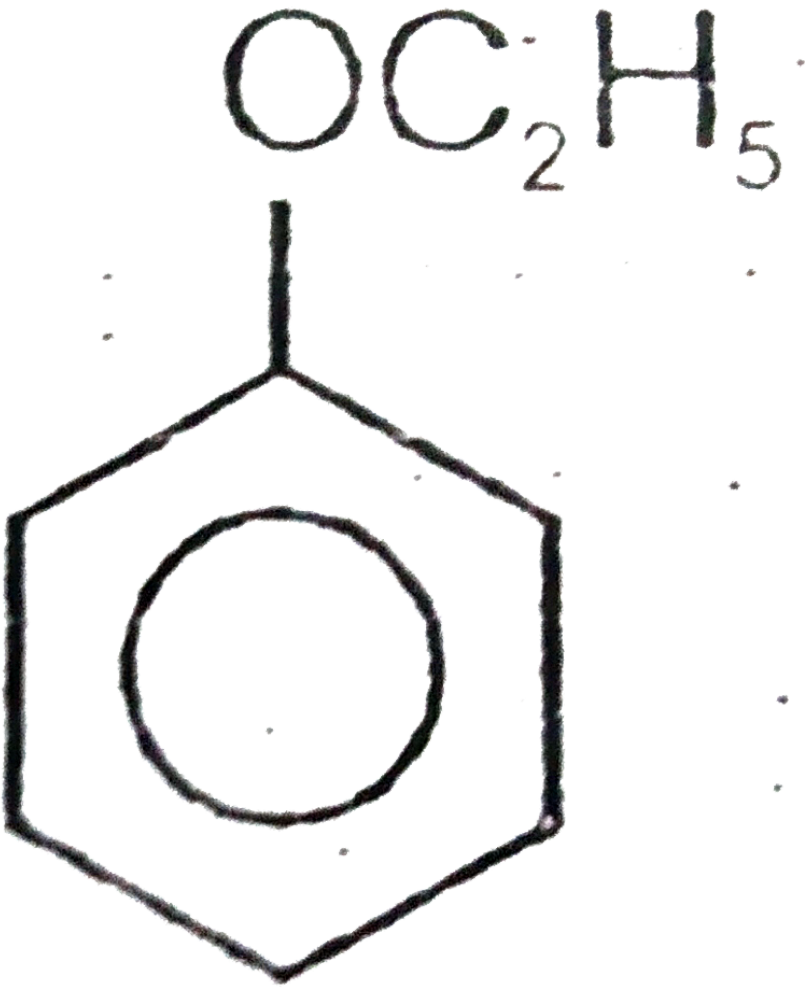
C. Ethoxy propane

D. Propoxy ethane

Answer: C

Watch Video Solution

3. IUPAC name of



is

A. Benzyl ethoxide

B. Ethoxy benzyl

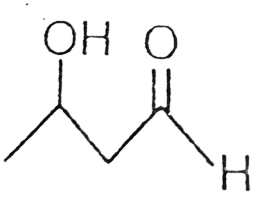
C. Benzene ethoxide

D. Ethoxy benzene

Answer: D

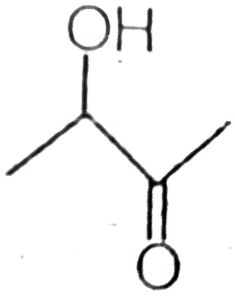
Watch Video Solution

4. Which among the following is 1 alcohol ?

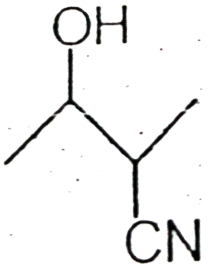
A. 

B. 

C.



D.

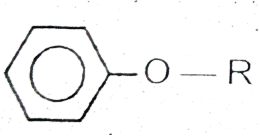


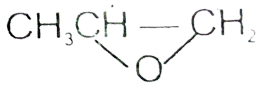
Answer: B

Watch Video Solution

5. Which one is ether ?

A.

B. 

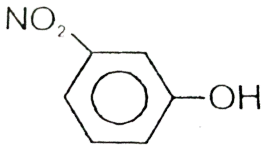
C. 

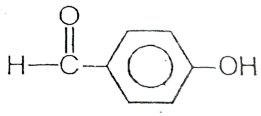
D. All of these

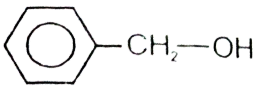
Answer: D

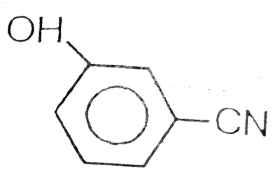
Watch Video Solution

6. Which one is phenol ?

A. 

B. 

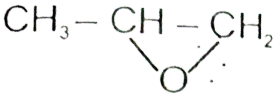
C. 

D. 

Answer: A

Watch Video Solution

7. $CH_3CH = CH_2 \xrightarrow{H/H_2O}$ major product is

A. 

B. $CH_3\overset{\overset{OH}{|}}{C}HCH_3$

C. $CH_3CH_2CH_2OH$

D. $CH_3\underset{\underset{OH}{|}}{CH} - \underset{\underset{OH}{|}}{CH_2}$

Answer: B

Watch Video Solution

8. Reaction involving syn addition is

A. $CH_2 = CH_2 \xrightarrow{H^+ / H_2O}$

B. $CH_3CH = CH_2 \xrightarrow{HX}$

C. $CH_3CH = CH_2 \xrightarrow[NaBH_4]{Hg(OA_c)_2 / H_2O}$

D. $CH_2 = CH_2 \xrightarrow[H_2O_2 / OH]{B_2H_6 / THF}$

Answer: D

Watch Video Solution

9. Reaction involving anti addition is

A. $CH_2 = CH_2 \xrightarrow{H^+ / H_2O}$

B. $CH_3CH = CH_2 \xrightarrow{HX}$

C. $CH_3CH = CH_2 \xrightarrow[NaBH_4]{Hg(OA_c)_2H_2O}$

D. $CH_2 = CH_2 \xrightarrow[H_2O_2 / OH]{B_2H_6 / THF}$

Answer: C

Watch Video Solution

10. $RCH = CH_2 \xrightarrow[(2)\,H_2\,\frac{\emptyset}{Z}\,n]{(1)\,O_3} (A) \xrightarrow[LiAlH_4]{H_2O} (B)$

Product (B) is

A. RCHO + HCHO

B. RCHO + HCOOH

C. RCOOH + HCOOH

D. $RCH_2OH + CH_3OH$

Answer: D

Watch Video Solution

11. Which one is preferable reagent for given reaction ?

$RCH_2 - X \rightarrow HO - CH_2R$

A. $(H_2O + KOH)$

B. $(ROH + KOH)$

C. $(ROH + KOH)/\Delta$

D. $(H_2O + KOH)/\Delta$

Answer: A

Watch Video Solution

12. 1° alkyl halides preferably undergo which of the following mechanism ?

A. E_1

B. E_{1cb}

C. S_N1

D. S_N2

Answer: D

Watch Video Solution

13. 2° alkyl halides from alcohols via

A. S_N1

B. S_N2

C. E_1

D. Both (1) & (2)

Answer: D

Watch Video Solution

14. $2^{\circ} alkylhalides follow$S_(N)1 and S_(N)2` both depending upon

A. Solvent

B. Termperature

C. Basicity

D. Size of halides

Answer: A

Watch Video Solution

15. 3° alkyl halides form alcohols preferably via

A. S_N2

B. S_N1

C. Transition state

D. S_N2i

Answer: B

Watch Video Solution

16. ROH + $SOCl_2 \rightarrow$

The final product is

A. Alkyl chloride

B. Alkyl sulphate

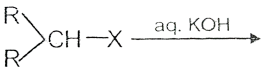
C. Alkene

D. Ether

Answer: A

Watch Video Solution

17. S_N1 is observed in

A. 

B. $R - OH + SOCI_2 \rightarrow$

C. $R - X \xrightarrow{alc.KOH}$

D. $ROH + HX \rightarrow$

Answer: A

Watch Video Solution

18. $R - OH \xrightarrow[ZnCI_3]{HX}$

A. R-X

B. Alkene

C. Both (1) & (2)

D. No product

Answer: A

Watch Video Solution

19. Order of nucleophilicity is

A. $CH_3O^- < C_2H_5O^-$

B. $C_2H_5O^- < C_2H_5S^-$

C. $CH_3O^- < CH_3S^-$

D.

Answer: D

Watch Video Solution

20. 1° alcohols preferably undergo dehydration via

A. E_1

B. E_2

C. S_N1

D. S_N2

Answer: B

Watch Video Solution

21. Grignard reagent is most suitable for preparation of which of the following with carbonyl compound ?

A. 1° alcohols

B. 2° alcohols

C. 3° alcohols

D. All of these

Answer: D

Watch Video Solution

22. $R - overser(18)(OH) + R\overset{O}{\overset{||}{C}} - OH \xrightarrow{H}$

Products are

A. $R - \overset{O}{\overset{||}{C}} - \overset{18}{O}R + H_2O$

B. $R-\overset{O}{\overset{||}{C}}-OR+H_2^{18}O$

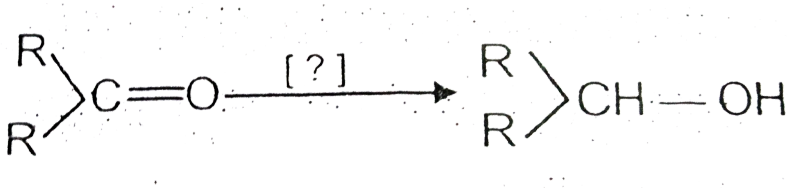
C. $R-\overset{O}{\overset{||}{C}}-OR+H_2^{18}O$

D. $R-\overset{O}{\overset{||}{C}}-\overset{18}{O}R+H_2O$

Answer: A

Watch Video Solution

23.



Here reagent is

A. $LiAIH_4$

B. $NaBH_4$

C. Ni/H_2

D. All of these

Answer: D

Watch Video Solution

24. $R-\overset{\overset{O}{||}}{C}-OH \xrightarrow{[?]} RCH_2-OH$

Here reagent is

A. $LiAIH_4$

B. $NaBH_4$

C. Both (1)& (2)

D. Red P/HI

Answer: A

Watch Video Solution

25. Which of the inter- molecular dehydration ?

A. $ROH \rightarrow R - OR$

B. $ROH \rightarrow R - X$

C. $ROH \rightarrow alke \neq$

D. $R - X \rightarrow ROH$

Answer: A

Watch Video Solution

26. Lucase test is used to distinguish

A. Phenols

B. Ethers

C. Alcohols

D. Alkyl halides

Answer: C

Watch Video Solution

27. In lucas test immediate from alcohols by

A. 3° alcohols

B. 2° alcohols

C. 1° alcohols

D. Phenol

Answer: A

Watch Video Solution

28. Phenols can be distinguished from alcohols by

A. $FeCI_3$ (neutral)

B. Fehling solution

C. Tollen's reagent

D. 2,4,-DNP

Answer: A

Watch Video Solution

29. Which among the following show tautomerism ?

A. Alcohols

B. Phenols

C. Ethers

D. Anisole

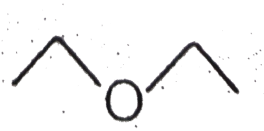
Answer: B

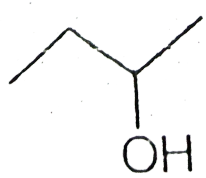
Watch Video Solution

30. Boiling poin will be least for

A. 

B. 

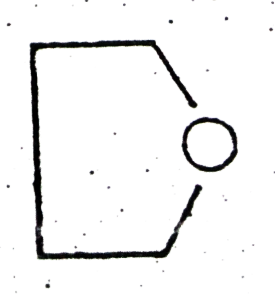
C. 

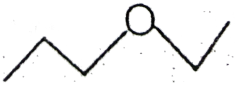
D. 

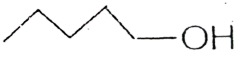
Answer: B

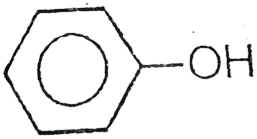
Watch Video Solution

31. Which one of the following is best lewis base ?

A. 

B. 

C. 

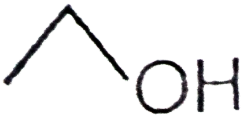
D. 

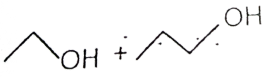
Answer: A

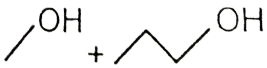
Watch Video Solution

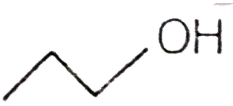
32.

Product / (s) will be

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

33. Alcohols and ethers are

A. Position isomers

B. Functional isomers

C. Chain isomers

D. Metamers

Answer: B

Watch Video Solution

34. RMgX reacts with a compound and gives RH , the compound should be

A. $RC \equiv CH$

B. $R - OH$

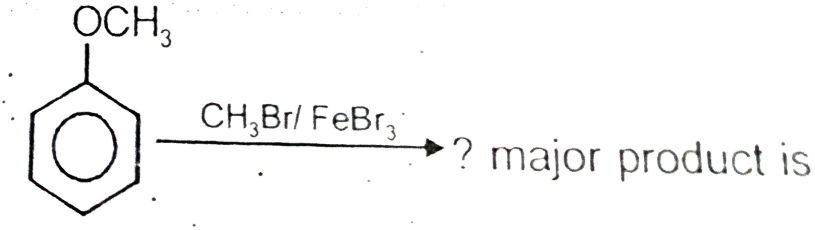
C. $RCOOH$

D. Any of these

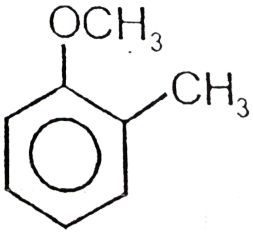
Answer: D

Watch Video Solution

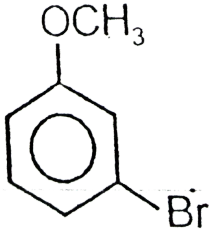
35. Complete the following reaction



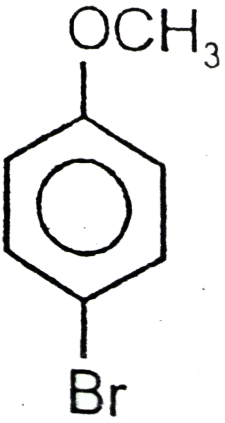
A.



