CHEMISTRY

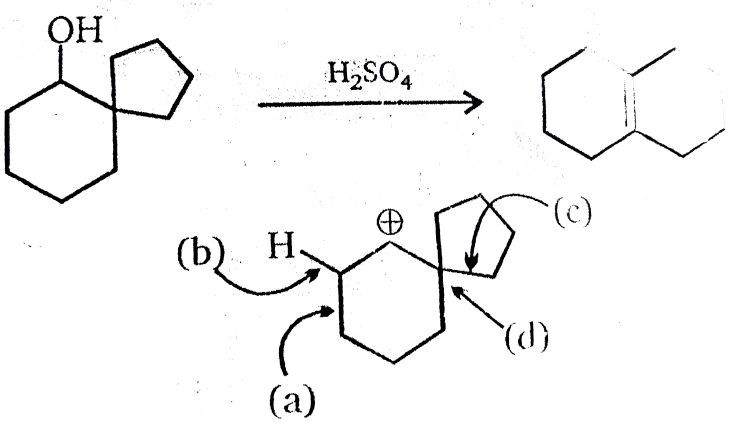
BOOKS - MS CHOUHAN CHEMISTRY (HINGLISH)

ALCOHOL, ETHERS AND EPOXIDES

Exercise

1. The following transformation involves a carbocation rearrangement. The carbocation is generated by potonation of the hydroxyl group by the lose of water. Which bond has to migrate in the carbocation to yield the

product indicated (after the deprotonation) ?



A. a

B. b

C. c

D. d

Answer: C

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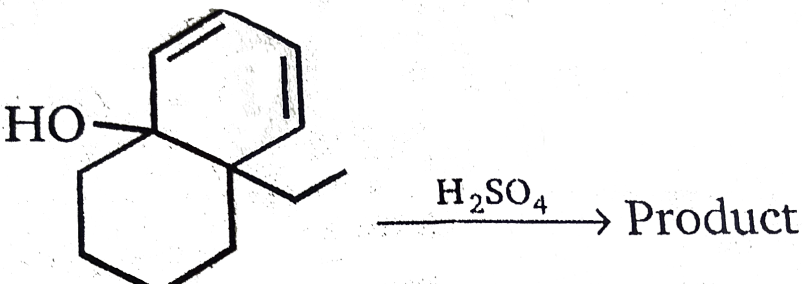
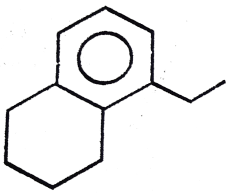
2. Identify the major product.

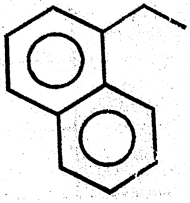


A.



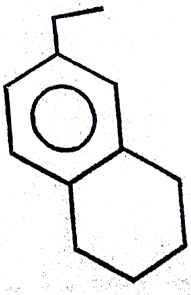
B.

(b)

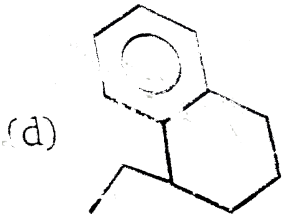


C.

(c)



D.



Answer: A

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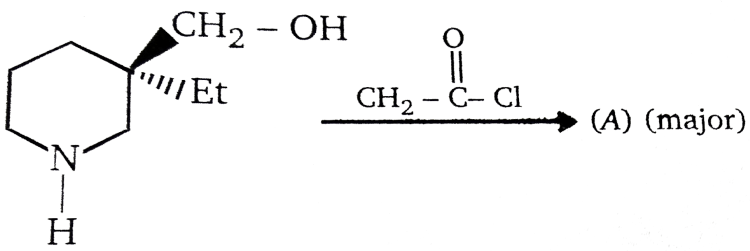
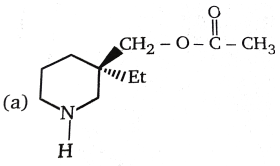
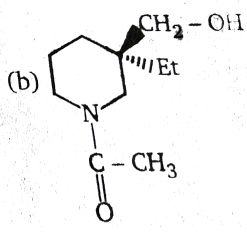
3. Complete the following reaction



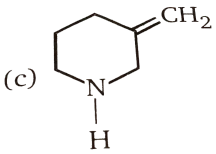
A.



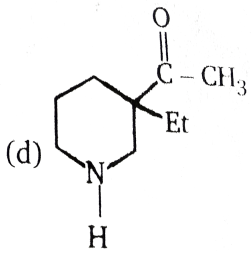
B.



C.



D.



Answer: B

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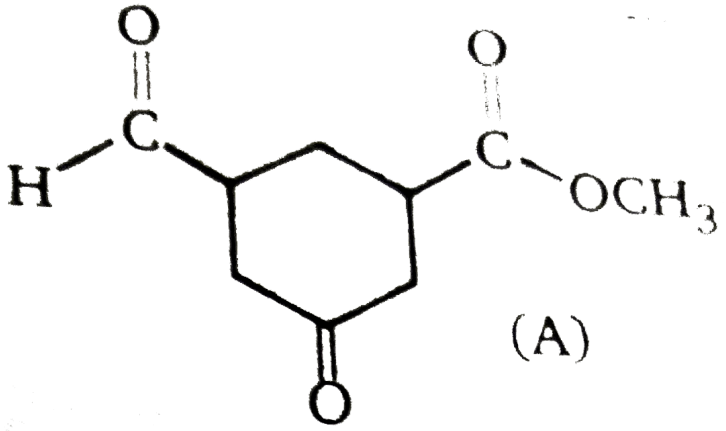
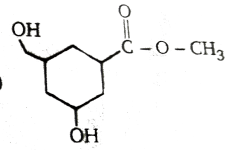
4. Predict the product when given compound reacts with $LiAlH_4$:



(A)

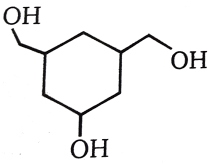
A.

B.



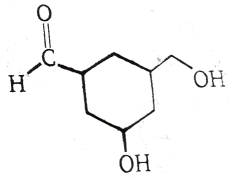
(b)

C.



(c)

D.



(d)

Answer: C

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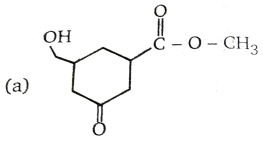
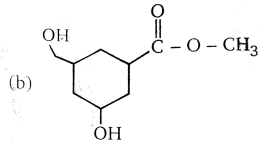
5. Predict the product when given compound (A, in the above question 4) reacts with $NaBH_4$.

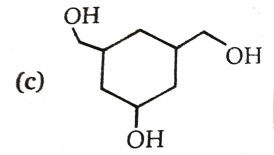
A.



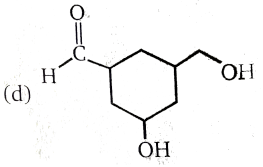
B.



C.



D.



Answer: B

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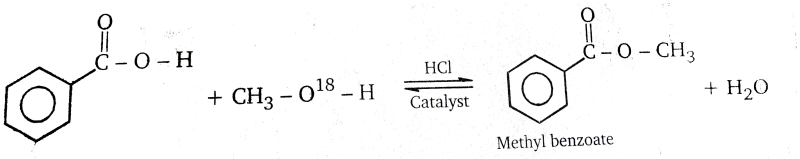
6. 

The labelled $-O^{18}$ will be in :

A. H_2O

B. Methyl benzoate

C. Both (a) and (b)

D. Benzoic acid

Answer: B

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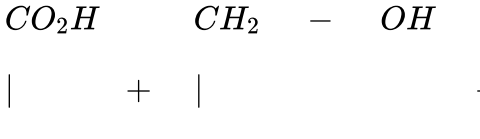
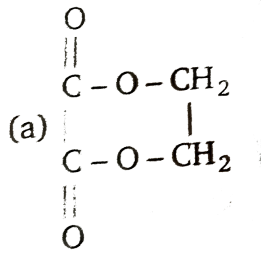
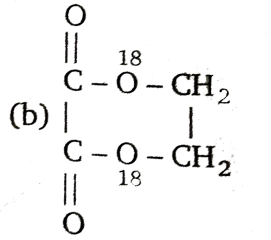
7. 

Product (A) is :

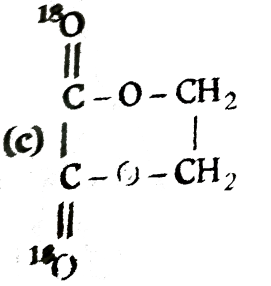
A.



B.



C.



D. $H-O-\overset{O}{\overset{||}{C}}-\overset{O}{\overset{||}{C}}-O-CH_2-CH_2-OH$

Answer: B

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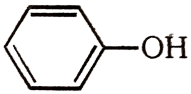
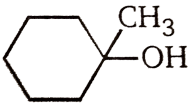
8. Which is oxidized most easily?

A. $CH_3 - CHOH - CH_3$

B. (b) 

C. $CH_3 - CH_2 - O - CH_2 - CH_3$

D. (d) 

Answer: A

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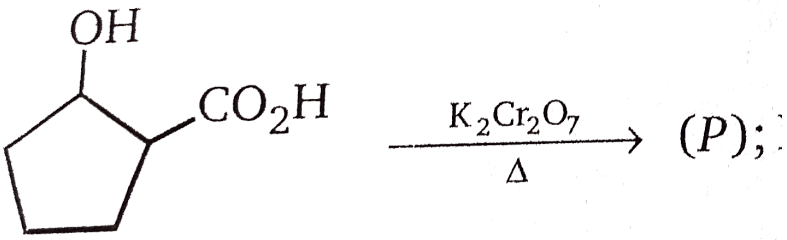
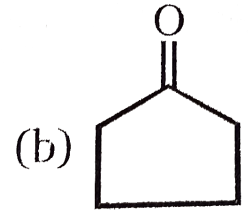
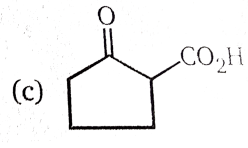
9. 

Product (P) is :

A. 

B. 

C. 

D. 

Answer: B

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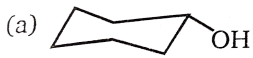
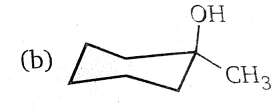
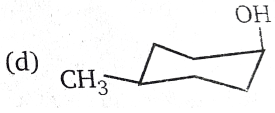
10. Which of the following react with HBr at faster rate ?

A. 

B. 

C. 

D. 

Answer: B

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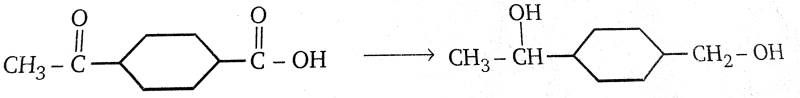
11. 

Above conversion can be done by :

A. $NaBH_4$

B. $LiAlH_4$

C. PCC

D. $KMnO_4$

Answer: B

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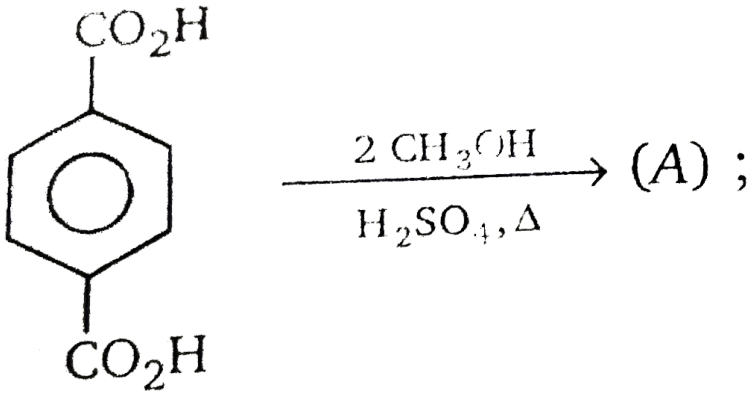
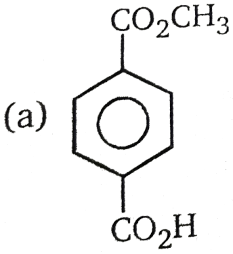


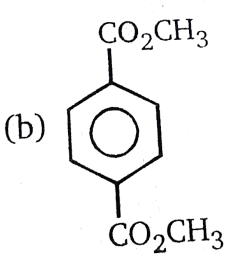
12. Product

(A) is

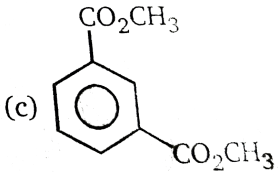


A.

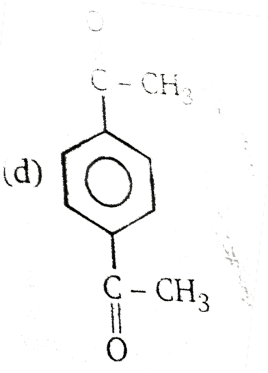
B.



C.



D.



Answer: B

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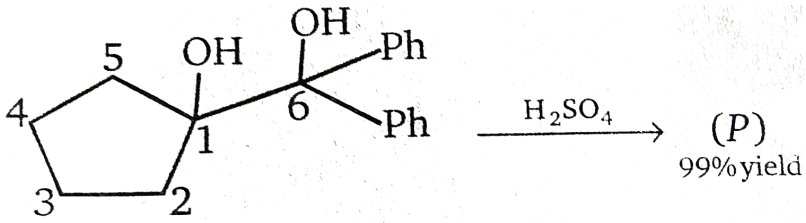
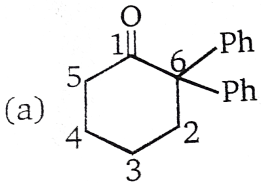
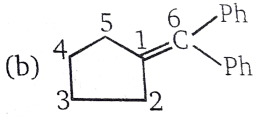
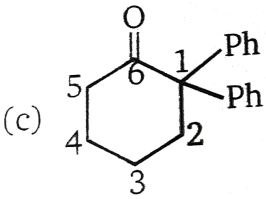
13. 

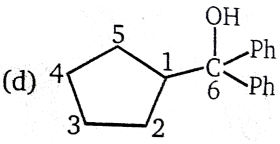
Unknown

(P) of the reaction is :

A. 

B. 

C. 

D. 

Answer: A

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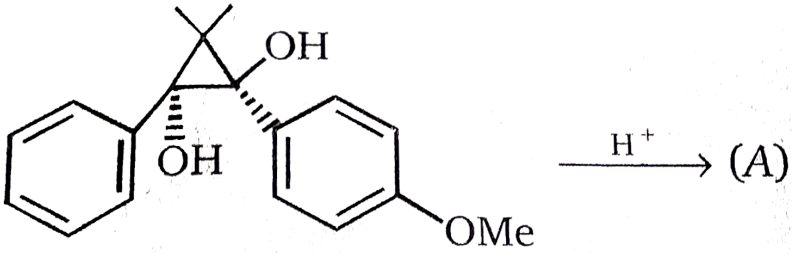
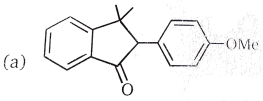
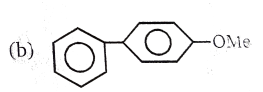
14. Predict the major product of the given reaction.

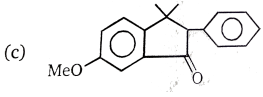


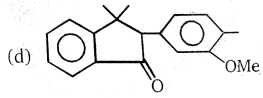
Product (A) is

:

A. 

B. 

C. 

D. 

Answer: A

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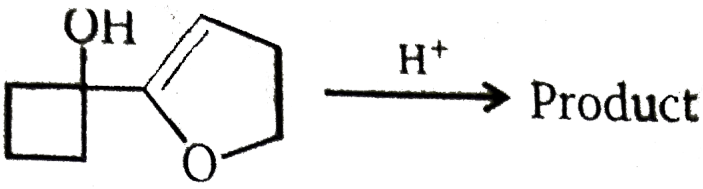
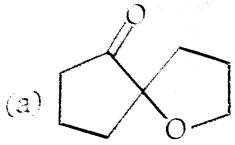
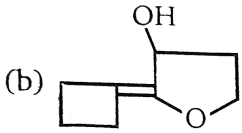
15. Identify the major product,



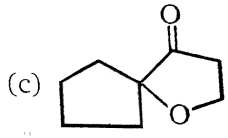
A.



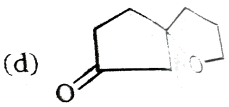
B.



C.



D.



Answer: A

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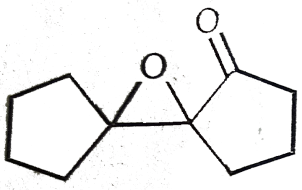
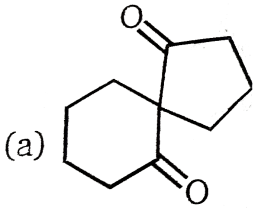
16. Find the final product of the reaction

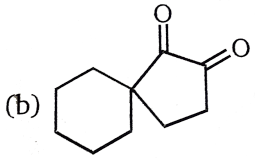


$\xrightarrow{H^+}$ (*A*); Product (*A*) is :

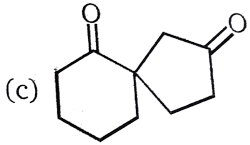
A.



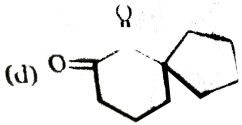
B.



C.



D.



Answer: A

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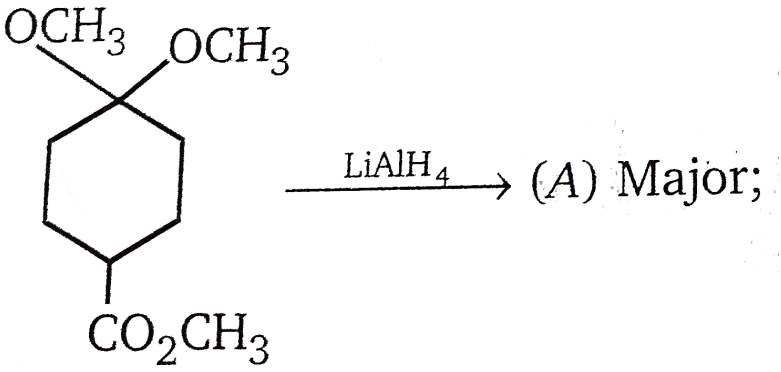
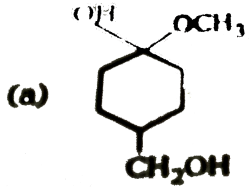
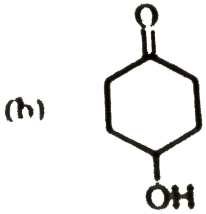
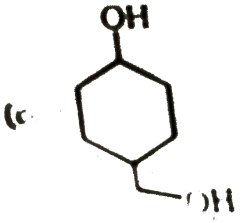


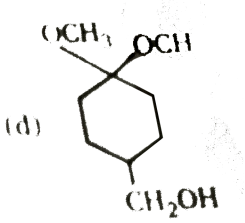
17. Product (A)

is :

A. 

B. 

C. 

D. 

Answer: D

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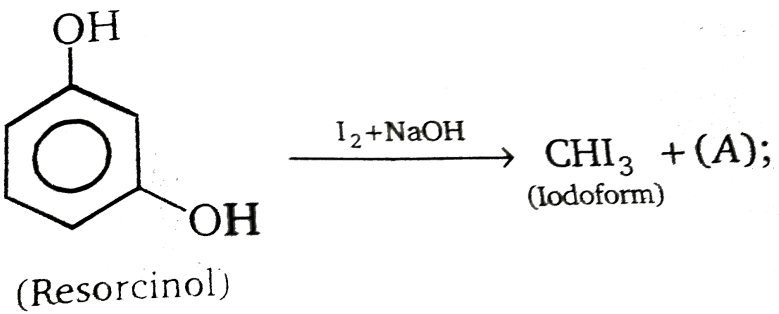
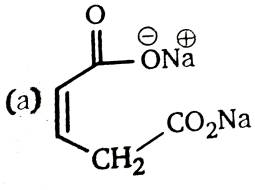
18. 

Compound (A) is :

A. 

B. $H-O-\overset{O}{\overset{||}{C}}-(CH_2)_2-\overset{O}{\overset{||}{C}}-OH$

C. $CH_3 - CH_2 - CH_2 - CH_2 - \overset{\overset{O}{||}}{C} - OH$

D. $CH_3 - (CH_2)_3 - \overset{\overset{O}{||}}{C} - ONa$

Answer: A

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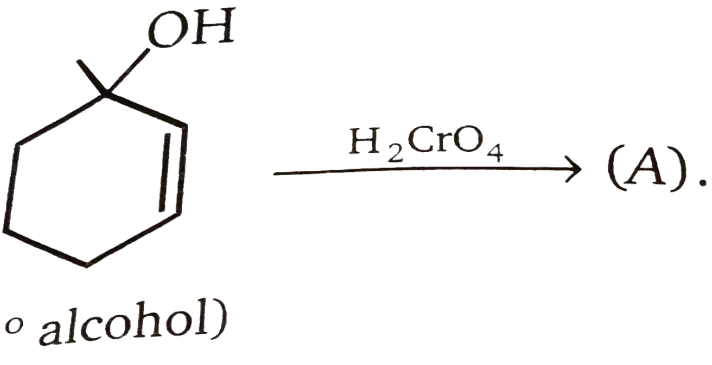
19.

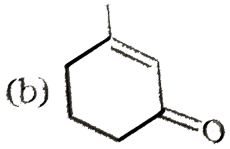


$(3^o$ alcohol)

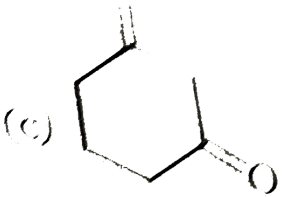
Product

(A) is :

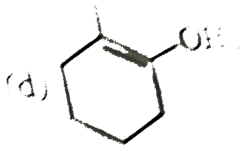
A. No reaction

B. 

C.



D.



Answer: B

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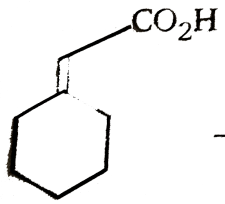
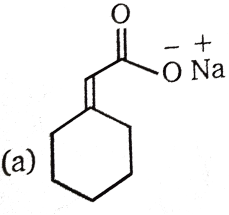
20.



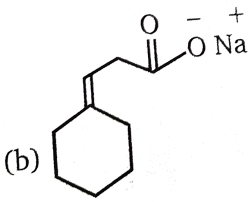
$$\xrightarrow[(2)\ H^{\oplus}]{(1)CH_2-Li(excess)} (A) \xrightarrow[NaOH]{I_2} (B) + CHI_3 \downarrow$$

Compound (B) is :

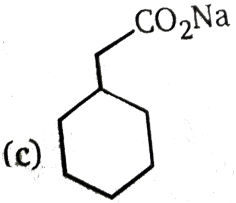
A.



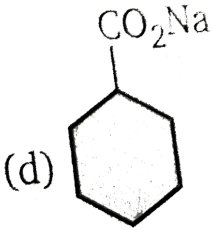
B.



C.



D.