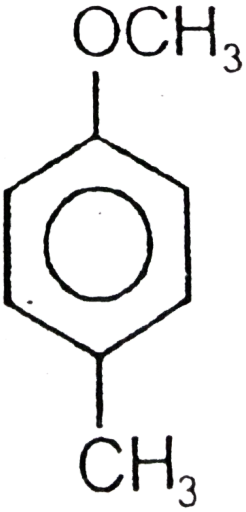
B.



C.



D.

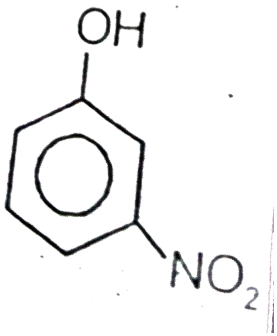


Answer: D

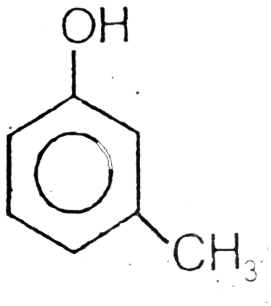
Watch Video Solution

36. Most acidic among the following is

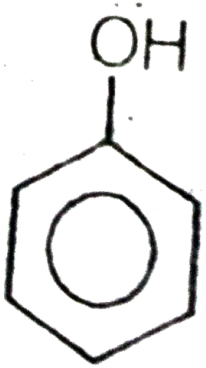
A.

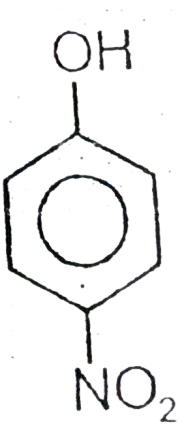


B.



C.

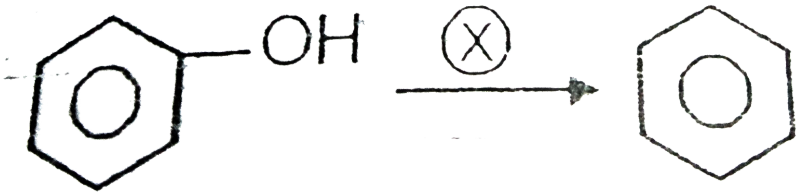




D.

Answer: D

Watch Video Solution

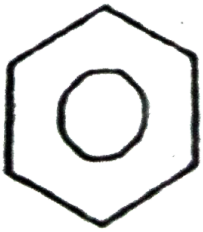


37.

The reagent (X) required for above conversion is

A. $LiAlH_4$

B. Zn



C.

D. $NaBH_4$

Answer: B

Watch Video Solution

38. REIMER-TIEMANN REACTION

A. $CHCI_3$

B. CH_2

C. CCI_2

D. CO_2

Answer: C

Watch Video Solution

39. In Reimer - Tiemann reaction the major produc is

A. Ortho isomer due to intra molecular H-bonding

B. Meta isomer

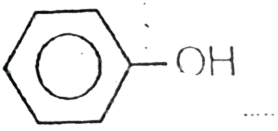
C. Para isomer due to symmetry

D. None of these

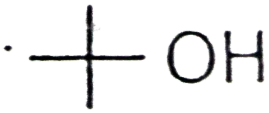
Answer: A

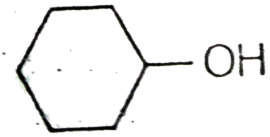
Watch Video Solution

40. Molecule which does not oxidise

A. 

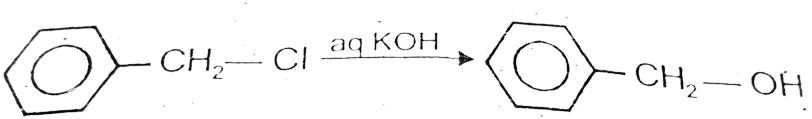
B. 

C. 

D. 

Answer: C

Watch Video Solution

41. 

Reaction happens via

A. S_N1

B. S_N2

C. S_Ni

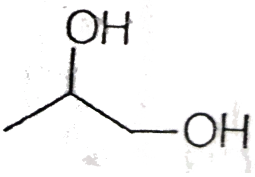
D. ArS_N1

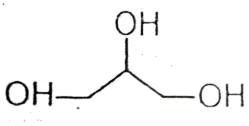
Answer: A

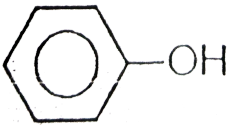
Watch Video Solution

42. Which of the most viscous ?

A. 

B. 

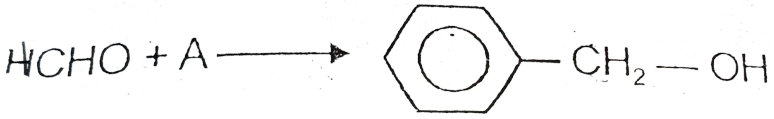
C. 

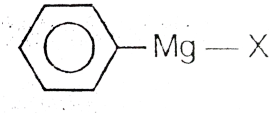
D. 

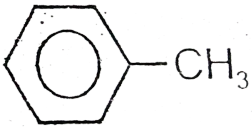
Answer: B

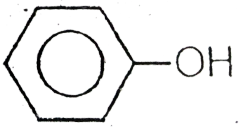
Watch Video Solution

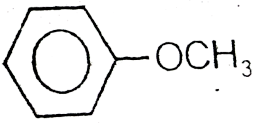
43. Complete the following reaction



A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

44. All the Phenols are

A. Enamines

B. Enols

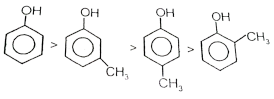
C. Aci- nitro compound

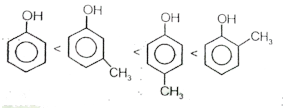
D. Aprotic

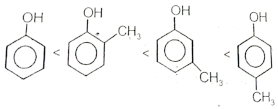
Answer: C

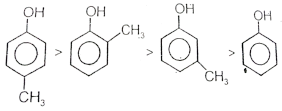
Watch Video Solution

45. Correct acidic order is

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

46. $CH_3 - O - CH_2CH_3 \xrightarrow[\text{Excess}]{HI\,/\,\Delta} (A) + (B)$

Product (A) and (B) are

A. $CH_3OH + CH_3CH_2I$

B. $CH_3I + CH_3CH_2OH$

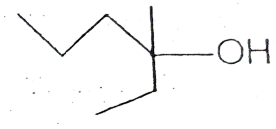
C. $CH_3I + CH_3CH_2I$

D. $CH_3OH + CH_3CH_2OH$

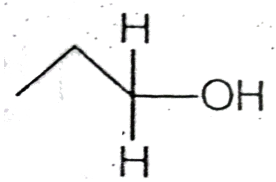
Answer: D

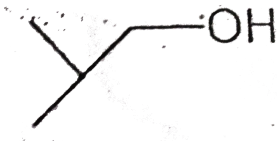
Watch Video Solution

47. Which of the following be optically active ?

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

48. How many minimum number of carbons are needed for an optically active ether ?

A. 2

B. 3

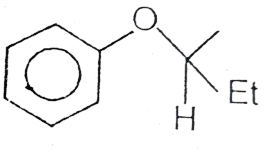
C. 4

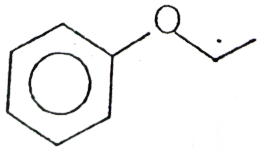
D. 5

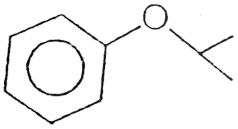
Answer: C

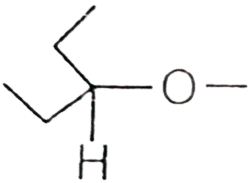
Watch Video Solution

49. Which one is optically active aromatic ether ?

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

50. Lowest boiling point is for

A. Butanol

B. Pentanol

C. 2-methyl propane -2-ol

D. 2-methyl butane-2-ol

Answer: C

Watch Video Solution

Assignment Section B Objective Type Questions One Option Is Correct

1. A compound (X) with the molecular formula C_3H_8O can be oxidized to another (Y) whose molecular formula is $C_6H_6O_2$

The compound (X) may be

A. $CH_3CH_2OCH_3$

B. CH_3CH_2CHO

C. $CH_3CH_2CH_2OH$

D. $CH_3CHOHCH_3$

Answer: C

Watch Video Solution

2. Which one among the followng compounds will produce a secondary alcohol on reaction with Grignard reagent ?

A. CH_3COCH_3

B. $CH_3 - COOCH_3$

C. $HCOOCH_3$

D. All of these

Answer: C

Watch Video Solution

3. An alkene obtained by the dehydration of an alcohol (A), on ozolysis gives two molecules of acetaldehyde for ever molecule of alkene. The alcohol (A) is

A. $CH_3CH_2CH_2OH$

B. CH_3CH_2OH

C. $CH_3 - CH = CHCH_2OH$

D. $CH_3CH_2CHOHCH_3$

Answer: D

Watch Video Solution

4. A compound (X) with the molecular formula C_3H_8O can be oxidized to another (Y) whose molecular formula is $C_6H_6O_2$

The compound (X) may be

A. Phenol

B. Anisole

C. Benzoic acid

D. All of these

Answer: A

Watch Video Solution

5. When sodium or potassium phenoxide is heated with carbon dioxide, followed by acidification, we get

A. Salicylic acid

B. Salicyladehyde

C. Benzoic acid

D. Cinnamic acid

Answer: A

Watch Video Solution

6. An organic compoun having molecular formula C_3H_6O does not react with 2,4-dintrophenol hydrazine and does not react Na metal. The compound is expected to be:

A. $CH_3 - CH_2 - CHO$

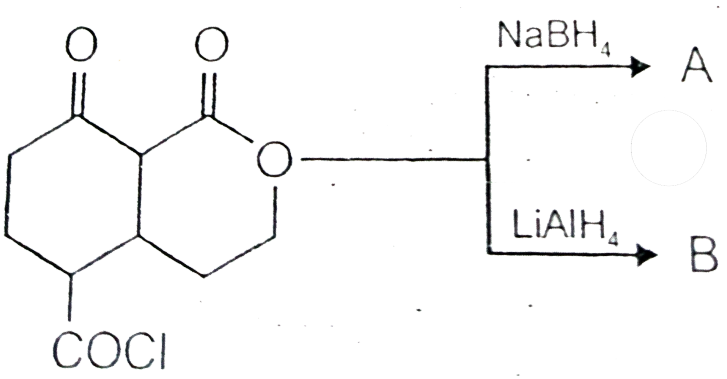
B. $CH_3 - CO - CH_3$

C. $CH_2 = CH - CH_2 - OH$

D. $CH_2 = CH - OCH_3$

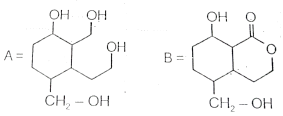
Answer: D

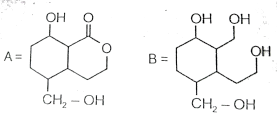
Watch Video Solution

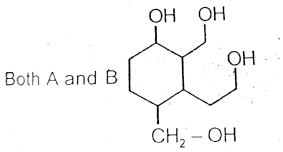


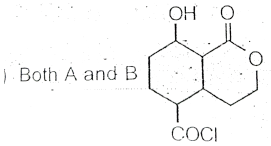
7.

A and B are respectively

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

8. Choose the correct statement

A. $LiAlH_4$ cannot reduce isolated carbon - carbon double or triple bond

B. Borane and $LiAlH_4$ have generally same reducing power and same mechanism

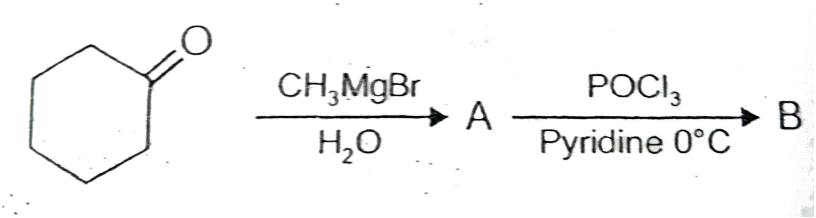
C. $LiAlH_4$ can reduce isolated carbon - carbon double bond

D. $LiAlH_4$ is a weak hydride doner than $NaBH_4$

Answer: A

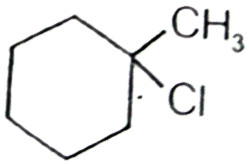
Watch Video Solution

9. Consider the following reaction sequence

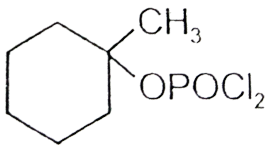


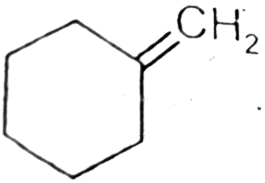
The product B is

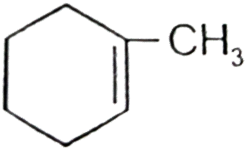
A.



B.



C. 

D. 

Answer: D

Watch Video Solution

10. An organic compound $\underline{A}$ react with sodium to form another compound $\underline{B}. The compound ul(A) when heated with concentrated H_(2)SO_(4) f$ or $ms diethylether. The compound ul(A)$ and ul(B)` are respectively

A. C_3H_7OH and $CH_3H_7ON. a$

B. CH_3OH and CH_3ONa

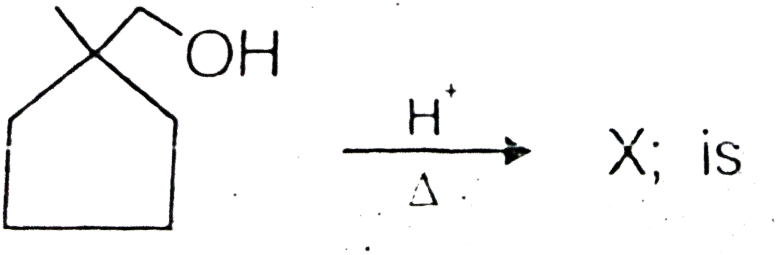
C. C_2H_5OH and C_2H_5ONa

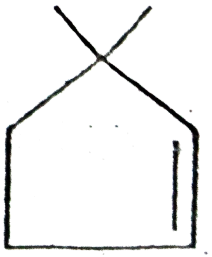
D. C_2H_5OH and CH_3ONa

Answer: C

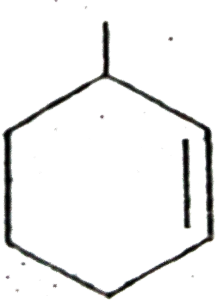
Watch Video Solution

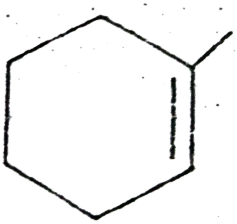
11. The product of the reaction

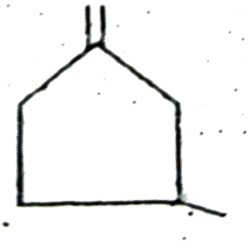




A.

B. 

C. 

D. 

Answer: C

Watch Video Solution

12. Which of the following reaction does not form ether as major product ?

A. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - O - Na + CH_3CH_2Br \rightarrow$

B. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Br + CH_3CH_2ONa \rightarrow$

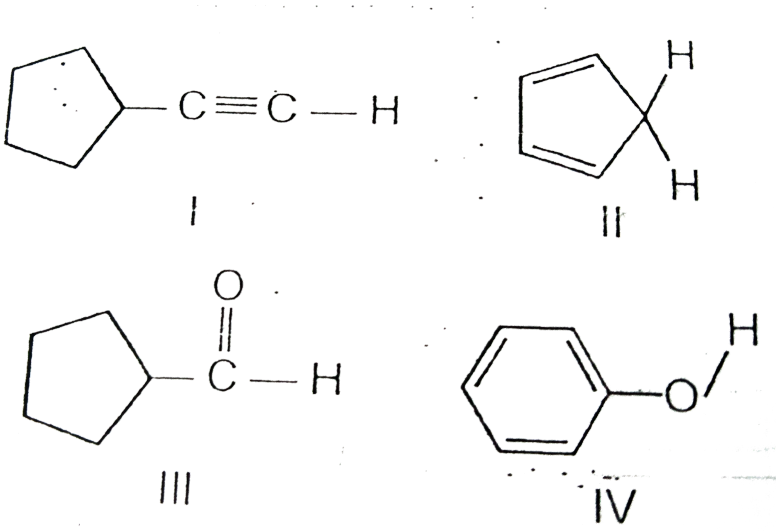
C. $CH_3 - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - Br + CH_3ONa \rightarrow$

D. $CH_3l - \underset{\underset{H}{|}}{\overset{\overset{CH_3}{|}}{C}} - ONa + CH_3 - \overset{\overset{CH_2Br}{|}}{CH_2} \rightarrow$

Answer: B

Watch Video Solution

13. Arrange the given species in the increasing order of acidic strength



A. $I < II < III < IV$

B. $I < III < II < IV$

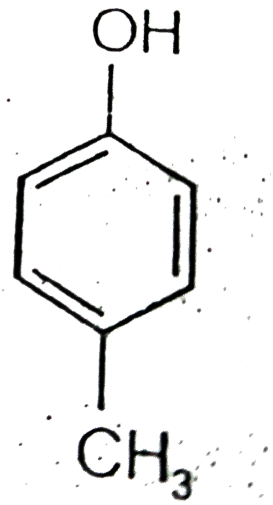
C. $III < II < I < IV$

D. $II < III < I < IV$

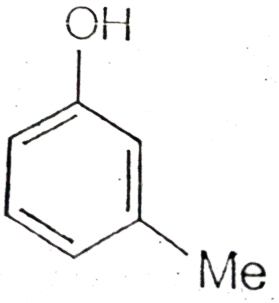
Answer: B

Watch Video Solution

14. Compound (X) C_7H_8O dissolves in NaOH but not in $NaHCO_3$ (X) reacts rapidly with Br_2 to give (Y) $C_7H_5OBr_3$ Product structure of X would be

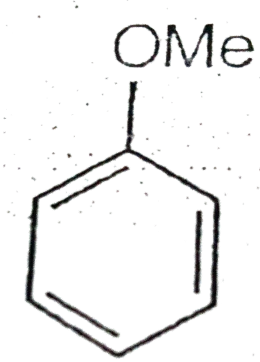


A.

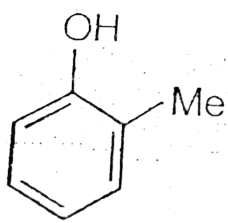


B.

C.



D.



Answer: B

Watch Video Solution

15. During the chromic acid oxidation of isopropyl alcohol into acetone colour of the reaction mixture changes from yellow - orange to greenish blue . The greenish blue colour is because of

A. Acetone

B. H_2CrO_4

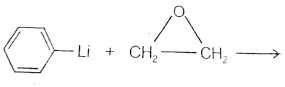
C. $HCrO_3$

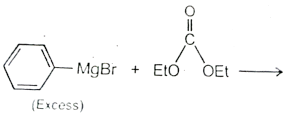
D. $Cr^{\wedge}(3+)$

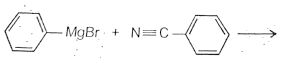
Answer: D

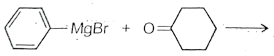
Watch Video Solution

16. Which of the following reactions will not yield alcohol as the major product ?

A. 

B. 

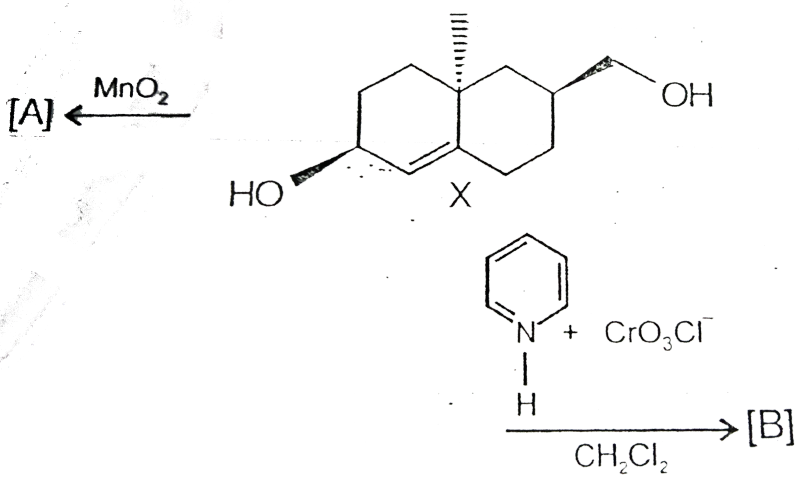
C. 

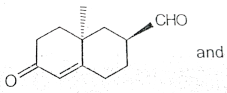
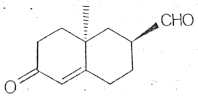
D. 

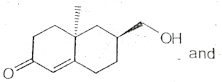
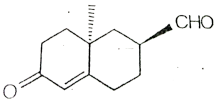
Answer: C

View Text Solution

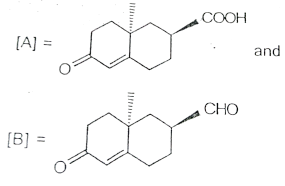
17. Pyridinium chloromate and MnO_2 are used as selective oxidizing agents in organic synthersis what would be the oxidation product of compound X when it reacts separately with PC C and MnO_2



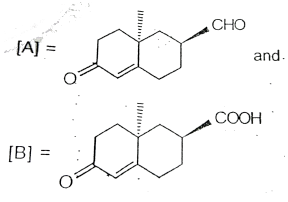
A. [A] =  and [B] = 

B. [A] =  and [B] = 

C.



D.

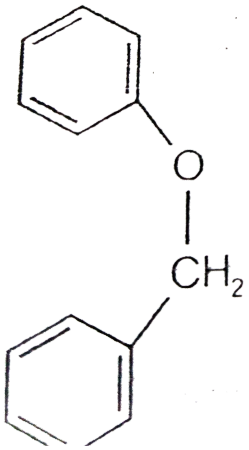


Answer: B

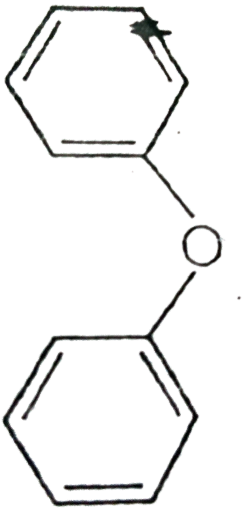
Watch Video Solution

18. Which of the following ethers is unlikely to be cleaved by not conc. HI ?

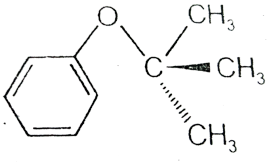
A.



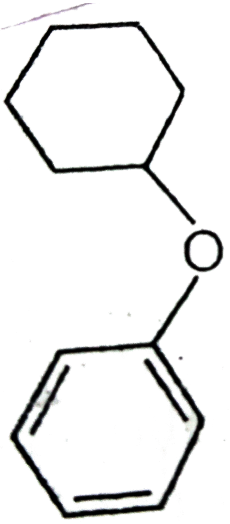
B.



C.



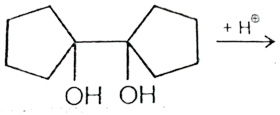
D.

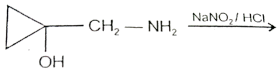


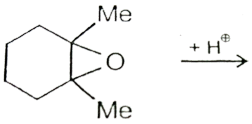
Answer: A

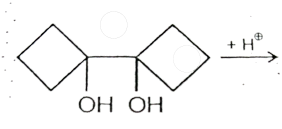
Watch Video Solution

19. Which of the following pinacol - pinacolone type of reaction will involve ring contraction ?

A. 

B. 

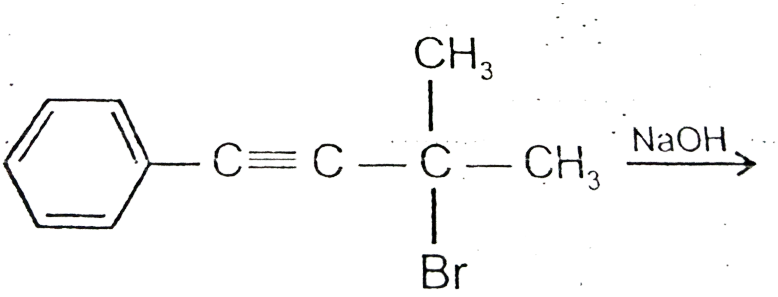
C. 

D. 

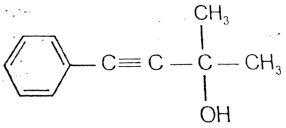
Answer: C

Watch Video Solution

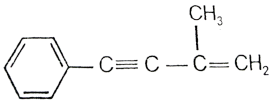
20. What would be the major product of the given reaction ?



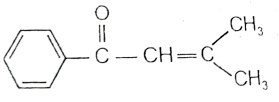
A.



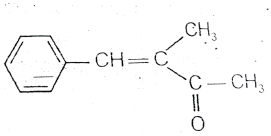
B.



C.



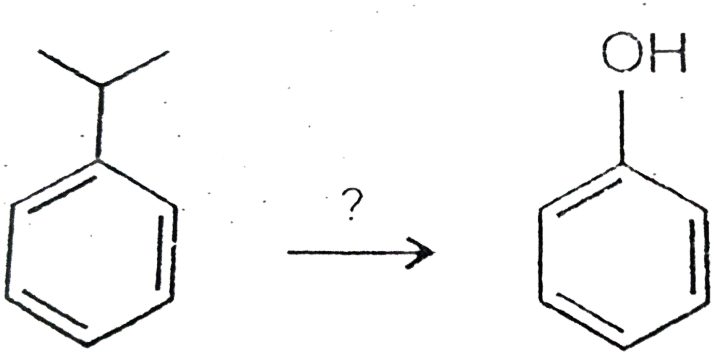
D.



Answer: C

Watch Video Solution

21. Reagents required to perform the given transformation is



A. $(i)O_2$ - oxidation (ii) H_3O^+

B. $(i)KMnO_4$ hot $LiAIH_4(iii)H_3O^+$

C. (i) Hot $KMnO_4(ii)NaBH_4(iii)H_3O^+$

D. $(i)H_2CrO_4(ii)lCaO + NaOH, \Delta(iii)NaOH$

Answer: A

Watch Video Solution

Assignment Section C Objective Type Questions More Than One Options Are Correct

1. Synthesis of cyclohexane -1,2 diol from cyclohexene may be accomplished in two ways :

I . MnO_4 dilute OH, $O^\circ C$ dihydroxylation

II . Peracid epoxidation followed by NaOH opening of the epoxide ring .

Which of the following statement about the products from these reactions is correct ?