Answer: A

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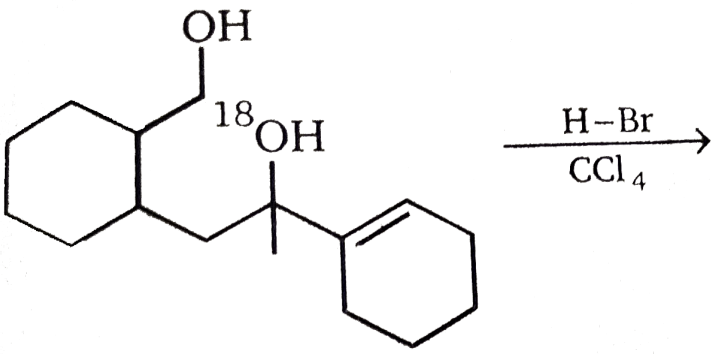
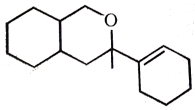
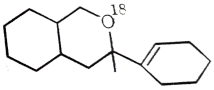
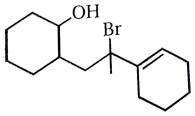
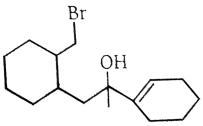


21. Major product obtained in the reaction is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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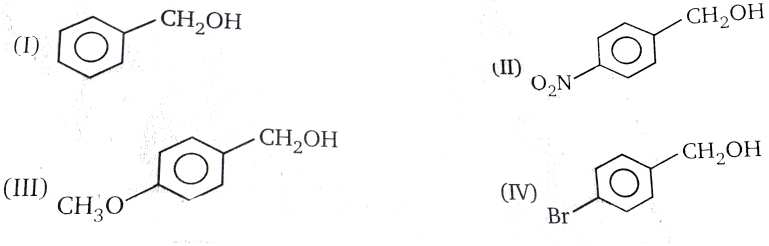
22. Consider the following alcohols,



The order of decreasing reactivities of these alcohols towards nucleophilic substitution with HBr is :

A. $III > I > IV > II$

B. $III > I > II > IV$

C. $I > III > IV > II$

D. $I > III > II > IV$

Answer: A

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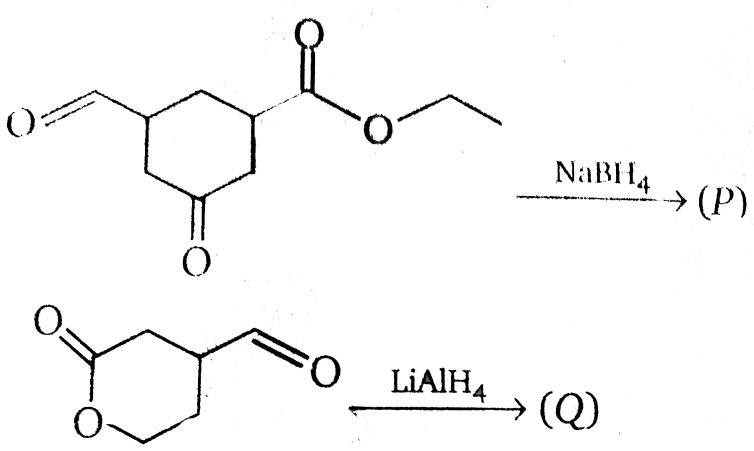

23.

Sum of number of alcoholic groups in product (P) and (Q) is :

A. 1

B. 2

C. 3

D. 5

Answer: D

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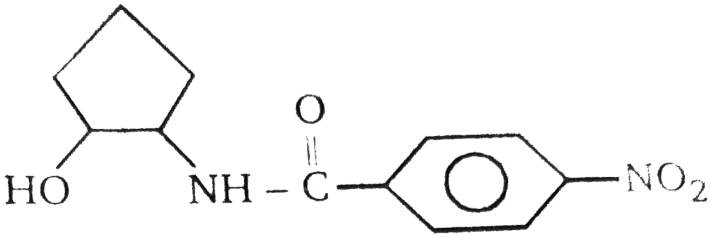
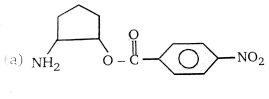
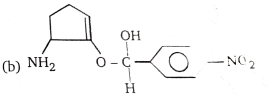
24. In presence of dil. HCl, compound A is converted to a constitutional isomer (B), compound B is :



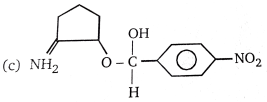
A.



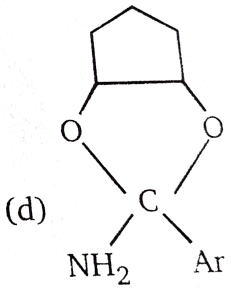
B.



C.



D.



Answer: A

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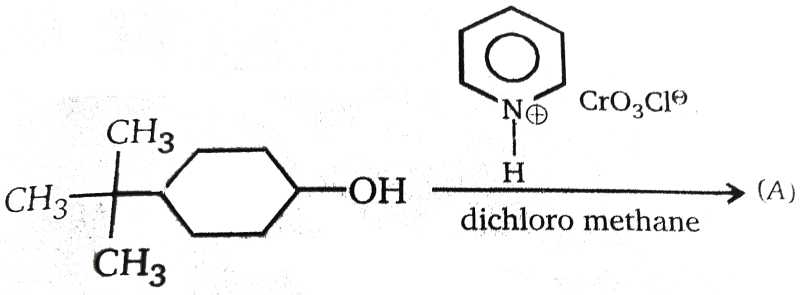
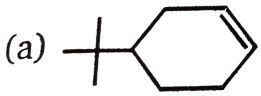
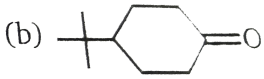
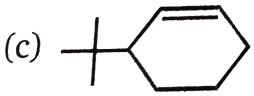
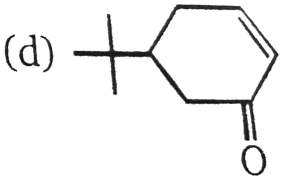
25. Complete the following reaction



A. 

B. 

C. 

D. 

Answer: B

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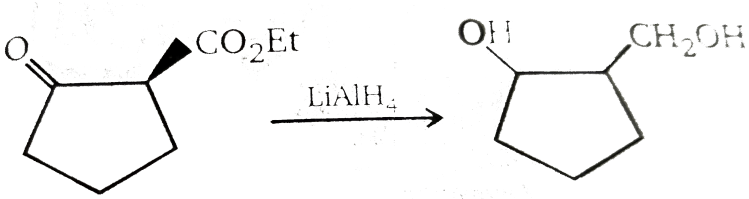
26. 

Product of the reaction is :

A. Racemic

B. Diastereomer

C. Meso

D. Optically pure

Answer: B

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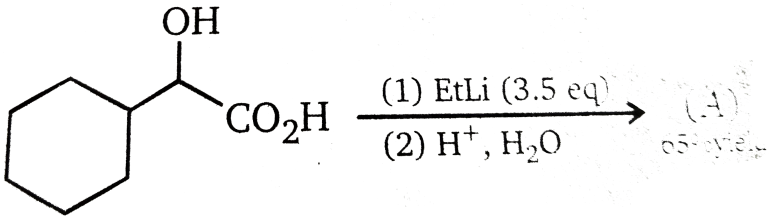
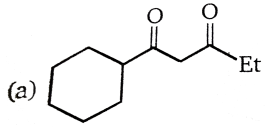
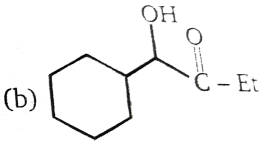
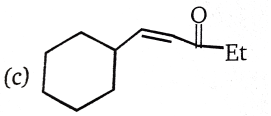
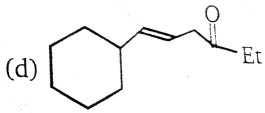
27. 

Chemist added extra 0.5 mole of $Et - Li$ in above reaction to obtain product (A), which is ?

A. 

B. 

C. 

D. 

Answer: B

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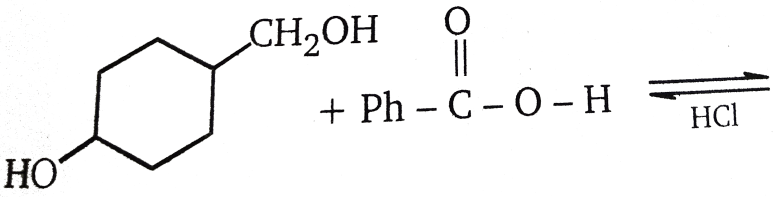
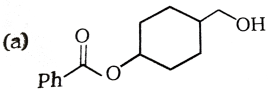
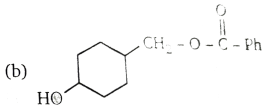
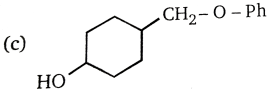
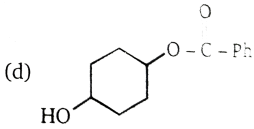


28. Major product of above esterification reaction is :

A. 

B. 

C. 

D. 

Answer: B

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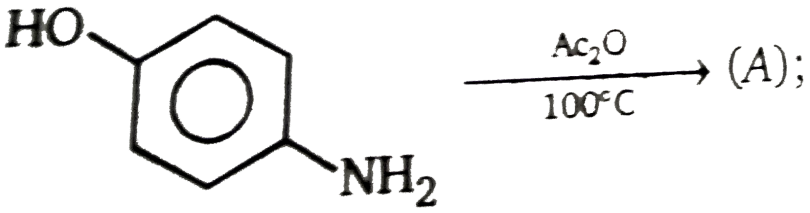
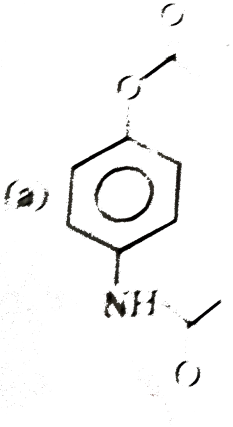
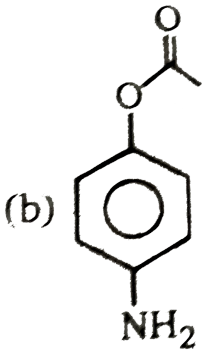
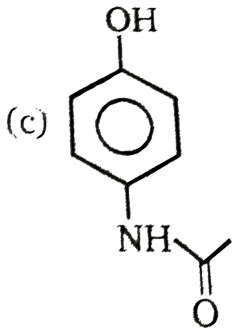
29. 

Product (A) of reaction is :

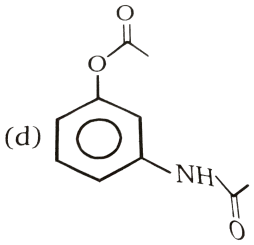
A. 

B. 

C.



D.



Answer: C

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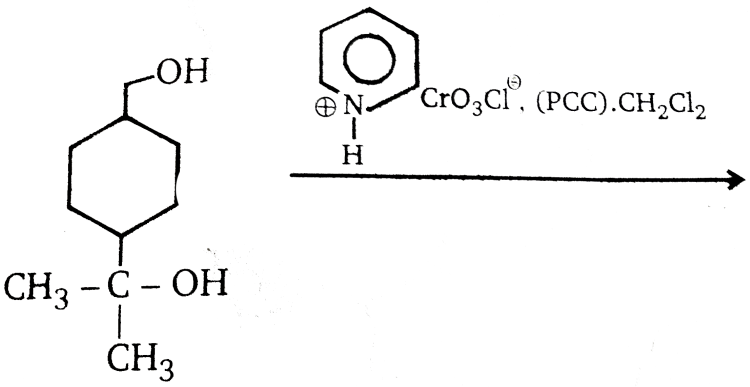
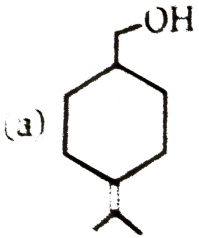
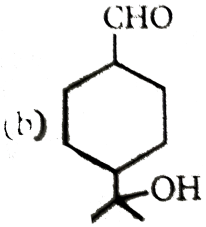


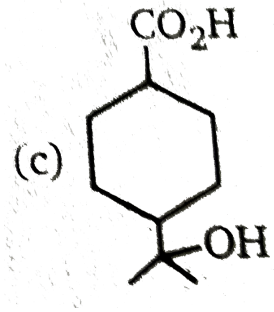
30. Product of the reaction is :

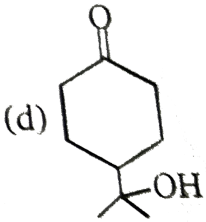
A.



B.



C. 

D. 

Answer: B

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31. Which is the best reagent to convert isopropyl alcoholto isopropyl bromide?

$$CH_3 - \overset{CH_3}{\overset{|}{C}}H - OH \xrightarrow{?} CH_3 - \overset{CH_3}{\overset{|}{C}}H - Br$$

A. HBr

B. $SOBr_2$

C. Br_2

D. CH_3MgBr

Answer: B

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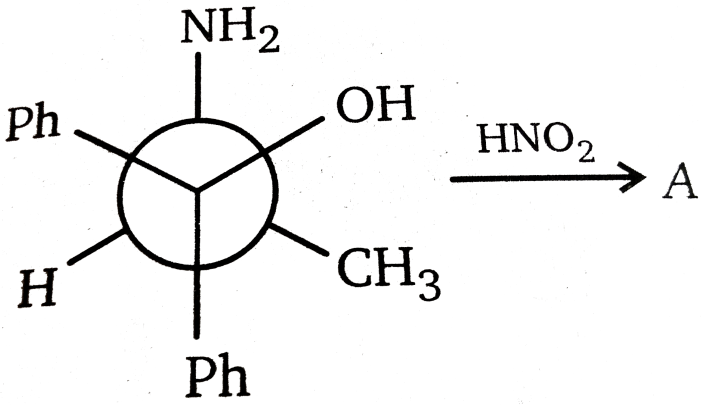
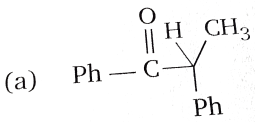
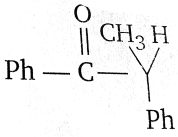


32.

Major product obtained in the above reaction is :

A.



(b) 

B.

C. Racemic

D. Diastereomers

Answer: A

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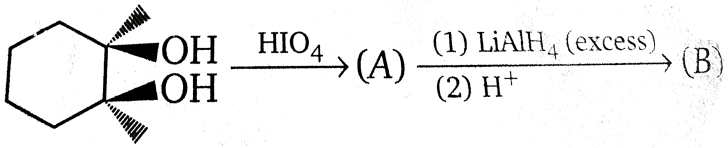
33.



Total number of stereoisomers of product (B) will be :

A. 2

B. 3

C. 4

D. 5

Answer: B

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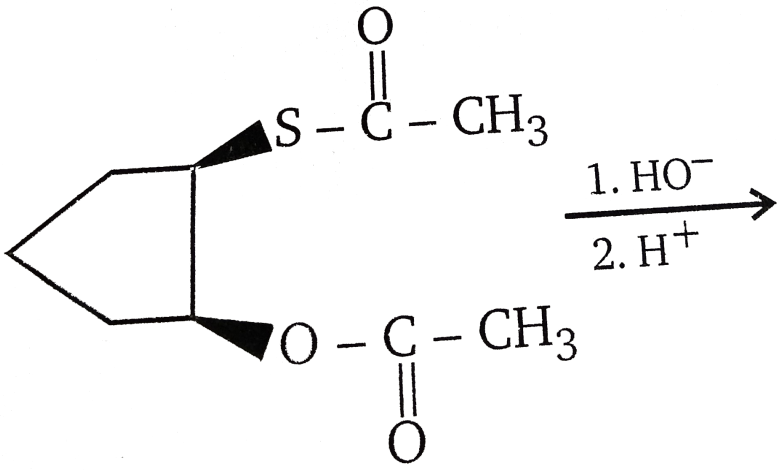
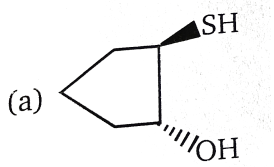
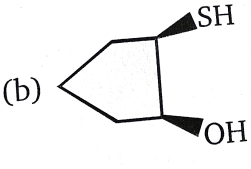


34. Major product of the reaction is :

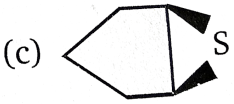
A.



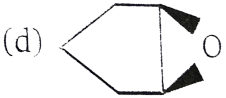
B.



C.



D.



Answer: B

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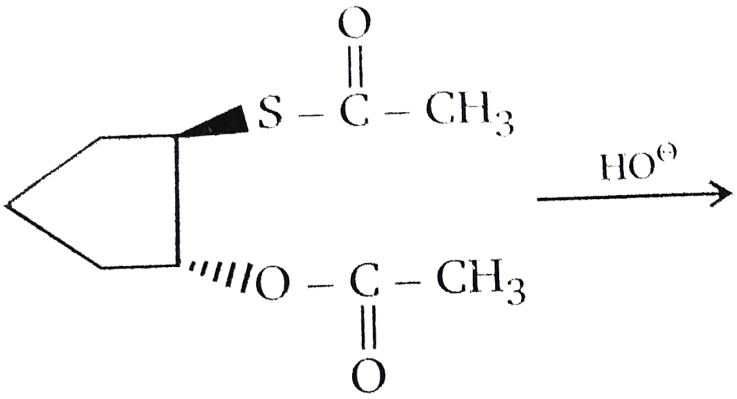
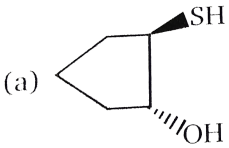
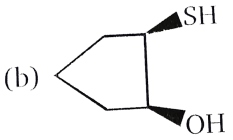
35. Complete the following reaction



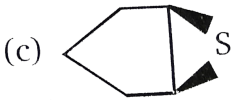
A.



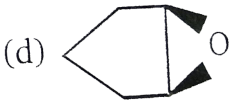
B.



C.



D.



Answer: C

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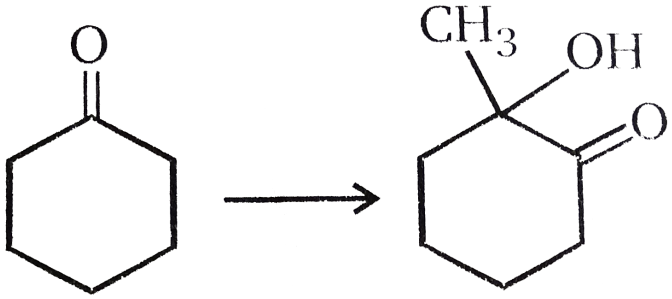

36.

CH_3MgBr/H^+ $KMnO_4$ (cold dil.) CrO_3 H^+/Δ

(1) (2) (3) (4)

For the above conversion the correct order of reagents used is :

A. $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$

B. $1 \rightarrow 4 \rightarrow 3 \rightarrow 2$

C. $1 \rightarrow 4 \rightarrow 2 \rightarrow 3$

D. $2 \rightarrow 3 \rightarrow 4 \rightarrow 1$

Answer: C

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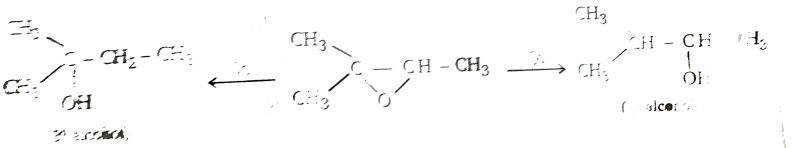

37.

find missing reagents.

A. $x = LiAlH_4, y = NaBH_4$

B. $x = LiAlH_4 / AlCl_3, y = LiAlH_4$

C. $x = LiAlH_4, y = LiAlH_4 / AlCl_3$

D. $x = H_2 / Ni, y = H_2 / Pt$

Answer: C

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38. In solvolysis of 1, 2 -dimethyl propyl p-toluene sulfonate in acetic acid at $75^\circ C$, (alkene + substitution products) will be formed by mechanism?

A. S_{N^2}, E_2

B. S_{N^2}, E_1

C. S_{N^1}, E_2

D. S_{N^1}, E_1

Answer: D

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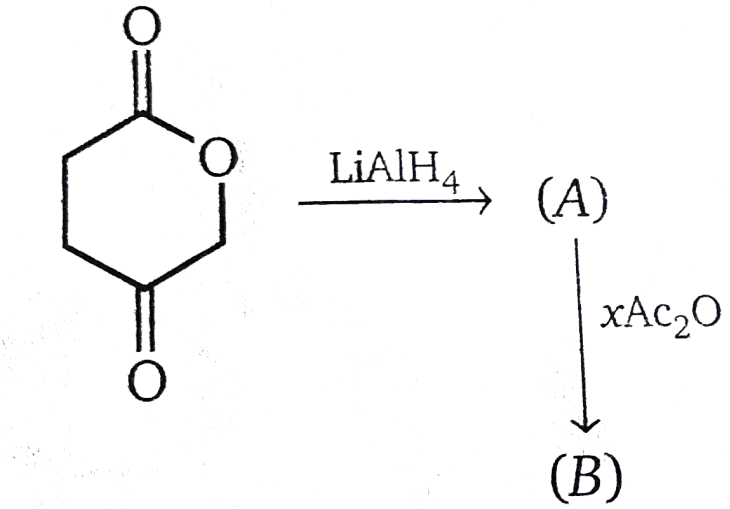

39.

$x =$ moles of anhydride consumed

A. 1

B. 2

C. 3

D. 4

Answer: C

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40. Identify product when (R) - and (S) -2 - butanol reacts with (R, R) tartaric acid in acidic medium.

A. Racemic

B. Diastereomer

C. Meso

D. Pure enantiomer

Answer: B

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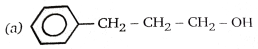
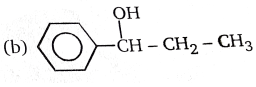
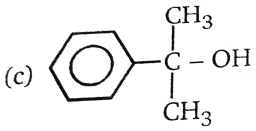
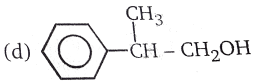
41. An alcohol of formula $C_9H_{12}O$ reacts with $Na_2Cr_2O_7$ to form a compound having formula $C_9H_{10}O$. The original alcohol might be :

A. 

B. 

C. 

D. 

Answer: B

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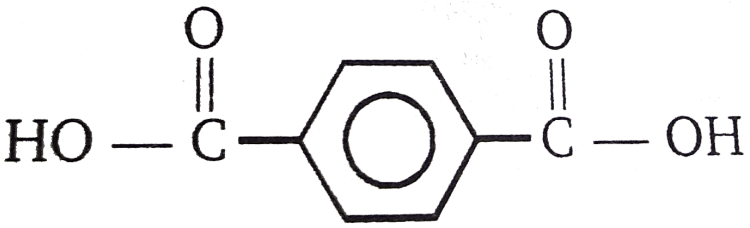
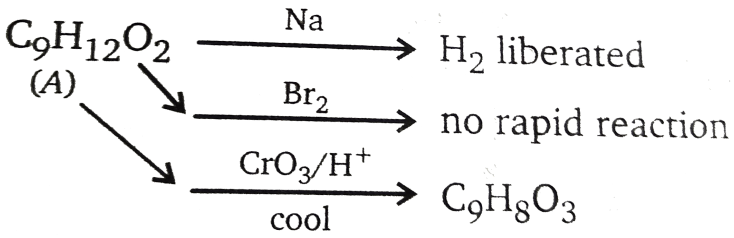
42. An optically active alcohol of formula $C_9H_{12}O_2$ produced the following compound when refluxed with $KMnO_4$.

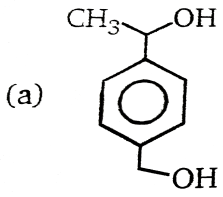


The original compound showed these properties also :

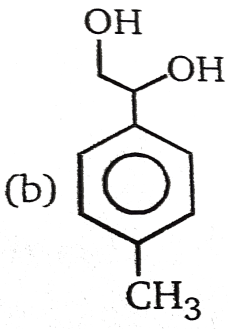


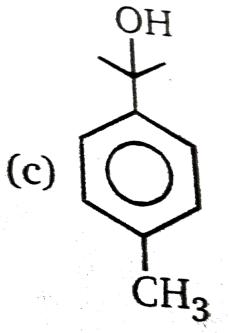
What is structure of (A) ?

A.



B.



C. 

D. both (a) and (b)

Answer: D

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43. Which are not cleaved by HIO_4?

I : glycerol II : glycol

III : 1, 3-propenediol IV : methoxy - 2 - propanol

A. I, II, III, IV

B. I, II

C. II, III

D. III, IV

Answer: D

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44. Which of the following reaction required an oxidising agent ?

A. $CH_3 - CH = CH_2 \rightarrow CH_3 - CH_2 - CH_3$

B. $CH_3 - CH_2OH \rightarrow CH_3CHO$

C. $CH_3 - CH_2Cl \rightarrow CH_3 - CH_3$

D. $CH_3 - CH_2OH \rightarrow CH_3 - CH_2Cl$

Answer: B

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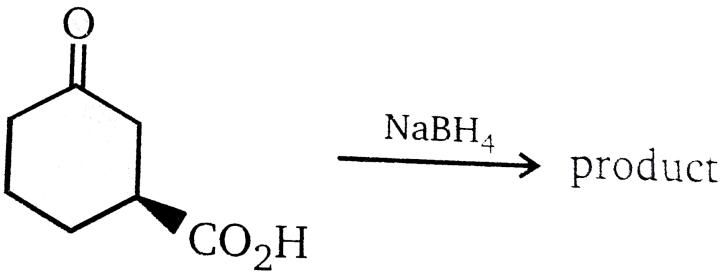
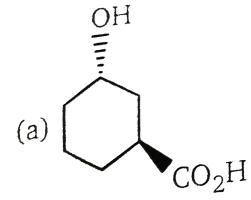
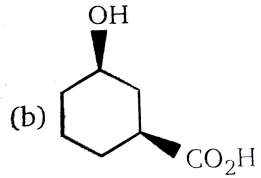
45. What is the major product of the following reaction ?