A. Methods I and II give same product

B. Method I gives resolvable racemic mixture while method II will give non- resolvable achiral product

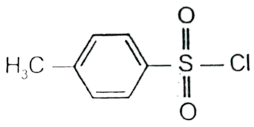
C. Method I gives resolvable optically inactive compound while method II gives resolvable racemic mixture

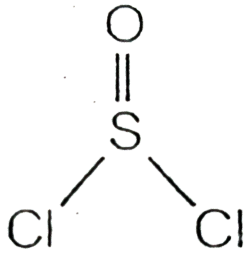
D. Products obtained through method I and II will have diasteriomeric relationship

Answer: C::D

Watch Video Solution

2. Which of the following convert a primary hydroxyl group into good leaving group for a S_N2 reaction ?

A. 

B. 

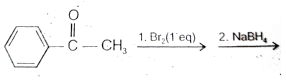
C. PCl_5

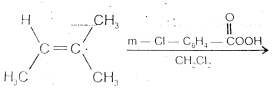
D. Nal (5 molar solution)

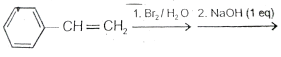
Answer: A::B::C

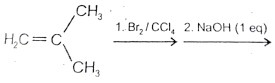
Watch Video Solution

3. Which of the following reaction or reaction sequence can be used to prepare epoxides ?

A. 

B. 

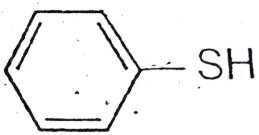
C. 

D. 

Answer: A::B::C

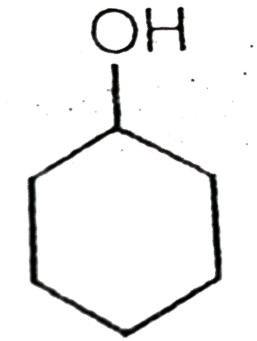
View Text Solution

4. Which of the following compounds will dissolve in aq. NaOH ?

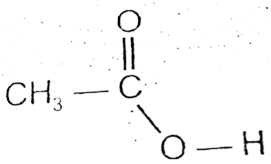
A. 

B. $CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - OH$

C.



D.



Answer: A::D

Watch Video Solution

5. Which of the following reagents can be used to distinguish phenol from Anisole ?

A. $FeCI_3$

B. Aqueous NaOH

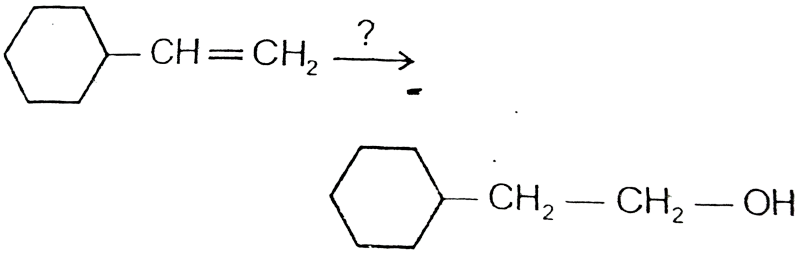
C. Br_2

D. $NaHCO_3$

Answer: A::B

Watch Video Solution

6. Which sequence of reactions can be used to perform the given transformation ?



A. $(i) B_2H_6 . THF \quad (ii) \overline{O}H / H_2O_2$

B. (i) conc $H_2SO_4 \quad (ii) H_2O, \Delta$

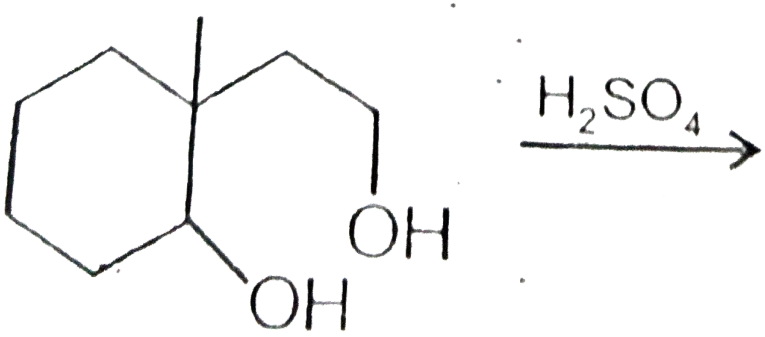
C. $(i) Hg(OAC) / H_2O \quad (ii) NaBH_4$

D. $(i) HBr /$ Peroxide $hv \quad (ii) NaOH$

Answer: A::D

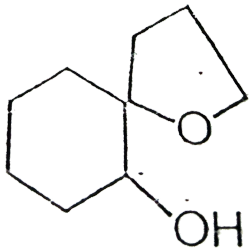
Watch Video Solution

7. Consider the following reaction

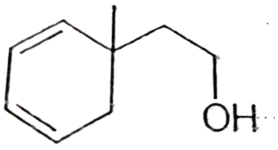


Probable product of the above reaction are

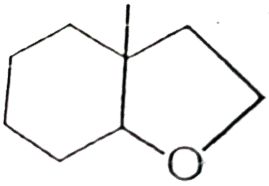
A.



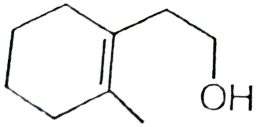
B.



C.



D.

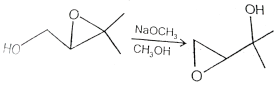


Answer: C::D

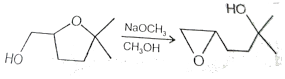
Watch Video Solution

8. Which of the following reactions will not occur ?

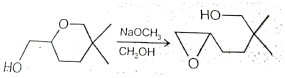
A.



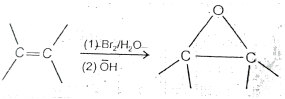
B.



C.



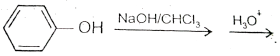
D.

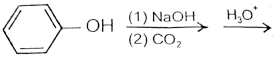


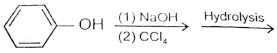
Answer: B::C

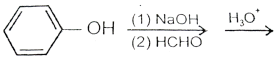
View Text Solution

9. Ortho salicylic acid is frequently used as precursor for the preparation of Asprin. Which of the following reactions can be used to prepare o-salicylic acid from phenol

A. 

B. 

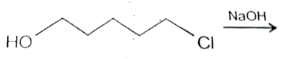
C. 

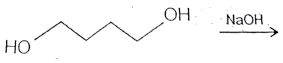
D. 

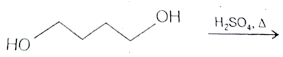
Answer: B::C

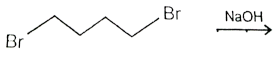
Watch Video Solution

10. Which of the following reaction can be used to prepare cyclic ethers ?

A. 

B. 

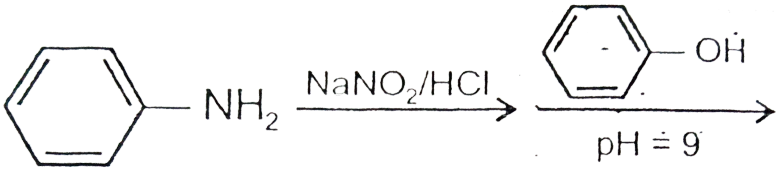
C. 

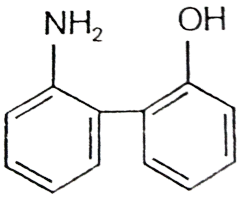
D. 

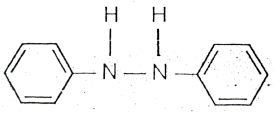
Answer: A::C

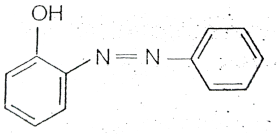
Watch Video Solution

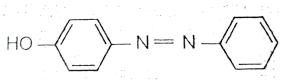
11. What would be the products of the given reaction ?



A. 

B. 

C. 

D. 

Answer: C::D

Watch Video Solution

12. Which of the following chemical tests can be used to distinguish primary . Secondary and tertiary alcohol from each other ?

A. Hinsburg test

B. Haloform Test

C. Lucas Test

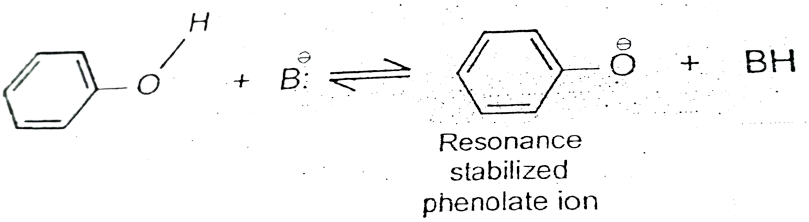
D. Victor- Meyer's Test

Answer: C::D

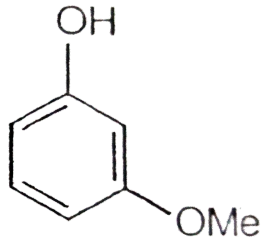
Watch Video Solution

Assignment Section D Linked Comprehension Type Questions

1. Phenols are more acidic than aliphatic alcohols acidity of phenols can be further increased by the introduction of electron withdrawing groups in aromatic ring .Acidic nature of phenol is because of the resonance stabilization of phenoxide ion

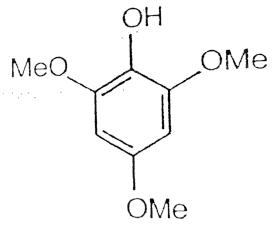


Which of the following will evolve CO_2 gas with aqueous $NaHCO_3$?

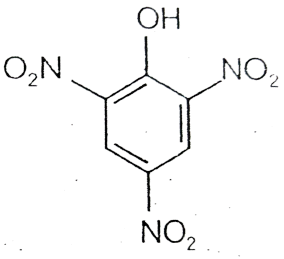


A.

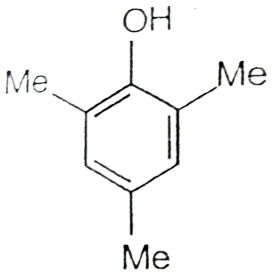
B.



C.



D.

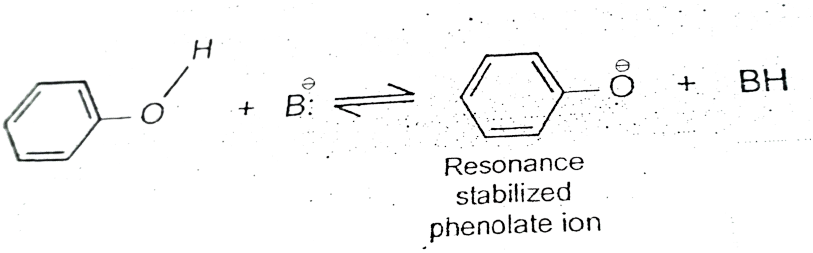


Answer: C

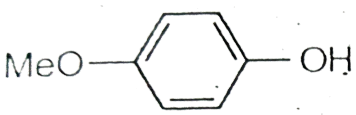
Watch Video Solution

2. Phenols are more acidic than aliphatic alcohols acidity of phenols can be further increased by the introduction of electron withdrawing groups in aromatic ring .Acidic nature of phenol is because of the resonance

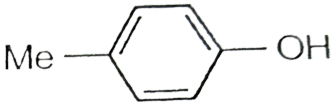
stabilization of phenoxide ion



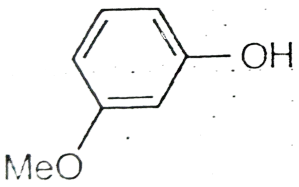
Arrange the given phanols in the increasing order of acidic strength



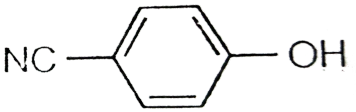
I



II



III



IV

A. $I < II < III < IV$

B. $II < I < III < IV$

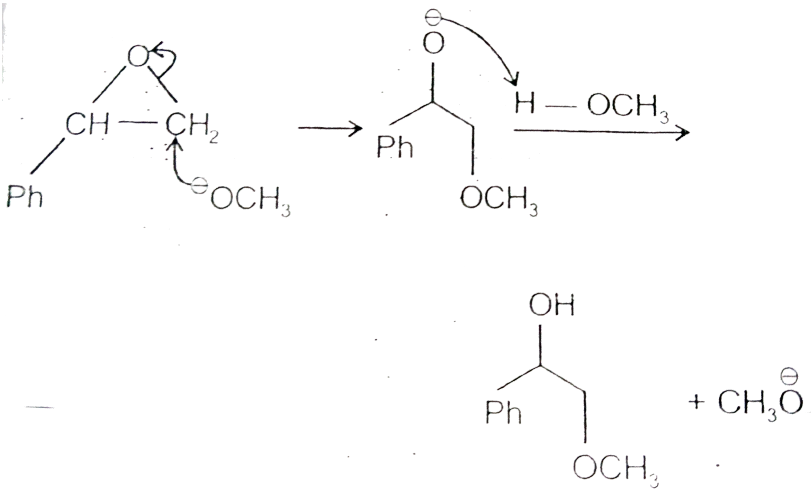
C. $I < IV < III < II$

D. $II < IV < III$

Answer: B

Watch Video Solution

3. Attack by a strong nucleophile such as CH_3O^{Θ} (Methoxide ion) on an epoxide occurs at the least hindered carbon similar to an S_N2 reaction



Attack by a weak nucleophile such as MeOH . Can occur only when the epoxide has been protonated so that a better leaving group is formed under acidic condition weak nucleophile attacks more substituted carbon to give final product .

Which statement is true about base ring opening reaction of epoxide ?