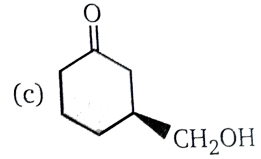
A.



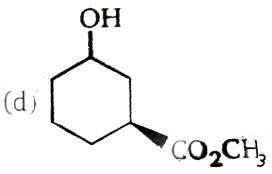
B.



C.



D.



Answer: A

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46. Which of the estes shown, after reduction with $LiAlH_4$ and aqueous workup, will yield two molecules of only a single alcohol ?

A. $CH_3CH_2CO_2CH_2CH_3$

B. $C_6H_5CO_2CH_2C_6H_5$

C. $C_6H_5CO_2C_6H_5$

D. None of these

Answer: B

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47. For the following reaction, select the statement that best describes the change.

$RCH_2OH + PCC\left[C_5H_5NH^+ClCrO_3^-\right] \rightarrow$

A. The alcohol is oxidized to an acid, and the $Cr(VI)$ is reduced

B. The alcohol is oxidized to an aldehyde, and the $Cr(VI)$ is reduced

C. The alcohol is reduced to an aldehyde, and the $Cr(III)$ is oxidized

D. The alcohol is oxidized to a ketone, and the $Cr(VI)$ is reduced

Answer: B

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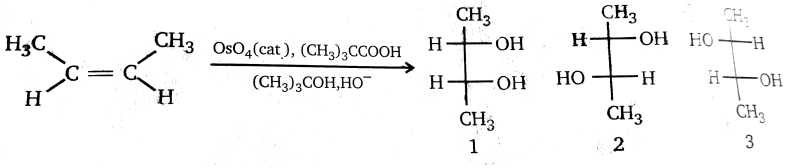
48. What is the product of the following reaction ?



A. Only 1

B. 1 : 1 mixture of 2 and 3

C. Only 2

D. 1 : 1 : 1 mixture of 1, 2, and 3

Answer: A

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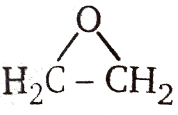
49. An organic compound B is formed by the reaction of ethylmagnesium iodide (CH_3CH_2MgI) with a substance A, followed by treatment with dilute aqueous acid. Compound B does not react with PCC in dichloromethane. Identify A ?

A. $CH_3 - \overset{O}{\overset{||}{C}} - H$

B. $CH_3CH_2\overset{O}{\overset{||}{C}}CH_3$

C. $H_2C = O$

(d) 

D.

Answer: B

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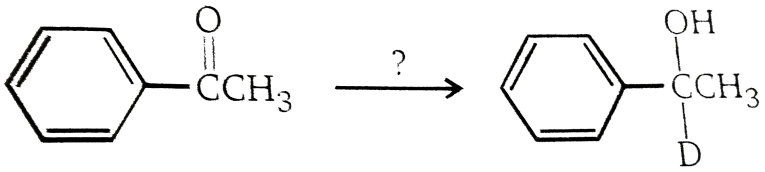
50. Which of the following reagents would carry out the following transformation ? $\left(D = {}^{2}H\right)$



A. $NaBD_4$ in CH_3OH

B. $LiAlH_4$, then D_2O

C. $NaBD_4$ in CH_3OD

D. $LiAlD_4$, then D_2O

Answer: A

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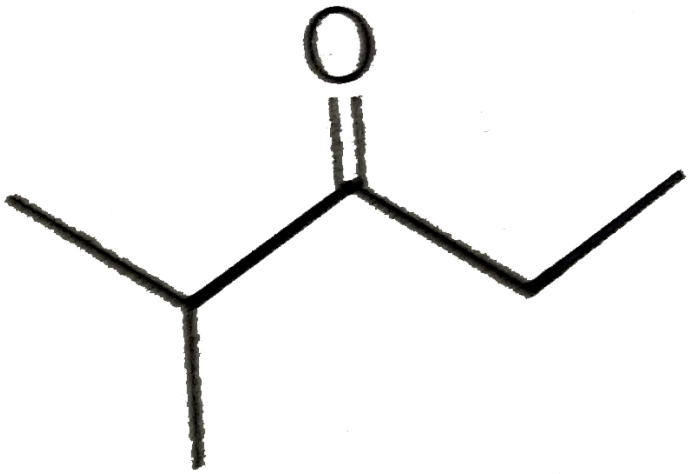
51. Which sequence of step describes the best synthesis of 2 - methyl-3-pentaneous ?



A. (1) 1- Propanol $+(CH_3)_2CHMgBr$, diethyl ether

(2) H_3O^+

(3) PCC, CH_2Cl_2

B. (1) 1-Propanol $+Na_2Cr_2O_7$, H_2SO_4, H_2O, heat

(2) $SOCl_2$

(3) $(CH_3)_2CHCl$, $AlCl_3$

C. (1) 1-Propanol $+PCC, CH_2Cl_2$

(2) $(CH_3)_2CHLi$, diethyl ether

(3) H_3O^+

(4) $Na_2Cr_2O_7, H_2SO_4, H_2O$, heat

D. (1) 2-Propanol $+Na_2Cr_2O_7, H_2SO_4, H_2O$, heat

(2) $CH_3CH_2CH_2Li$, diethyl ether

(3) H_3O^+

(4) PCC, CH_2Cl_2

Answer: C

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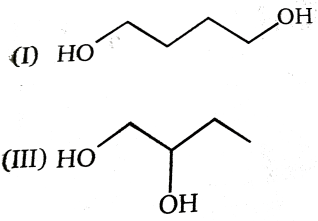
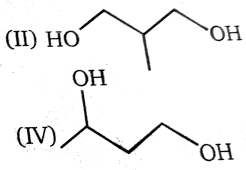
52. Diols (I-IV) which react with CeO_3 in aqueous H_2SO_4 and yield products that redily under fo dercarboxylation on heating are :





A. I and II

B. II and III

C. II and IV

D. I and IV

Answer: C

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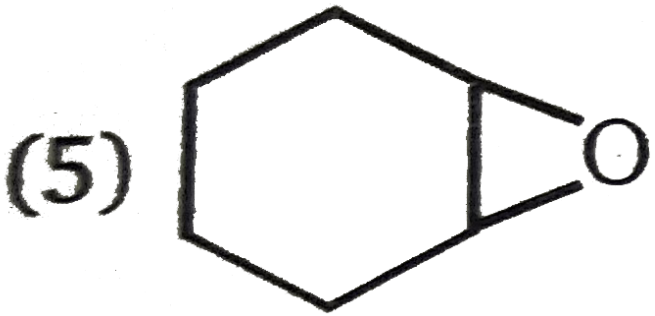
53. Which of the following compounds are not oxidized by HIO_4 ?

(1) $\begin{matrix} CH_3-CH-OH \\ | \\ CH_2-OH \end{matrix}$

(2) $\begin{matrix} CH_3-C=0 \\ | \\ H-C=O \end{matrix}$

(3) $\begin{matrix} CH_3-C=O \\ | \\ CH_3-C=O \end{matrix}$

(4) $\begin{matrix} CH_3-C=O \\ | \\ CH_3-CH-NH_2 \end{matrix}$



(5)

(6) $\begin{matrix} CH_2-OCH_3 \\ | \\ CH_2-OH \end{matrix}$ (7) $\begin{matrix} O \\ \| \\ C-OH \\ | \\ CH_2-OH \end{matrix}$

A. 5, 6, 7

B. 4, 5, 6, 7

C. 6, 7

D. 3, 4, 5, 6, 7

Answer: C

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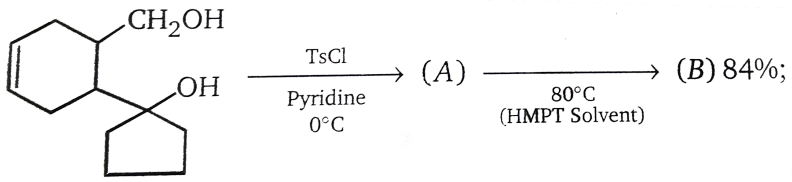
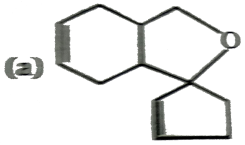
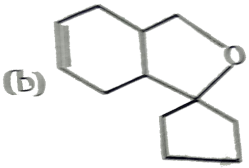
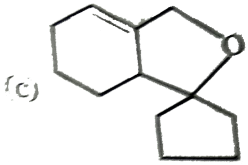
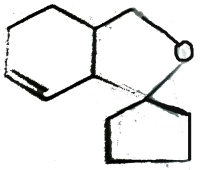


54. Final product (B) will be :

A. 

B. 

C. 

D. 

Answer: B

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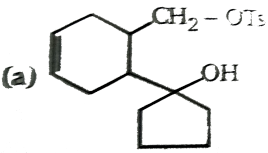
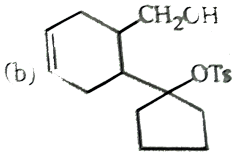
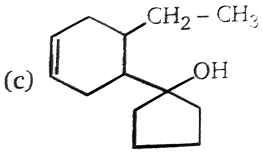
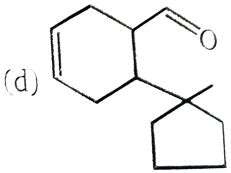
55. Unknown (A) in the reaction (given in Q. 55) is :

A. 

B. 

C. 

D. 

Answer: A

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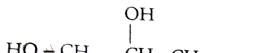
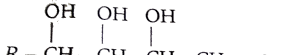
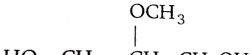
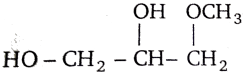
56. In the given table, identify the incorrect option, the digit in box indicate the moles of that substance.

	Reactant	HIO_4 consumed	HCO_2H formed	HCHO formed
(a)		2	1	2
(b)		3	2	1
(c)		0	0	0
(d)		1	1	1

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57. Succinic acid $\xrightarrow{\Delta} (A) \xrightarrow[\Delta]{NH_3} (B) \xrightarrow[KOH]{Br_2} (C)$, Product (C) will be :

A. $\begin{array}{l} CH_2 - CO_2H \\ | \\ CH_2 - CH_2 - NH_2 \\ CH_2 - CO_2H \end{array}$

B. $\begin{array}{l} CH_2 - NH_2 \\ | \\ CH_2 - CO_2^- K^+ \end{array}$

C. $\begin{array}{l} CH_2 - NH_2 \\ | \end{array}$

$CH_2 - CO_2H$

D. |

$CH_2 - CH_2 - Br$

Answer: C

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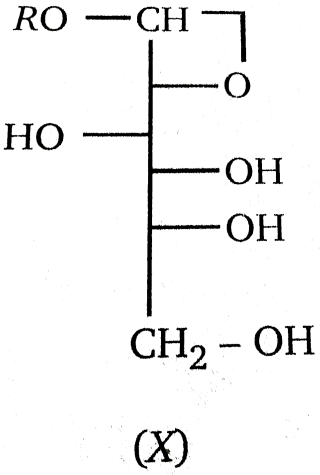
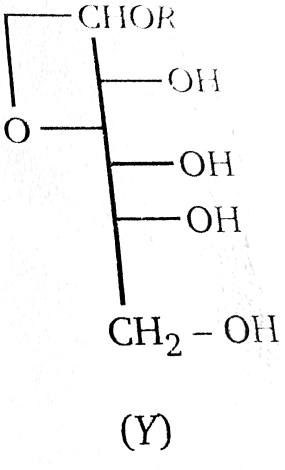
58. Given are the structures of cyclic D- glucoside. Moles of HIO_4 consumed with X and Y are ..... Respectively:



(X)



(Y)

A. 2, 2

B. 3, 3

C. $2, 3$

D. $3, 2$

Answer: A::D

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59. Moles of formic acid formed in x and Y respectively are :

A. $1, 2$

B. $2, 1$

C. $2, 3$

D. $3, 2$

Answer: B

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60. Moles of $HCHO$ formed are :

A. $1, 1$

B. $2, 2$

C. $1, 2$

D. $2, 1$

Answer: A::C

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61. In which of the following group, each member gives positive iodoform test?