A. Base catalyzed epoxide opening is nonstereo selective reaction

B. Both acid catalyzed and base catalyzed ring opening is regioselective

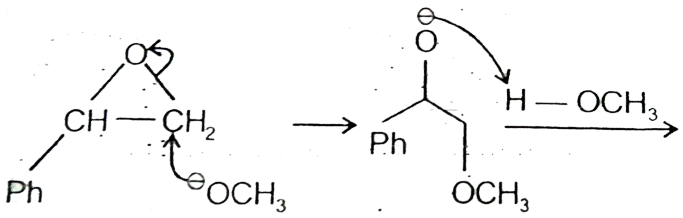
C. In acidic medium attack of nucleophile take place at less substituted carbon of epoxide

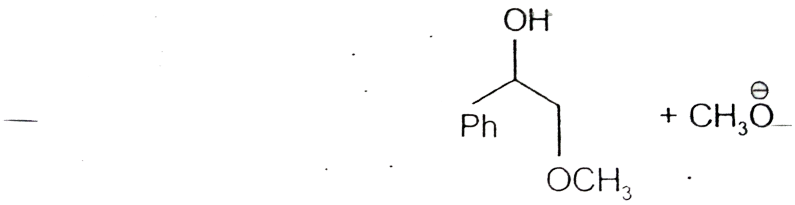
D. Epoxides are less reactive than oxetanes

Answer: B

Watch Video Solution

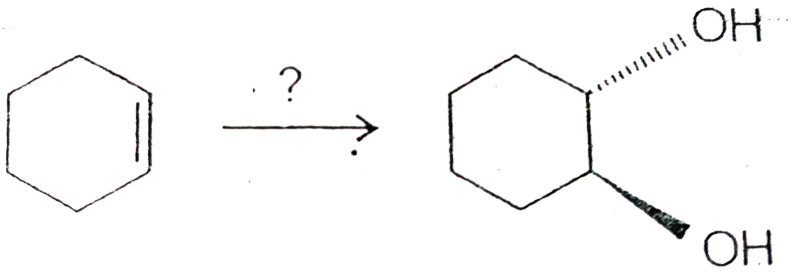
4. Attack by a strong nucleophile such as CH_3O^{Θ} (Methoxide ion) on an epoxide occurs at the least hindered carbon similar to an S_N2 reaction





Attack by a weak nucleophile such as MeOH . Can occur only when the epoxide has been protonated so that a better leaving group is formed under acidic condition weak nucleophile attacks more substituted carbon to give final product .

Given synthetic transformation can be performed by



A. $CH_3 - \overset{O}{\overset{||}{C}} - OOH / H_2O$

B. $(i) OsO_4 (ii)$ Hydrolysis

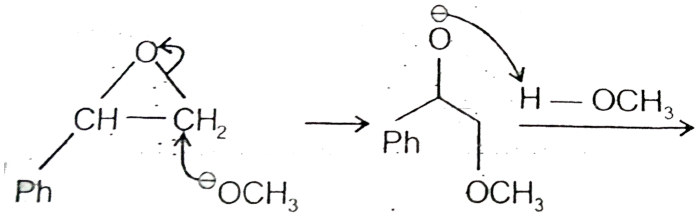
C. $(i) KMnO_4, \overset{\Theta}{O}H, 0^\circ C$ (ii) Hydrolysis

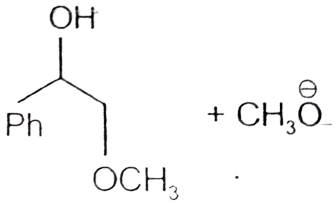
D. $(i) Br_2 / H_2O (ii) \overset{\Theta}{O}H$

Answer: A

Watch Video Solution

5. Attack by a strong nucleophile such as CH_3O^Θ (Methoxide ion) on an epoxide occurs at the least hindered carbon similar to an S_N2 reaction

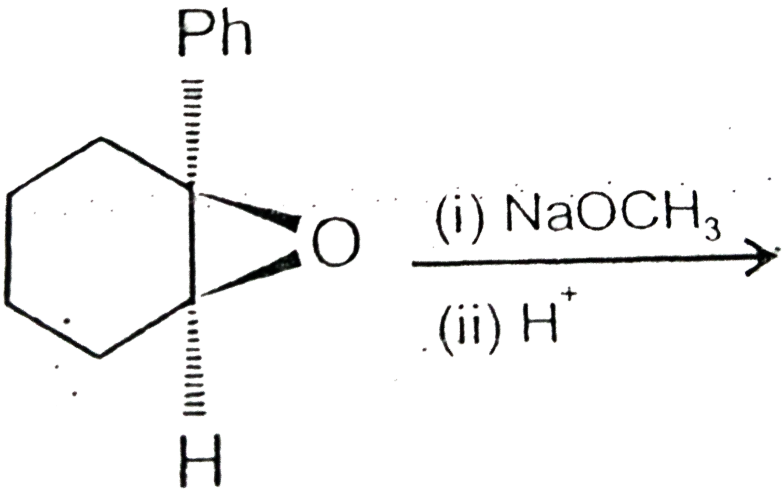




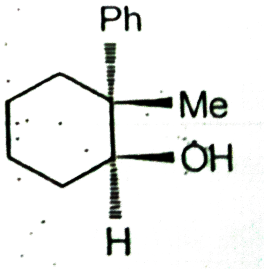
Attack by a weak nucleophile such as MeOH . Can occur only when the epoxide has been protonated so that a better leaving group is formed under acidic condition weak nucleophile attacks more substituted carbon

to give final product .

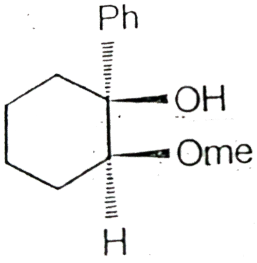
What would be the major product of the given transformation ?



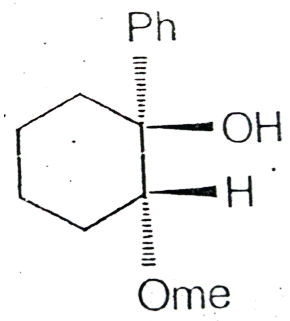
A.



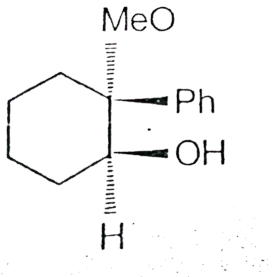
B.



C.

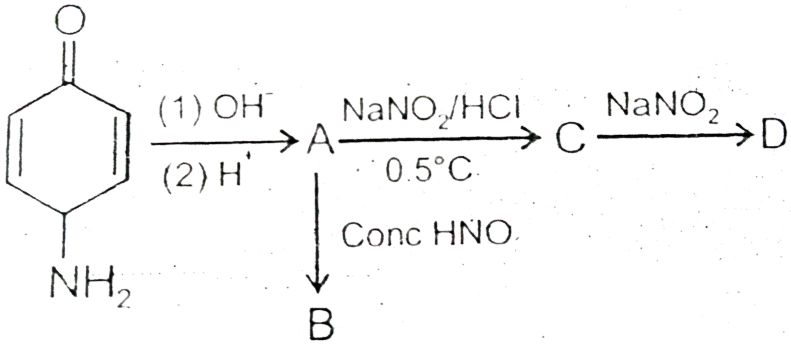


D.



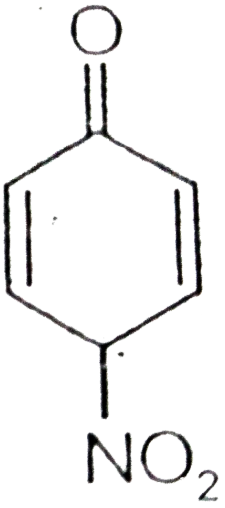
Answer: C

Watch Video Solution



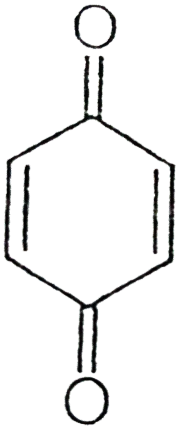
6.

Product (B) is

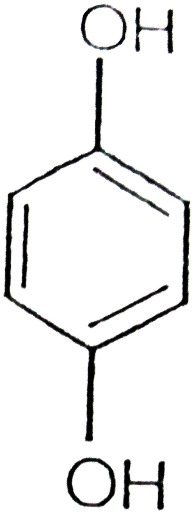


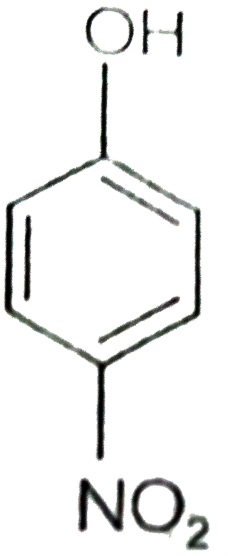
A.

B.



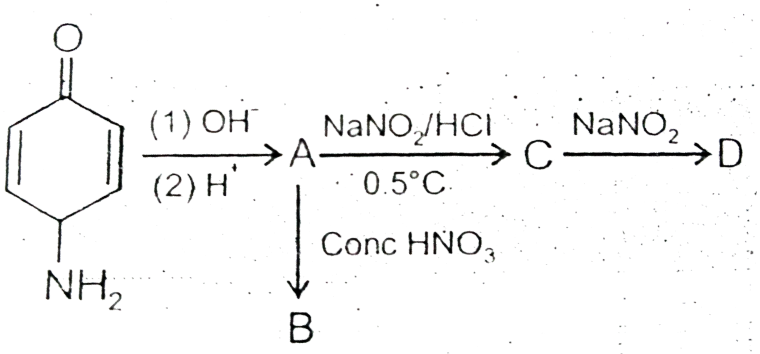
C.



D. 

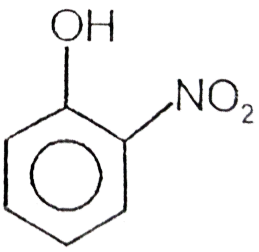
Answer: B

Watch Video Solution

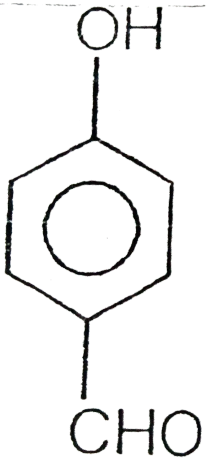
7. 

Product (D) is more acidic than

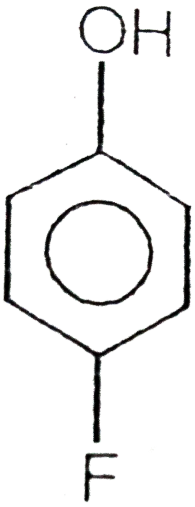
A.



B.



C.



D. All of these

Answer: D

Watch Video Solution

Assignment Section E Assertion Reason Type Question

1. Statement - 1 Victor - Meyer's test can be used to distinguish primary and secondary alcohols

Statement -2 under victor - Meyers' condition these alcohols give different colouration .

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: A

Watch Video Solution

2. Statement -1 Solubility of alcohols decreases with increasing molecular weight

Statement -2 : Increases in hydrophobic group decreases proportion of hydrogen bonding .

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: A

Watch Video Solution

3. Statement -1 Phenols cannot be converted into esters by direct reaction with carboxylic acids whereas alcohols can be

Statement -2 This is due to the fact that the esterification reaction is exothermic for alcohols but slightly endothermic for phenols.

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: A

Watch Video Solution

4. Statement -1 Secondary alcohols react faster than primary alcohols with Na

Statement -2 : O - H bond in secondary alcohol is less polar than than primary alcohol

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: D

Watch Video Solution

5. Statement-1 Resorcinol turns $FeCI_3$ solution purple

Statement - 2 Resorcinol is a dihydric phenol

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: B

Watch Video Solution

6. Statement -1 The C - O bond length of aliphatic alcohols is less than phenols

Statement - 2 in phenols C - O bond acquires π bond character.

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: D

Watch Video Solution

7. Statement - 1 $POCI_3$ can be used to dehydrate alcohols

Statement -2 This reaction proceeds by formation of carbocation in 1^{st} step

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: C

Watch Video Solution

8. Statement -1 In phenylbenzoate Frie's rearrangements is faster than ethylbenzoate

Statement -2 Phenyl acylium cation is more stable than ethylacylium cation.