A. methanol, ethanol, propanone

B. ethanol, isopropanal, methanal

C. ethanol, ethanal, isopropyl

D. propanal, propanol-2, propanone

Answer: C

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62. $H_2O^{18} + Na \rightarrow \underset{\text{(base)}}{(A)} + (B)$

$CH_3 - \overset{O}{\overset{||}{C}} - O - CH_2 - CH_3 + (A) \rightarrow (C) + (D)$ alcohol

Product (C) of the reaction is :

A. $CH_3 - \overset{O}{\overset{||}{C}} - \underset{18}{O} - H$

B. $CH_3 - \overset{O^{18}}{\overset{||}{C}} - O - H$

C. $CH_3 - \overset{O}{\overset{||}{C}} - O^{-18}$

D. $CH_3 - \overset{O}{\overset{||}{C}} - O^{\Theta}N\overset{\oplus}{a}$

Answer: C

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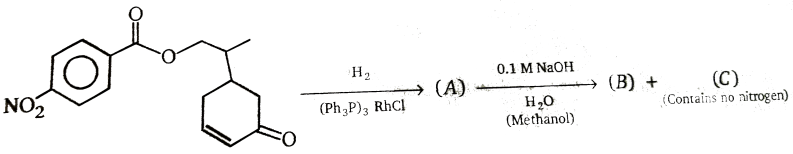
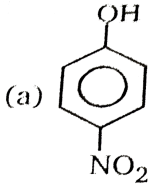
63.

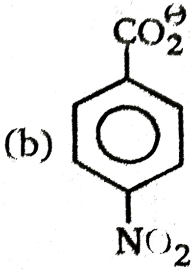


Product (B) of the reaction is :

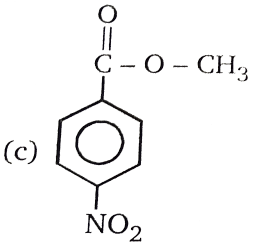
A.



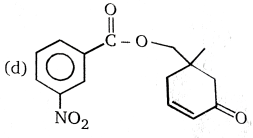
B.



C.



D.



Answer: A::B

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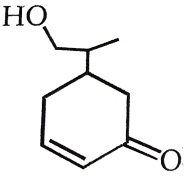
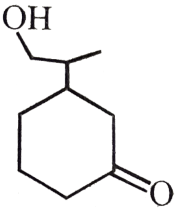
64. Product (C) of above reaction is :

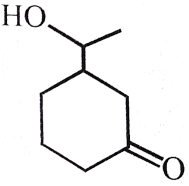
A. (a)



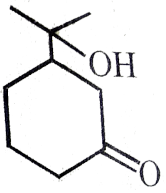
B. (b)



C. (c)



D. (d)



Answer: B

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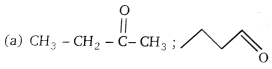
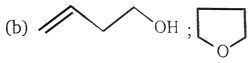
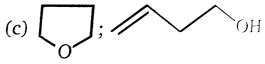
65. The unknown compounds X and Y, both having molecular formula C_4H_8O, give following results with four chemical tests.

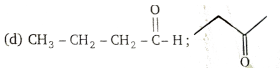
	Bromine	Na metal	Chromic acid	Lucas reage
Compound X	decolourises	bubbles	Orange to Green	No reaction
Compound Y	No reaction	No reaction	No reaction	No reaction

Compound X and Y respectively are :

A. 

B. 

C. 

D. 

Answer: B

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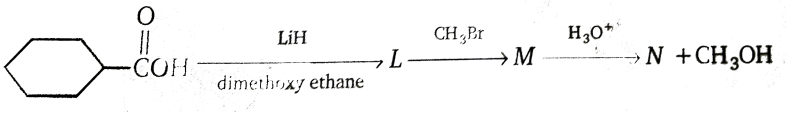
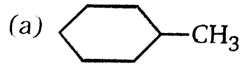
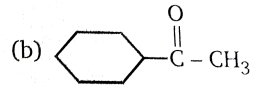
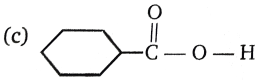
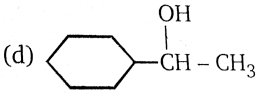
66. 

Product (N) is :

A. 

B. 

C. 

D. 

Answer: C

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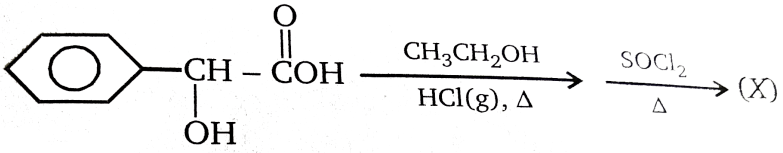
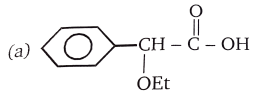
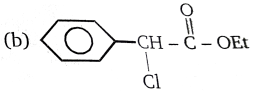
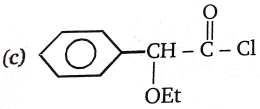
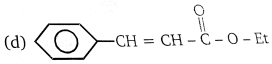
67. Assign the structure of major product (X) of the reaction given below.



A. 

B. 

C. 

D. 

Answer: B

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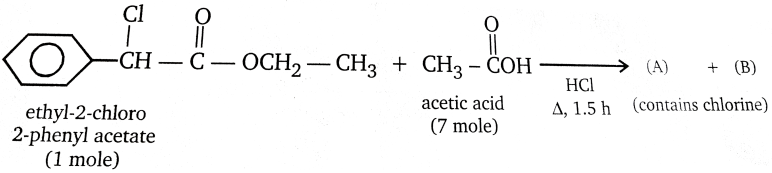
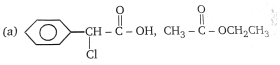
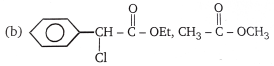
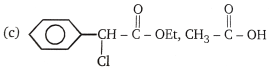
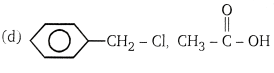
68. 

Product (A) and (B) respectively in the above reaction are :

A. 

B. 

C. 

D. 

Answer: A

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69.

$$\underset{\substack{\text{methylacrylate}\\ \text{bpt } 81^\circ C}}{H_2C=CH-\overset{O}{\overset{||}{C}}-OCH_3} + \underset{\substack{\text{n- butyl alcohol}\\ \text{bpt } 117^\circ C}}{CH_3CH_2CH_2OH} \xrightarrow[TsOH,\,\Delta]{} \underset{\text{dpt, } 145^\circ C}{(A)} + \underset{\text{dpt } 6}{CH_3}$$

Product (A) of above reaction is :

A. $H_2C=CH-\overset{O}{\overset{||}{C}}-OCH_2CH_2CH_3$

B. $H_2C=CH-\overset{O}{\overset{||}{C}}-O-CH(Me)_2$

C. $H_2\underset{OCH_3}{\underset{|}{C}}-CH_2\overset{O}{\overset{||}{C}}-OCH_3$

D. $H_3C-(CH_2)_4-\overset{O}{\overset{||}{C}}-O-CH_3$

Answer: A

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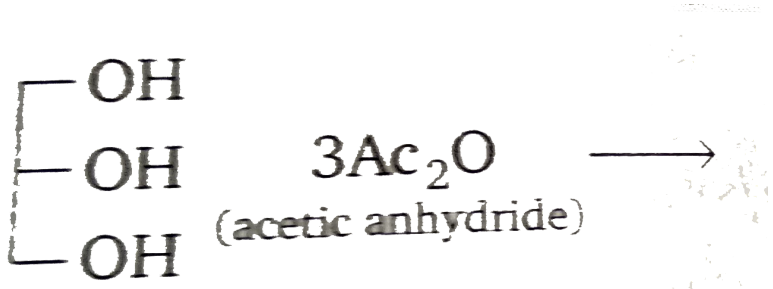
70.



In above reaction molecular formula of glycerol increases by:

A. $C_4H_4O_2$

B. $C_6H_6O_6$

C. $C_6H_6O_2$

D. $C_6H_6O_3$

Answer: D

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71. Give the best condition for this tranformation:

A. CH_3OH, H^+ (cat.), heat

B. H_2O, H^+ (cat.), heat

C. Mg, ether, CH_3OH

D. $SOCl_2$, CH_3OH

Answer: A

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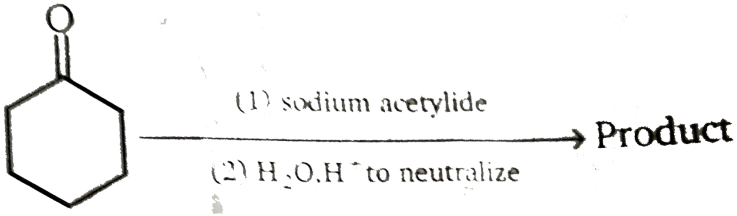
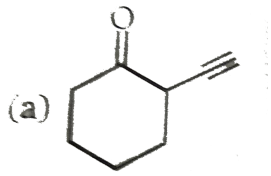
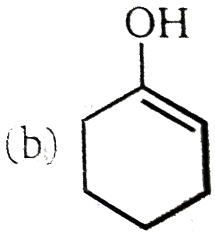
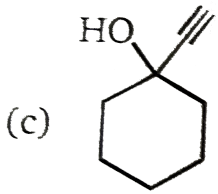
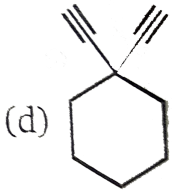
72. Give the major organic product of the following reaction.



A. 

B. 

C. 

D. 

Answer: C

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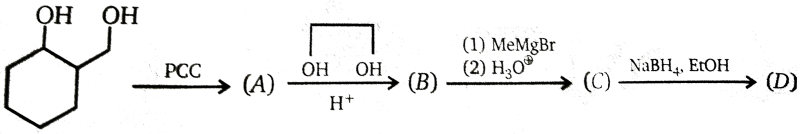
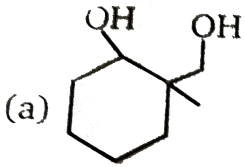
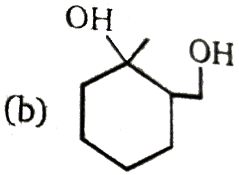
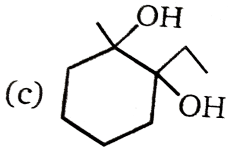
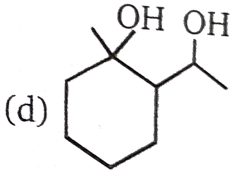
73. 

Product (D) in above reaction is :

A. 

B. 

C. 

D. 

Answer: B

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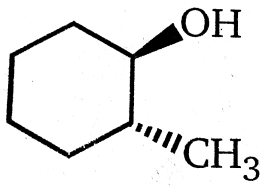
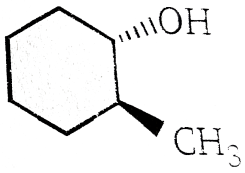
74. Select the best method for the preparation of the following compounds :



and



A. reaction of cyclohexanone with CH_3Li

B. reaction of 1- methylcyclohexene with $Hg(Oac)_2$ followes by $NaBH_4$

C. reaction of cyclohexene with BH_3, $NaOH/H_2O_2$, following by CH_3Br

D. reaction of cyclohexene with $MCPBA$, followed by CH_3MgBr

Answer: D

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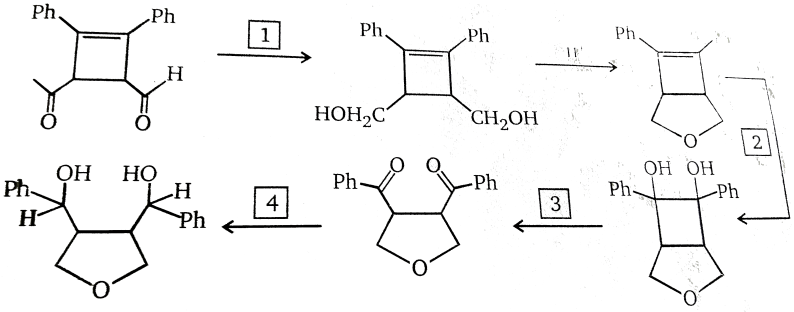
75. Indentify the reagents (1-4), required for the transformations shown and arrange them in correct order.