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: A

Watch Video Solution

9. Statement -1 : When phenol is treated with PBr_3 is gives bromobenzene.

Statement -2 It is an example of nucleophilic substitution

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: C

Watch Video Solution

10. Statement -1 : Phenol and benzoic acid can be distinguished by $NaHCO_3$

Statement -2 Phenol releases CO_2 gas from $NaHCO_3$

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: C

Watch Video Solution

11. Statement-1 Hydration of alkenes may give more than one type of alcohol

Statement -2 Carbocation intermediate may show rearrangement

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

D. Statement -1 is False Statement -2 is True

Answer: A

Watch Video Solution

12. Statement- 1 Phenols are more acidic than carboxylic acid

Statement -2 Acidity depends on reasonance stabilisation of the

conjugate base formed

A. Statement -1 is true ,Statement -2 is True , Statement -2 is a correct explanation for Statement -1

B. Statement -1 is True , Statement -2 is True Statement -2 is NOT a correct explanation for Statement -1

C. Statement -1 is True Statement -2 is False

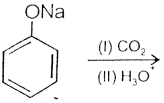
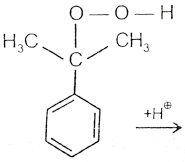
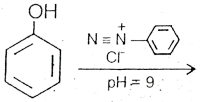
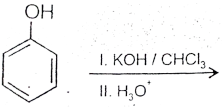
D. Statement -1 is False Statement -2 is True

Answer: D

Watch Video Solution

Assignment Section F Matrix Match Type Questions

1. Match the column - I with column - II

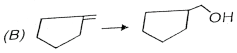
Column-I	Column-II Product/s gives test
(A) 	(p) With neutral $FeCl_3$ test
(B) 	(q) With $NaHCO_3$
(C) 	(r) With Na
(D) 	(s) With 2, 4 DNP reagent

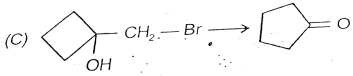
Watch Video Solution

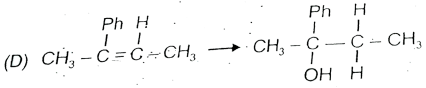
2. Match the column - I (Chemical Transformation) with column - II (Name reaction)

Column-I

(A) 

(B) 

(C) 

(D) 

Column-II

(p) Hydroboration oxidation

(q) Oxymercuration demercuration

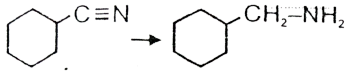
(r) Markovnikoff's product

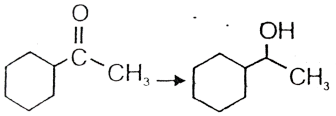
(s) Carbocation intermediate

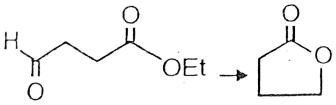
Watch Video Solution

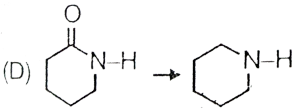
3. Match the following

Column I

(A) 

(B) 

(C) 

(D) 

Column II

(p) $LiAlH_4$

(q) $NaBH_4$

(r) H_2/Pd

(s) DIBAL-H (1 eq)

(t) Reduction

Watch Video Solution

4. Match the following

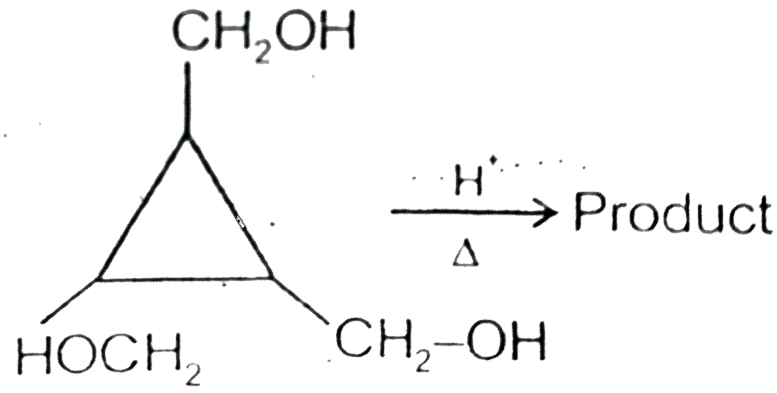
$\left|(\text{column I}, , \text{column II}), \left(Cr_2O_7^{2+} + H^+, , (\text{p})\text{Aldehydes} \right), ((B)SOCI_2, \right.$

C „"(s) Chloroalkene "):}|`

View Text Solution

Assignment Section G Integer Answer Type Questions

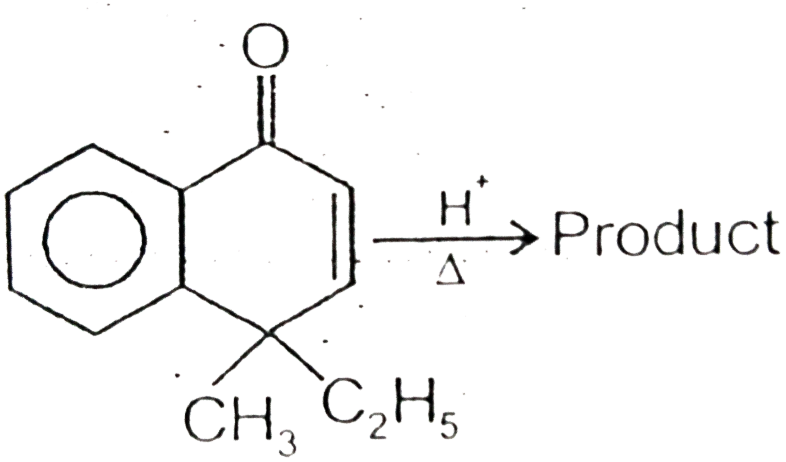
1.



The degree of unsaturation of product is

Watch Video Solution

2.

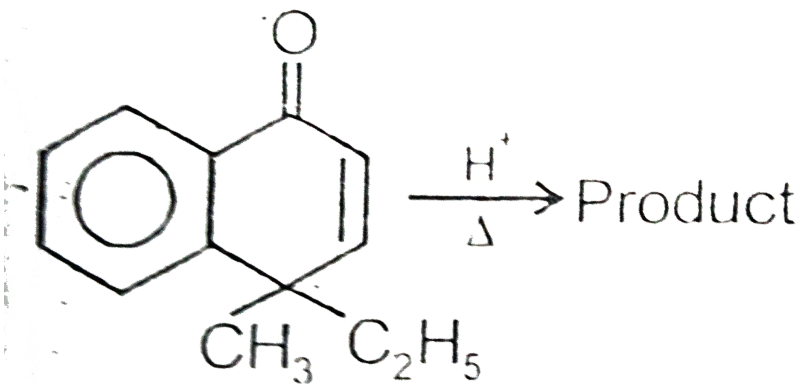


In final product the number of π electrons involved in aromaticity is $2x$ the value of x is

Watch Video Solution

3. The number of isomer (including stereoisomers) of $C_5H_{12}O$ which can give positive haloform test is

Watch Video Solution



4. In the final product , the number of π electrons involved in aromaticity is 2x . The value of x is

Watch Video Solution

Assignment Section H Multiple True False Type Questions

1. Statement -1 : Phenol is more acidic than ethyl alcohol

Statement -2 : Phenol is a weaker acid than benzoic acid

Statement -3 : Phenol is a good substrate to prepare o- salicylic acid

A. TTF

B. TTT

C. FFF

D. FTT

Answer: B

Watch Video Solution

2. Statement- 1 Pyridinium chlorochromate can convert primary alcohols into corresponding aldehyde

Statement -2 MnO_2 can oxidize benzylic alcohol into corresponding carboxylic acid

Statement - 3 : OsO_4 can convert alkene into trans 1,2- diol

A. FFF

B. TTT

C. TTF

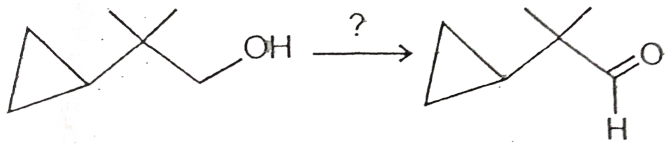
D. TFF

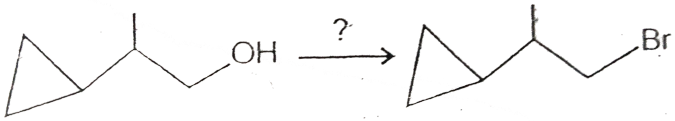
Answer: C

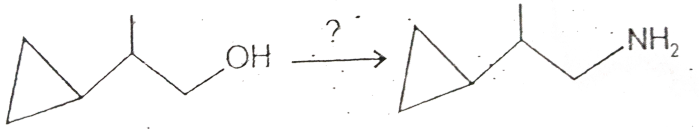
Watch Video Solution

Assignment Section I Subjective Type Questions

1. Write the best reagents above each reaction arrow. If the transformation cannot be achieved in a single step be any reagents write NR

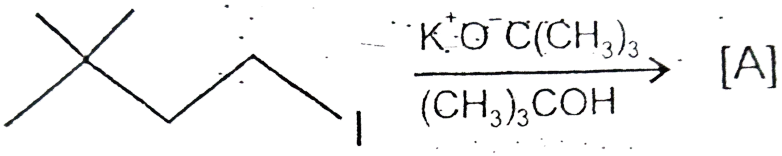
(a) 

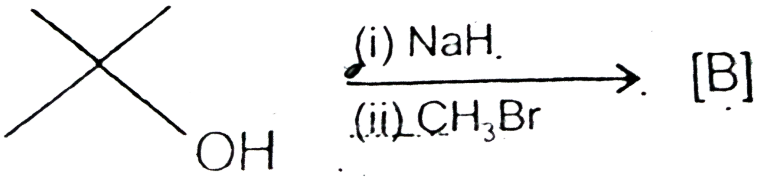
(b) 

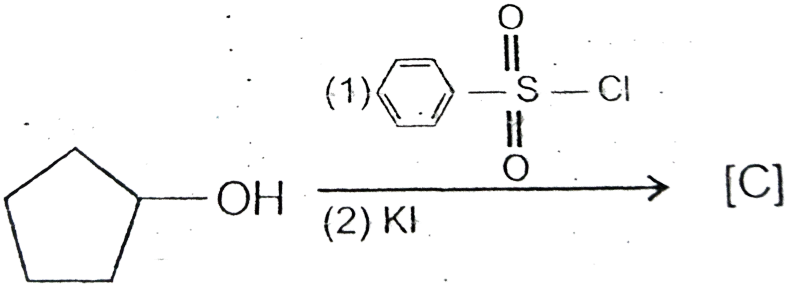
(c) 

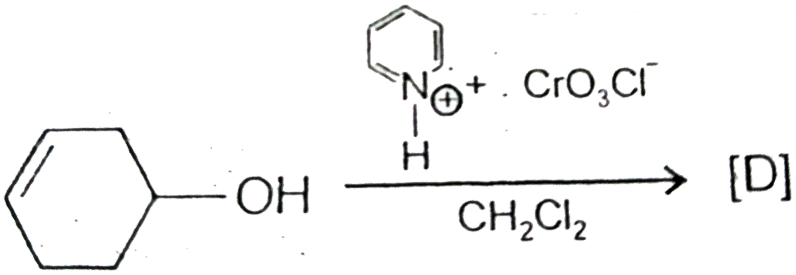
Watch Video Solution

2. Provide the organic products of the following reactions



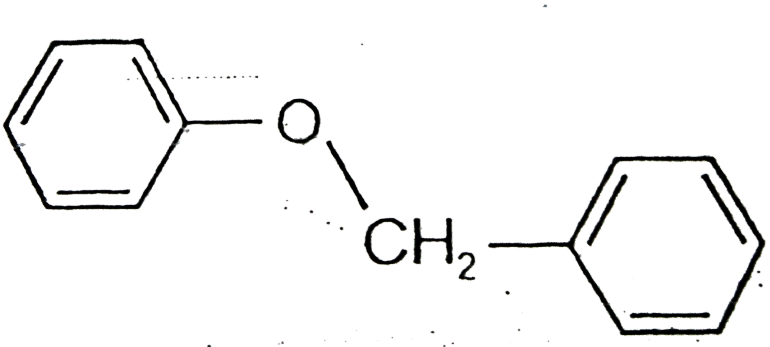


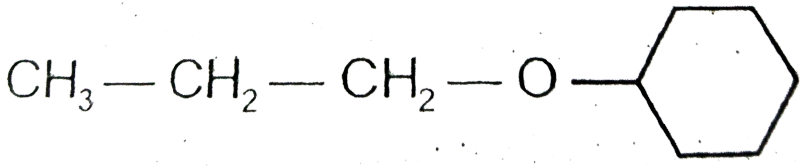


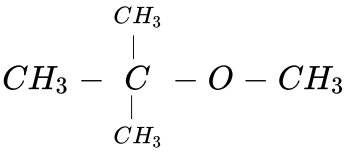


Watch Video Solution

3. Prepare the following ethers via the williamson's synthesis







Watch Video Solution

4. Give the products of the reaction of styrene oxide with

(a) NaSH

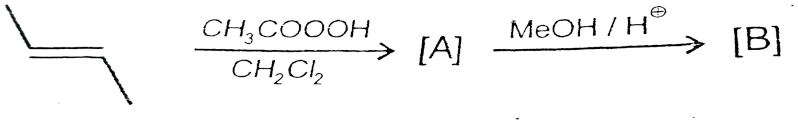
(b) $LiAID_4$

(c) $MeOH / H^{+}$

(d) $HBr(1eq)$

Watch Video Solution

5. Supply structures and names for compounds A and B



Watch Video Solution

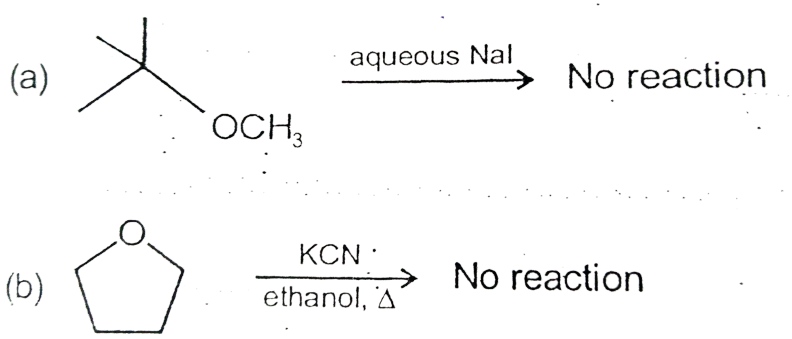
6. Use simple chemical tests to differentiate between each member of the following pairs of compounds

(a) n - Propylalcohol and phenol

(b) Phenol and Benzoic acid

Watch Video Solution

7. Explain briefly



Watch Video Solution

8. Identify the correct compound in each case

(a) Four stereoisomeric compounds C_4H_8O all optically active contain no double bonds and evolve a gas when treated with CH_3Mgl

(b) A compound believed to be either cyclohexyl methyl ether or 2-methylcyclohexanol evolves a gas when treated with NaH .

Watch Video Solution

9. Give a structure for each of the following compounds (More than one answer may be possible)

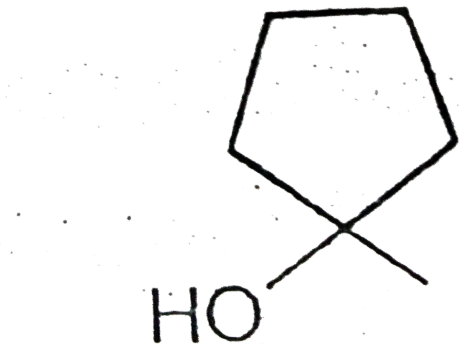
(a) A chiral ether $C_5H_{10}O_2$ that exists in only two stereoisomeric forms.