(1) $LAH(LiAlH_4)$ (2) OsO_4

(3) $NaIO_4$ (4) $NaBH_4$

A. $1 \rightarrow 3 \rightarrow 4 \rightarrow 2$

B. $2 \rightarrow 3 \rightarrow 1 \rightarrow 4$

C. $2 \rightarrow 1 \rightarrow 3 \rightarrow 4$

D. $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$

Answer: D

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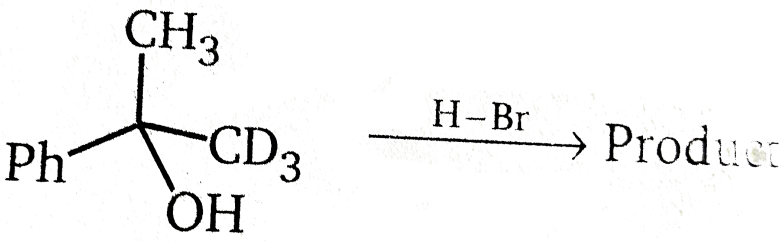
76. Which describes the best stereochemical aspects of the following reaction ?



A. Inversion of configuration occurs at the carbon undergoing sunstitution.

B. Retention of configuration occurs at the carbon undergoing substitution.

C. Racemization (loss of configuration) occurs at the carbon undergoing substitution.

D. The carbon undergoing substitution is not stereogenic

Answer: C

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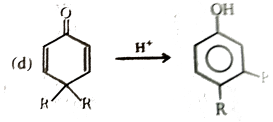
77. Which of following is an example of Pinacol-Diazotization?

A. $Me_2\underset{OH}{\overset{|}{C}} - \underset{Br}{\overset{|}{C}}Me_2 \xrightarrow{Ag^+} Me - \overset{\overset{O}{||}}{C} - CMe_3$

B. $Me_2\underset{OH}{\overset{|}{C}} - \underset{NH_2}{\overset{|}{C}}Me_2 \xrightarrow[HCl]{NaNO_2} Me - \overset{\overset{O}{||}}{C} - CMe_3$

C. $Me_2\underset{OH}{\overset{|}{C}} - \underset{OH}{\overset{|}{C}}Me_2 \xrightarrow{H^\oplus} Me - \overset{\overset{O}{||}}{C} - CMe_3$

D.



Answer: B

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78. $\underset{C_5H_{10}O}{(A)} \xrightarrow{H_3O^\oplus} B + C$, (B) and (C)both give +ve iodoform test. compound (A) is :

A. $CH_3 - CH = CH - O - CH_2 - CH_3$

B. $CH_3 - \overset{\overset{H}{|}}{\underset{|}{\underset{CH_3}{C}}} - O - CH_2 - CH_3$

C. $CH_3 - \underset{\underset{CH_2}{||}}{C} - O - CH_2 - CH_3$

D. both (b)and (c)

Answer: D

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79. Asolution of Ph_3CCO_2H in conc. H_2SO_4 gives (X) when poured into methanol X is :

A. $Ph_2C - \overset{\overset{O}{||}}{C} - O - CH_3$

B. $Ph_2CH - \overset{\overset{O}{||}}{C} - O - CH_3$

C. $Ph_3C - OCH_3$

D. $Ph_3C - CH_3$

Answer: C

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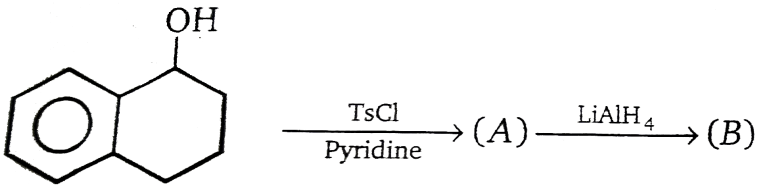
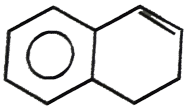
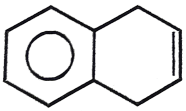
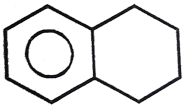
80.

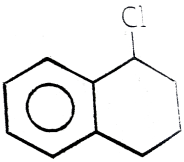


Product (B) of the above reaction is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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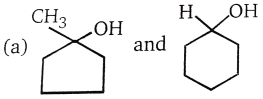
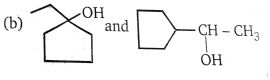
81. In the given pair of alcohol, in which pair second alcohol is more reactive than first towards hydrogen bromide?

A. 

B. 

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

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

D. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - CH_3$ and $(CH_3)_2 \underset{\underset{OH}{|}}{C} - CH_2 - CH_3$

Answer: D

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82. Rank the transition states that occur during the following reaction steps in order of increasing stability (least $\rightarrow$ stable)

1. $H_3C - \overset{+}{O}H_2 \rightarrow CH_3^+ + H_2O$

2. $(CH_3)_3C - \overset{+}{O}H_2 \rightarrow (CH_3)_3C^+ + H_2O$

3. $(CH_3)_2CH - \overset{+}{O}H_2 \rightarrow (CH_3)_2CH^+ + H_2O$

A. $1 < 2 < 3$

B. $2 < 3 < 1$

C. $1 < 3 < 2$

D. $2 < 1 < 3$

Answer: C

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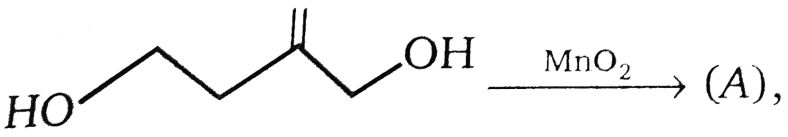
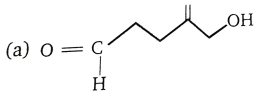
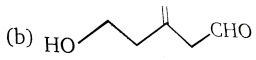
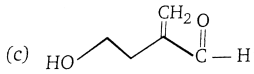


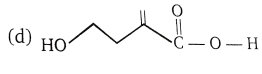
83. Product

(A) is :

A. 

B. 

C. 

D. 

Answer: C

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84. In which of the following reaction hydrogen gas will not be evolved?

A. $CH_3 - CH_2 - OH \xrightarrow{Na}$

B. $CH_3 - CH_2 - OH \xrightarrow{K}$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - OH \xrightarrow{Al}$

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - OH \xrightarrow{CH_3MgBr}$

Answer: D

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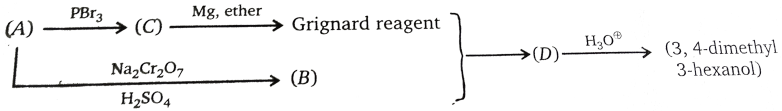
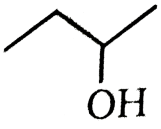
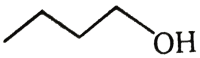
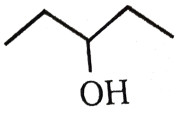
85.

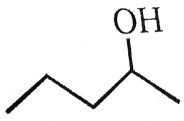


When Grignard reagent reacts with (B) product (D) will obtained. Reactant (A) of the above reaction is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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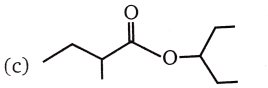
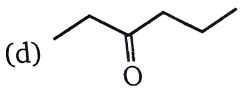
86. $(A) \xrightarrow{LiAlH_4} \underset{\text{(Chiral alcohol only)}}{2(B)}$, structure of (A) is :

A. $CH_3 - \underset{\underset{Et}{|}}{CH} - \overset{\overset{O}{||}}{C} - O - \underset{\underset{Et}{|}}{CH} - CH_3$

B. $CH_3 - \underset{\underset{Et}{|}}{CH} - \overset{\overset{O}{||}}{C} - O - CH_2 - \underset{\underset{Et}{|}}{CH} - CH_3$

C. 

D. 

Answer: B

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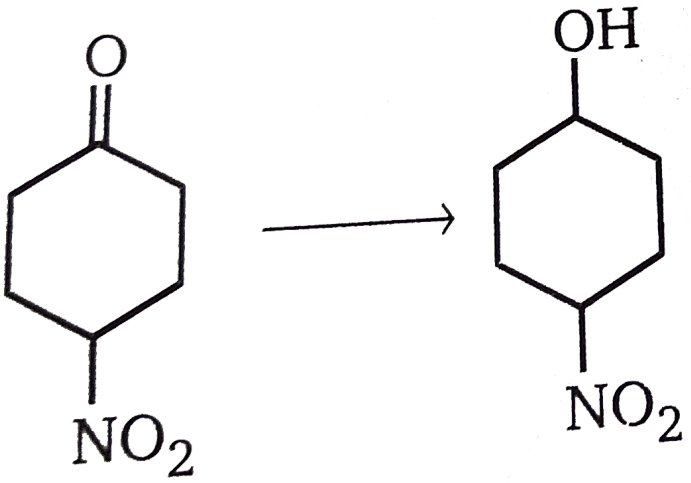

87.

Above conversion can be achieved by :

A. $LiAlH_4$

B. $NaBH_4$

C. NH_2 / Ni

D. CrO_3

Answer: B

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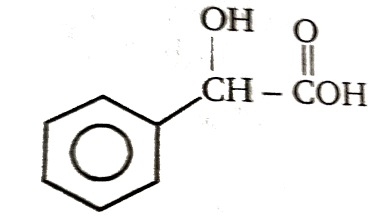
88.

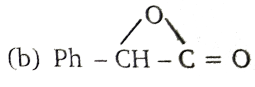


(Mandelic acid)

$+ \text{EtOH} \xrightarrow[\text{HCl}]{} (86\%)$

Identify product of above Fischer esterification reaction :

A. $Ph - \underset{\displaystyle O - Et}{\underset{|}{CH}} - CO_2H$

B. 

C. $Ph - \underset{\displaystyle OH}{\underset{|}{CH}} - CO_2Et$

D. $Ph - \underset{\displaystyle OH}{\underset{|}{CH}} - \overset{\displaystyle O}{\overset{||}{C}} - Et$

Answer: C

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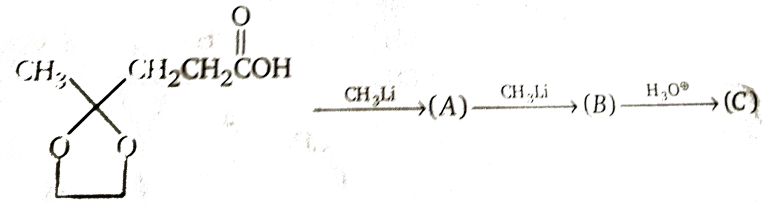
89.



Product (C) of the above reaction is :

A. $CH_3 - \overset{\overset{O}{\|}}{C} - CH_2 - CH_2 - \overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_3$

B. $CH_2 - \overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2 - CH_2 - \overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_3$

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

D. $CH_3 - \overset{\overset{O}{\|}}{C} - CH_2 - \overset{\overset{O}{\|}}{C} - CH_3$

Answer: C

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90. What is the product of the following reaction ?

$$CH_3 - \overset{OH}{\overset{|}{C}}H - CH_2 - CH_2 - OH \xrightarrow[\text{Pyridine cold}]{CrO_3} \text{Product}$$

A. $CH_3 - \overset{OH}{\overset{|}{C}}H - CH_2 - \overset{O}{\overset{||}{C}} - H$

B. $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - \overset{O}{\overset{||}{C}} - H$

C. $CH_3 - oberset(O)\overset{||}{C} - CH_2 - \overset{O}{\overset{||}{C}} - OH$

D. $CH_3 - \overset{OH}{\overset{|}{C}}H - CH_2 - \overset{O}{\overset{||}{C}} - OH$

Answer: B

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91. The major reason that phenol is a better Bronsted acid than cyclohexanol is that :

A. it is a better proton donor.

B. the cyclohexyl group is an electron donating group by induction, which destabilizes the anion formed in the reaction by resonance.