(b) A chiral alcohol C_4H_6O

(c) A diol $C_4H_{10}O_2$ that exists in only two steroiosomeric forms.

View Text Solution

10. Design a synthesis of 1- methylcyclopentanol using alcohol with no more than five carbon atoms as the only source of carbon in the final product.



1-methylcyclopentanol

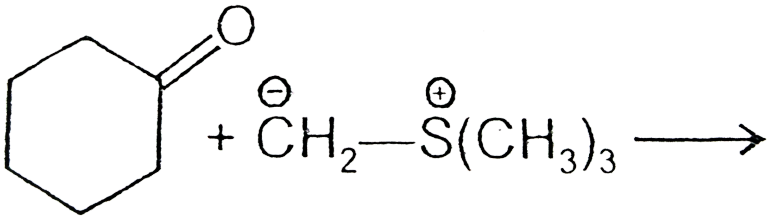
Watch Video Solution

11. 0.037g of an alcohol, R-OH was added to CH_3MgBr and the gas evolved measured 11.2 mL at STP. The Molecular mass of R-OH will be .

Watch Video Solution

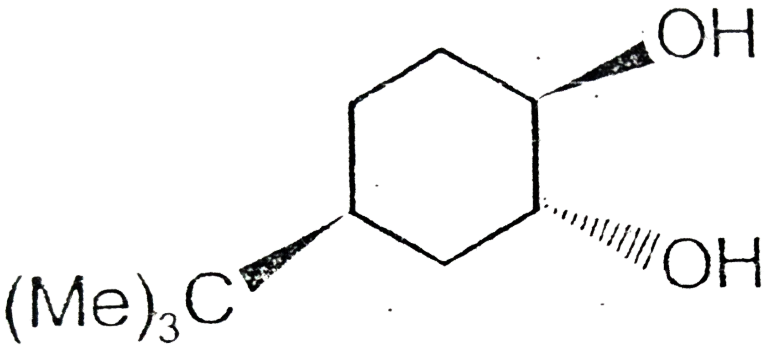
Assignment Section J Aakash Challengers Questions

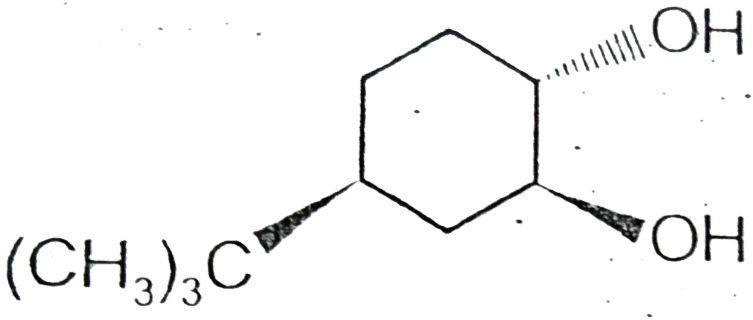
1. Show the product from the following Write mechanism in support of your product

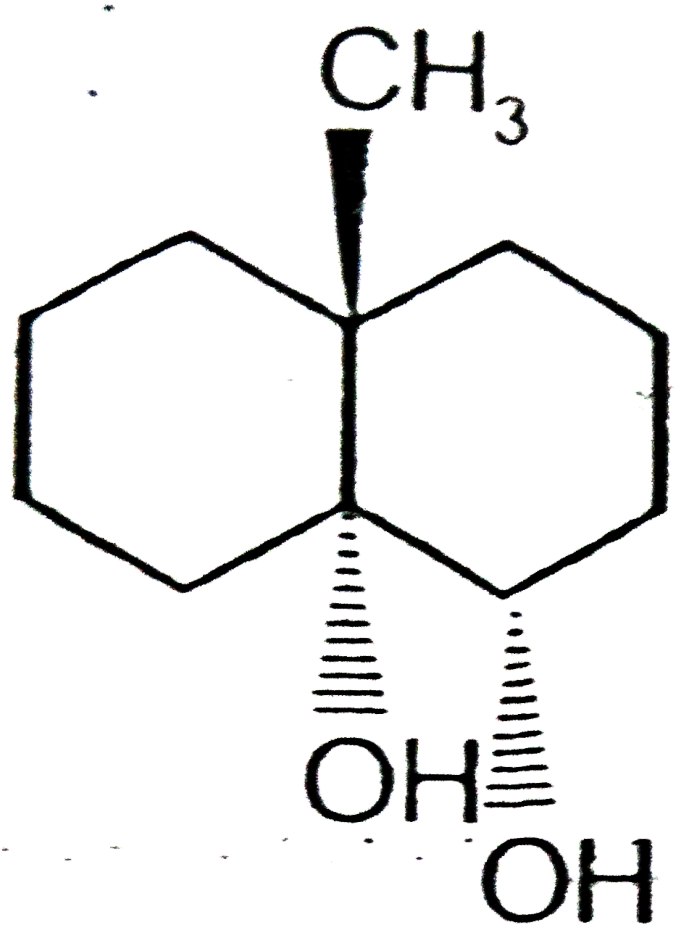


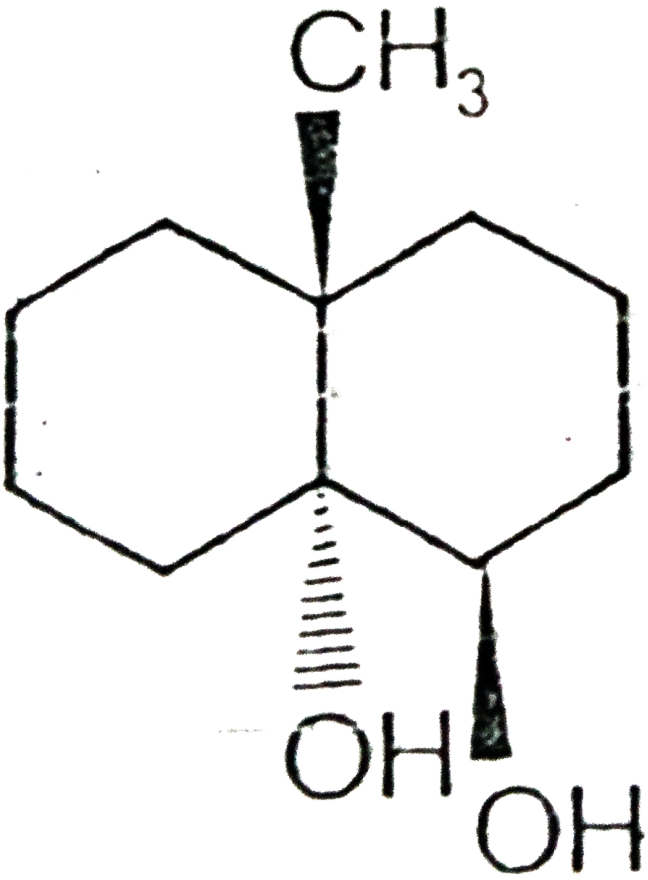
Watch Video Solution

2. How many of the following glycols is virtually inert to periodate oxidation which glycol is inert ? Explain



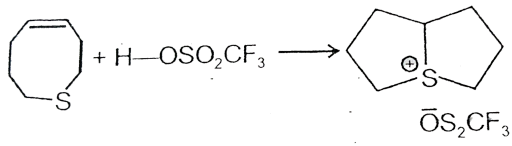


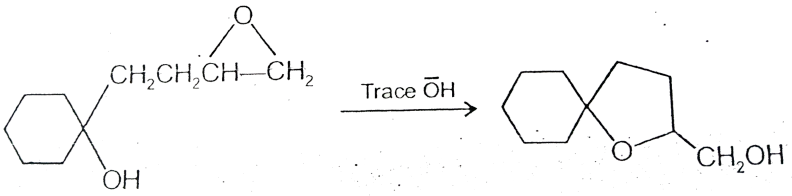

CH3
OH
OH



View Text Solution

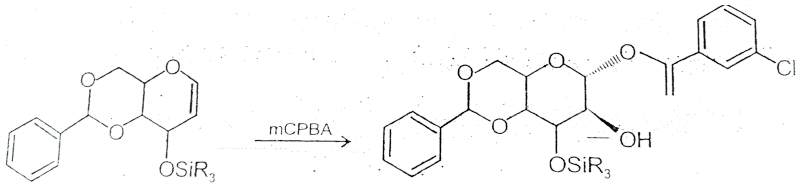
3. Draw a stepwise mechanism for the following reactions





Watch Video Solution

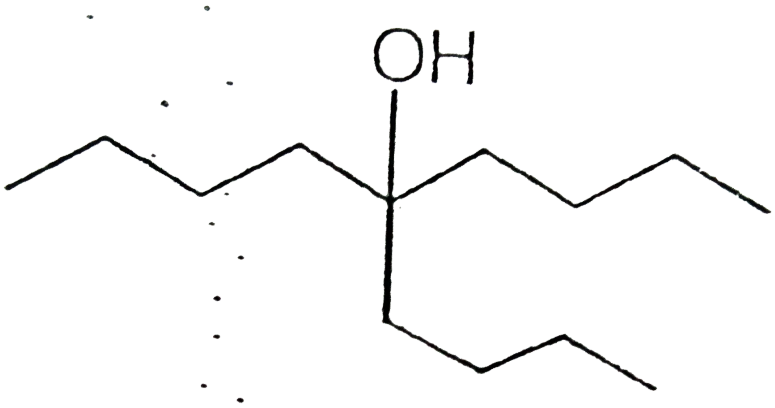
4. Draw a stepwise mechanism for the following reaction



Watch Video Solution

5. Show how you would synthesize the following compound .As starting materials you may use any organic compound containing four or fewer

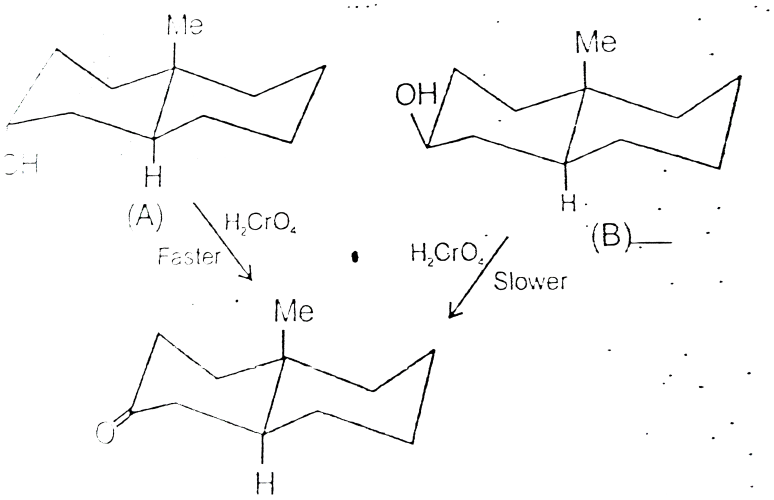
carbons



Watch Video Solution

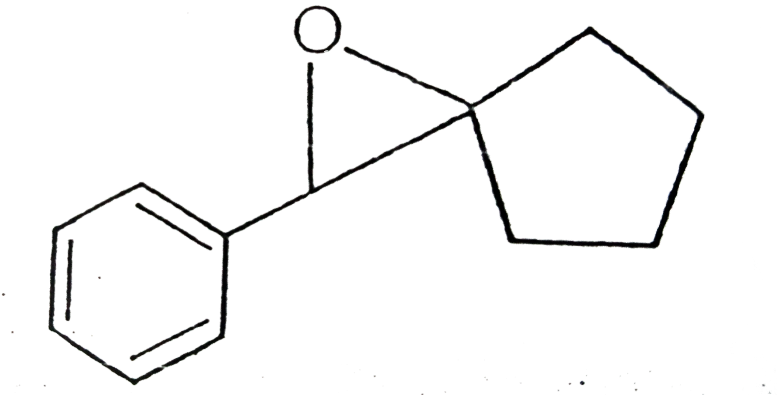
6. Chromic acid oxidation of a alcohol occurs in two steps : formation of chromate ester followed by an elimination of H^+ and chromium . Which step do you expect to be rate- limiting ? Careful kinetic studies have shown that compound A undergoes chromic oxidation over 10 times as

fast as compound B . Explain the large difference in rates.



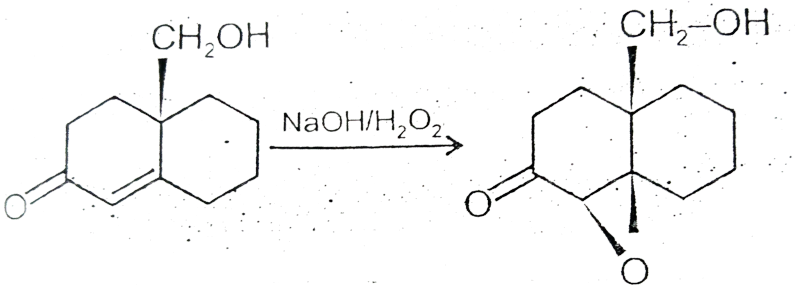
View Text Solution

7. Show how you would synthesize the following compound from any starting materials containing no more than six carbon atoms.



Watch Video Solution

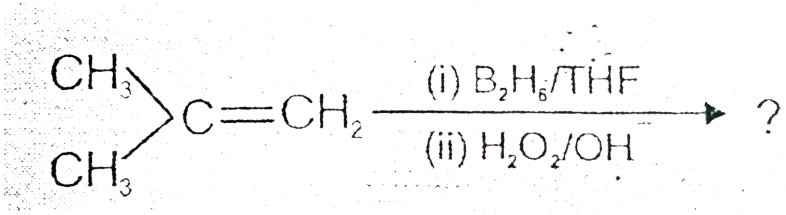
8. Provide a mechanism for the following reaction and suggest a reason for the diasteroselectivity of the reactions

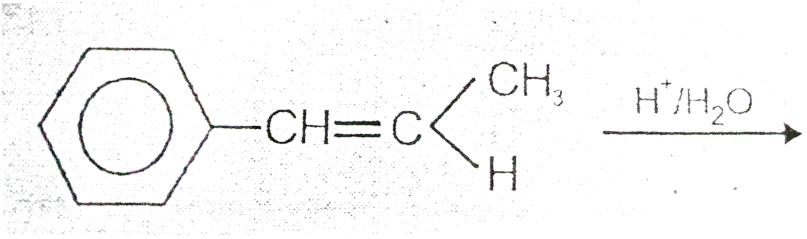


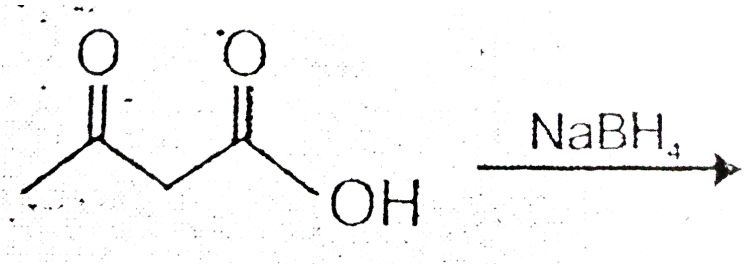
View Text Solution

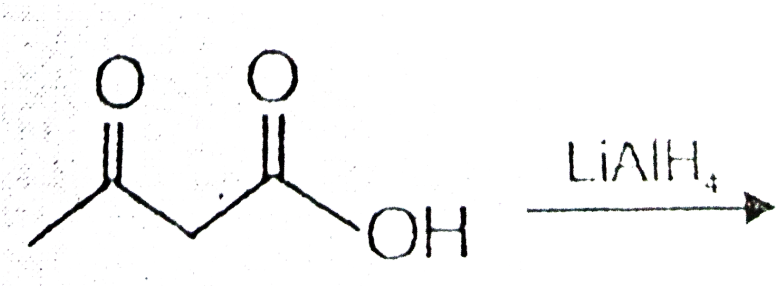
Try Yourself

1. Find the product of given reaction





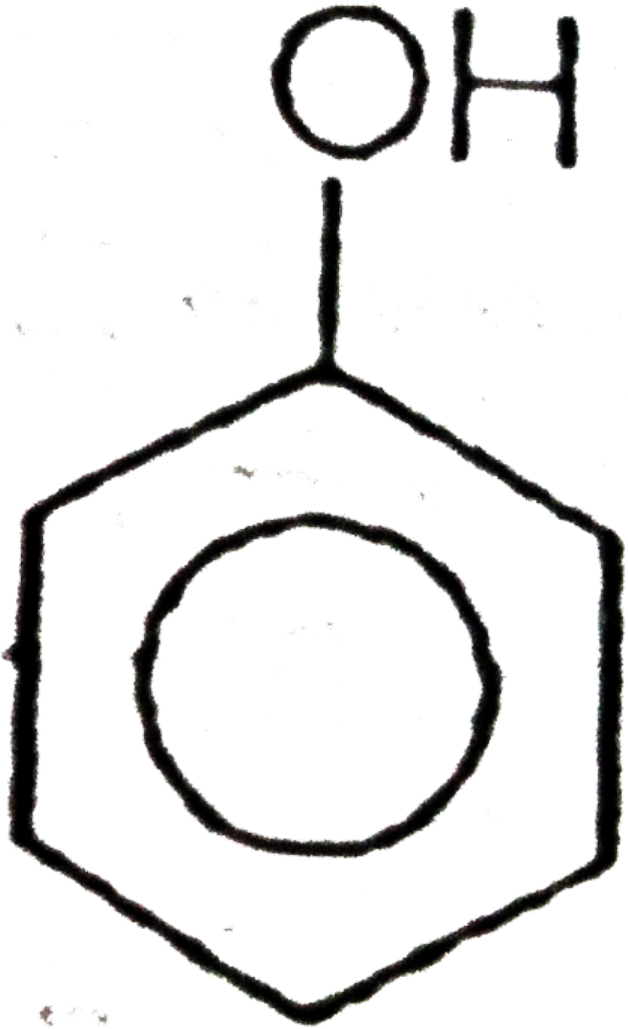


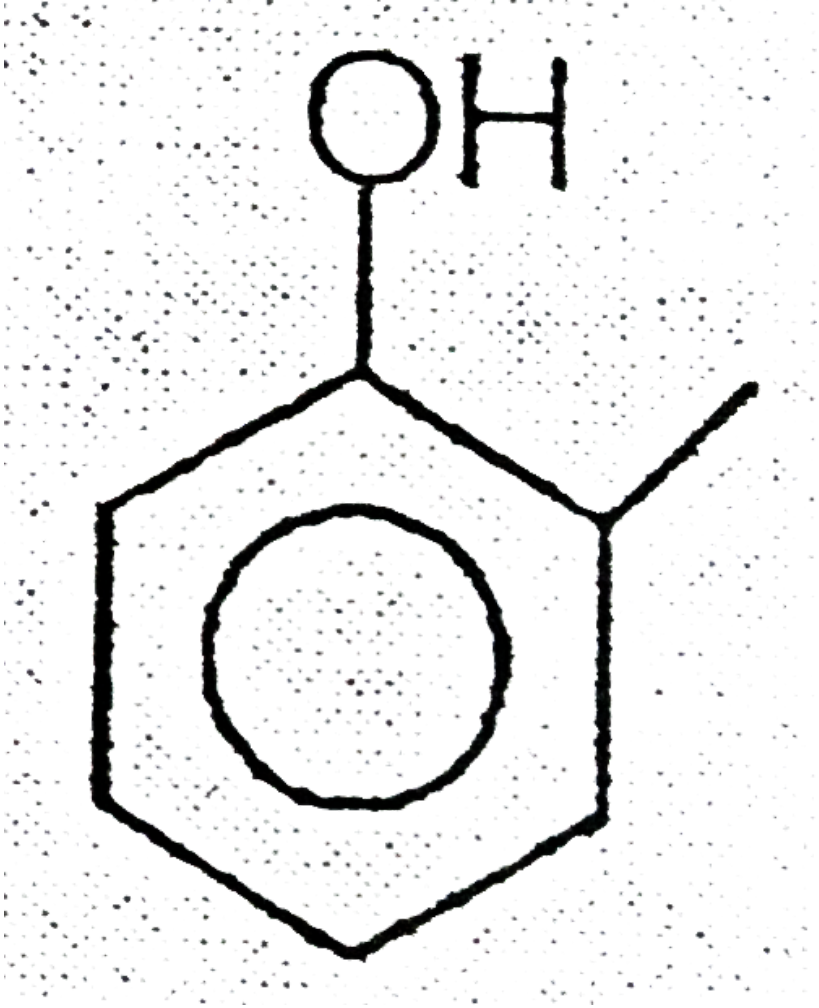


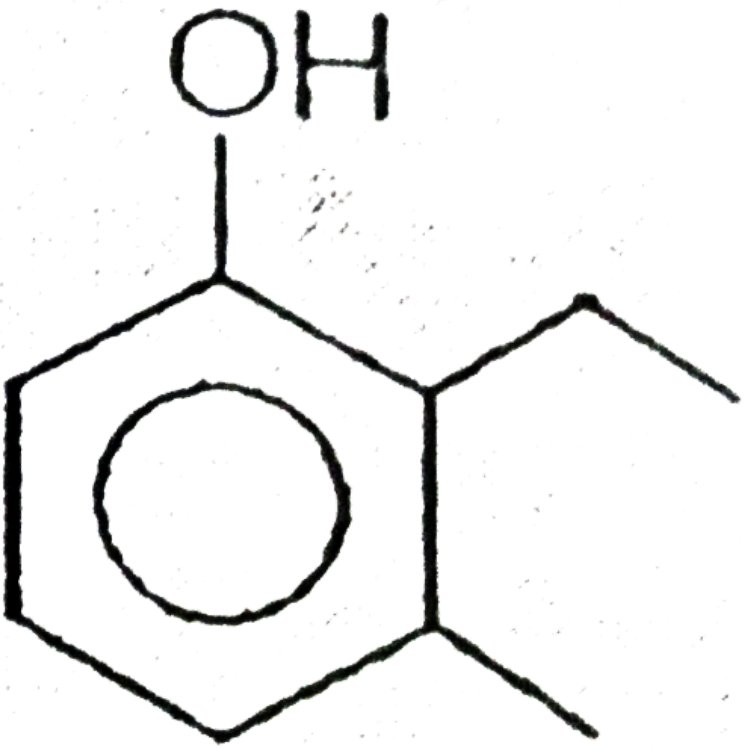
Watch Video Solution

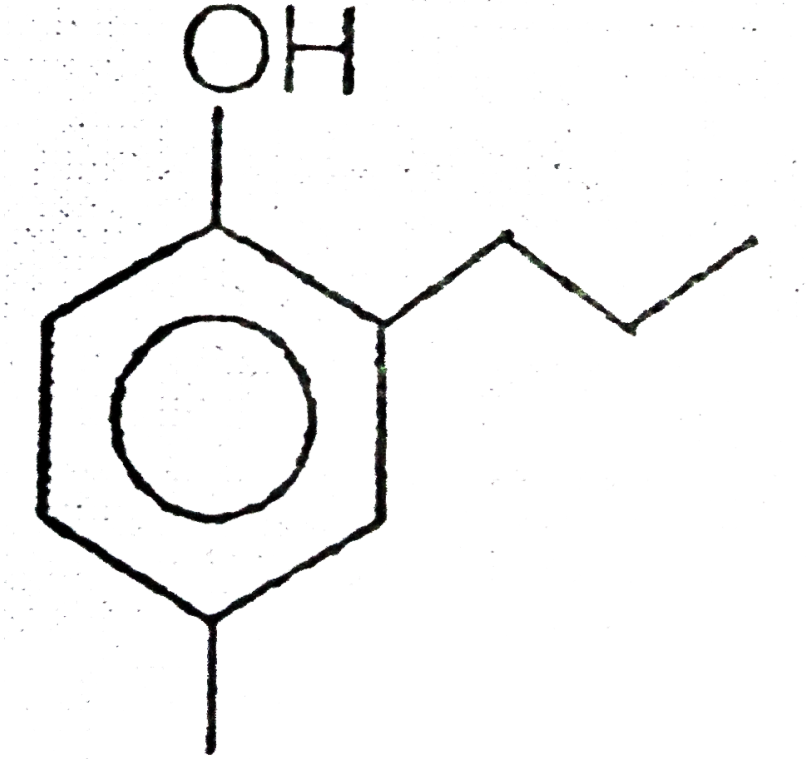
2. Arrange the following in increasing order of their

(i) Solubility and (ii) Boiling point


OH


OH

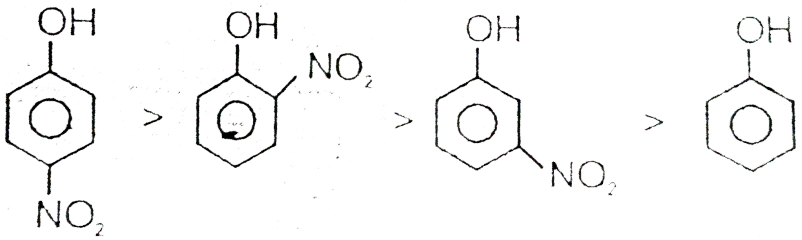

OH



Watch Video Solution

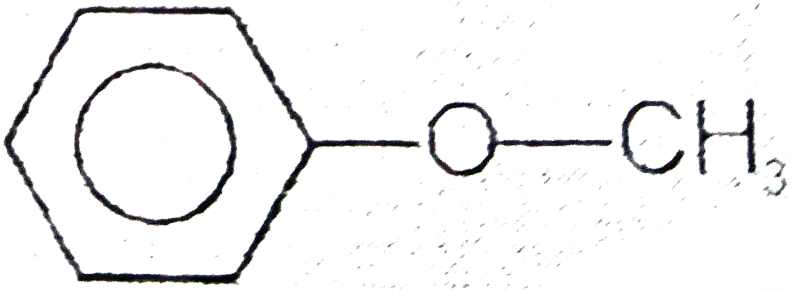
3. (a) Why acidic nature of alcohol and phenol increase with electron withdrawing substituent

(b) Explain the order of acidic nature of



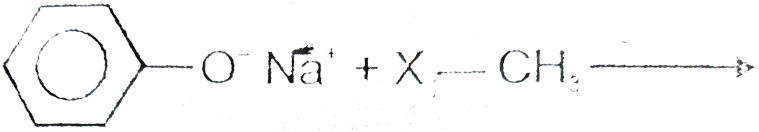
Watch Video Solution

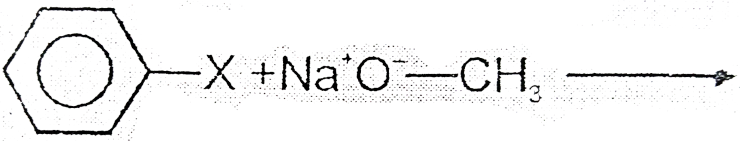
4. For the preparation of anisole



which one is

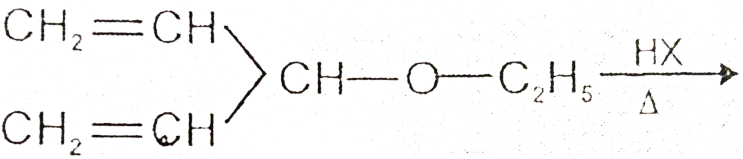
preferable reaction and why ?

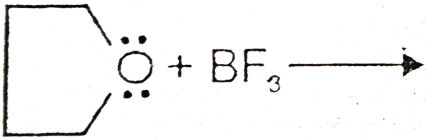




Watch Video Solution

5. Predict final products in the reactions





Watch Video Solution