C. phenol is able to stabilize the anion formed in the reaction.

D. the phenyl group is an electron withdrawing group by induction, which stabilizes the anion formed in the reaction.

Answer: D

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92. Which of these reagents would accomplish the following reduction?

$$N \equiv C - CH_2 - \overset{\overset{O}{||}}{C} - CH_2 - CH = CH_2 \rightarrow N \equiv C - CH_2 - \underset{\underset{H}{|}}{\overset{\overset{OH}{|}}{C}} - CH$$

A. $NaBH_4$

B. $LiAlH_4$

C. 1 mole H_2, poisoned catalyst, low presuure

D. H_3O^+

Answer: A

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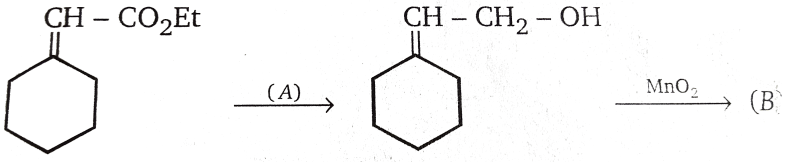
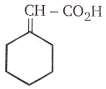
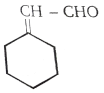
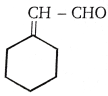
93.

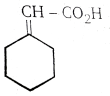


Identify A and B :

A. (a) $A = NaBH_4, B =$ 

B. (b) $A = NaBH_4, B =$ 

C. (c) $A = LiAlH_4, B =$ 

D. (d) $A = LiAlH_4, B =$ 

Answer: C

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94. $Ph - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_3 \xrightarrow{K} \xrightarrow{C_2H_5Br} (A)$

Product (A) in above reaction is :

A. $Ph - CH_2 - \underset{\underset{OEt}{|}}{CH} - CH_3$, (inversion)

B. $Ph - CH_2 - \underset{\underset{OEt}{|}}{CH} - CH_3$, (retention)

C. $Ph - CH_2 - \underset{\underset{OEt}{|}}{CH} - CH_3$, (racemic)

D. $Ph - CH = CH - CH_3$

Answer: B

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95. $Ph - \overset{\overset{O}{||}}{C} - O - H + CH_3 - O^{18} - H \overset{H^+}{\Longleftrightarrow} (X) + H_2O$, Identify X,

A. $X = Ph - \overset{\overset{O}{||}}{C} - O^{18} - CH_3$ (Trans esterification)

B. $X = Ph - \overset{O}{\overset{||}{C}} - O^{18} - CH_3$ (Esterification reaction)

C. $X = Ph - \overset{O}{\overset{||}{C}} - O^{18} - CH_3$ (Saponification)

D. $X = Ph - \overset{O}{\overset{||}{C}} - \ - CH_3$ (Hydrolysis)

Answer: B

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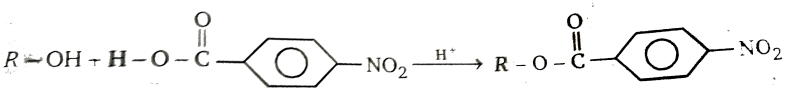

96.

Fastest rate of reaction will be when R is :

A. $CH_3 -$

B. $CH_2 - CH_2$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} -$

D. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} -$

Answer: A

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97. Select the correct statement.

A. Solvolysis of $(CH_3)_2C = CH - CH_2 - Cl$ in ethanol is over 6000 times greater than alkyl chloride $(25^\circ C)$

B. $CH_3 - CH = CH - CH_2 - OH$ when reacts with HBr give a mixture of 1-bromo-2- butene and 3-bromo 1-butene

C. When solution of 3-butene -2-ol in aqueous sulphuric acid is allowed sulphuric acid is allowed to stand for one week, it was found to contain both 3-buten -2-ol and 2-buten -1-ol

D. All of these

Answer: D

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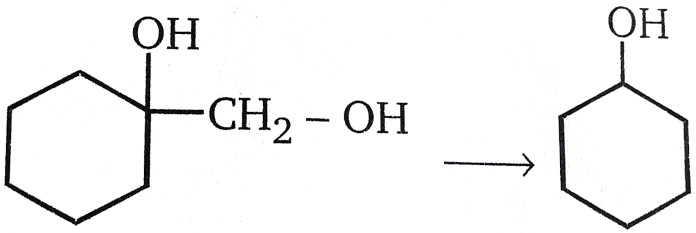

98. Above transformation can be carried out by :

A. $H^+/\Delta, Zn(Hg), HCl$

B. $HIO_4, LiAlH_4$

C. $HIO_4, H^+/\Delta$

D. $H^+/\Delta, HIO_4$

Answer: B

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99.

$$H_2C = CH - CH_2 - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_3 \xrightarrow[\text{Pyridine}]{SOCl_2} (A) \xrightarrow[(H_2O)]{O_3/Zn} \underset{C_5H_9ClO}{(B)}$$

compound (C) is :

A. $CH_3 - \overset{\overset{OH}{|}}{CH} - CH_2 - \underset{\underset{Cl}{|}}{CH} - CH_3$

B. $HOCH_2 - CH_2 - CH_2 - CH_2 - CH_2 - CH_2 - Cl$

C. $HO - CH_2 - CH_2 - CH_2 - \overset{\overset{Cl}{|}}{CH} - CH_3$

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

Answer: C

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100. Iodoform can be obtained on warming $NaOH$ and iodine with :

A. $CH_3CH_2CH(OH)CH_3$

B. $(CH_3)_2CH\overset{\overset{O}{||}}{C}C_2H_5$

C. $CH_3 - \underset{\underset{O}{||}}{C} - OCH_3$

D. $(CH_3)_2CHCH_2OH$

Answer: A

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101. Which of these is a reducing agent ?

A. CrO_3 / H^+

B. $KMnO_4$

C. $LiAlH_4$

D. O_3

Answer: C

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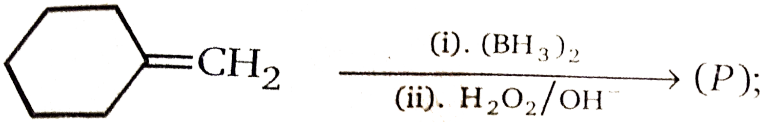
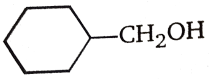
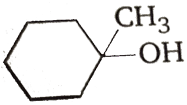
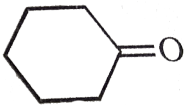


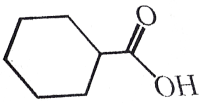
102. Product

(P) in the reaction is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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103. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}} - CH_3 \xrightarrow[\text{cool}]{Na_2Cr_2O_7} (P)$, Product (P) in the reaction is :

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

B. $CH_3 - \overset{\overset{CH_3}{|}}{CH} - CH_3$

C. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - O - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_3$

D. No reaction

Answer: D

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104. 1, 2, 3- butanetriol undergoes oxidative cleavage of HIO_4. During this process

A. 1 equivalent of HIO_4 consumed & HCO_2H & $H_3C - \underset{\underset{O}{||}}{C} - CO_2H$

are formed

B. 2 equivalents of HIO_4 consumed & HCO_2H (2 eq.) & 1 eq. of CH_3CO_2H are formed

C. 3 equivalents of HIO_4 consumed & HCO_2H (2 eq.) & 1 eq. of CH_3CO_2H are formed

D. 2 equivalents of HIO_4 consumed & 2 eq. of HCO_2H & 1 eq. of $CH_3CH=O$ is formed

Answer: B

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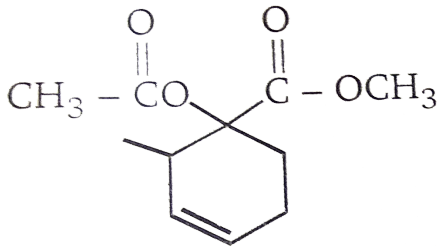
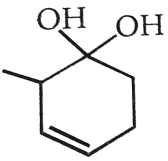
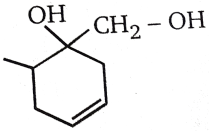
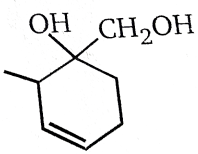


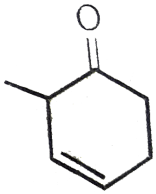
$\xrightarrow[\text{(ii) } H_2O]{\text{(i) } LiAlH_4} (A)\ ;\ (96\%)$

105. Product (A) of the reaction is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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106. $R-\overset{O}{\overset{||}{C}}-O-R'+R''OH \overset{H^{\oplus}}{\Longleftrightarrow} R-\overset{O}{\overset{||}{C}}-O-R''+R'OH$

Above reaction is/an example of :

A. eaterification

B. saponification

C. trans-esterification

D. hydrolysis

Answer: C

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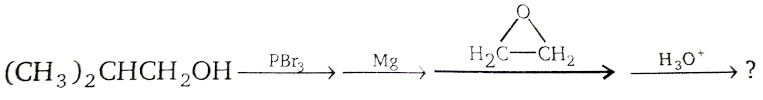
107. What is the major orgainc product of the following sequence of reactions?



A. $(CH_3)_2ChC\overset{OH}{\overset{|}{H}}CHCH_2CH_3$

B. $(CH_3)_2CHCH_2CH_2OH$

C. $(CH_3)_2CHCH_2CHCH_3$

D. $(CH_3)_2CHCH_2CH_2CH_2OH$

Answer: D

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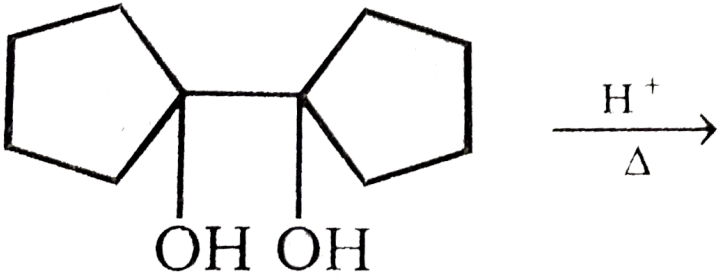
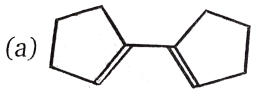
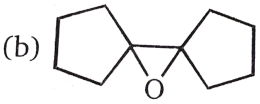
108. The structure of the product formed in the reaction given below is :



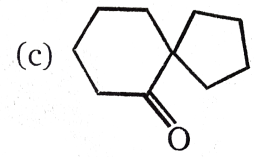
A.

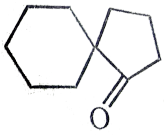


B.



C.



D. (d) 

Answer: C

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109. $\begin{array}{l} CHO \\ | \\ CH-OH \\ | \\ CH_2-OH \end{array} \xrightarrow{2HIO_4}$ Products obtained in the above reaction are :

A. $HCHO, HCO_2H$

B. $HCHO, 2HCO_2H$

C. $CO_2, 2HCO_2H$

D. $CO_2, HCHO, HCO_2H$

Answer: B

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110. $\begin{array}{l} CHO \\ | \\ (CH-OH)_3 \\ | \\ CH_2-OH \end{array} + 4HIO_4$ Products obtained are :

Aldo pentose

A. $4HCO_2H, HCHO$

B. $4CH_2O, HCO_2H$

C. $CO_2, 4HCHO$

D. $CO_2, 3HCO_2H, HCHO$

Answer: A

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111.

$$\begin{array}{l} CHO \\ | \\ (CH-OH)_3 \\ | \\ CH_2-OH \end{array} \xrightarrow{4HIO_4} \text{Prosuct (ii)} \quad \begin{array}{l} CH_2OH \\ | \\ (CH-OH)_4 \\ | \\ CH_2-OH \end{array} \xrightarrow{5HIO_4}$$

Product

Ratio of moles of formic acid obtained in reaction (i) and reaction (ii) is :

A. $3/4$

B. $4/5$

C. 1

D. $5/4$

Answer: C

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112. Which of the following compound gives $2HCHO, CO_2, HOO_2H$ when oxidised by periodic acid?

$CH_2 - OH$
|

A. $(CH - OH)_2$
|
$CH_2 - OH$
CHO
|

B. $(CH - OH)_2$
|
$CH_2 - OH$
$CH_2 - OH$
|
$C = O$

C. |
$(CH - OH)_2$
|
$CH_2 - OH$
CHO
|
$C = O$

D. |
$CH - OH$
|
$CH_2 - OH$

Answer: D

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113. Hydration of 3-phenylbutan-1-ene in dil. H_2SO_4 will give mainly :

A. 3-Phenylbutan-2-ol

B. 3-Phenylbutan-2-ol

C. 2-Phenylbutan-2-ol

D. 2-Phenylbutan -1-ol

Answer: C

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114. Decarboxylation of sodium salicylate with soda lime form :

A. Salicylic acid

B. Phenol

C. Benzene

D. None of these

Answer: B

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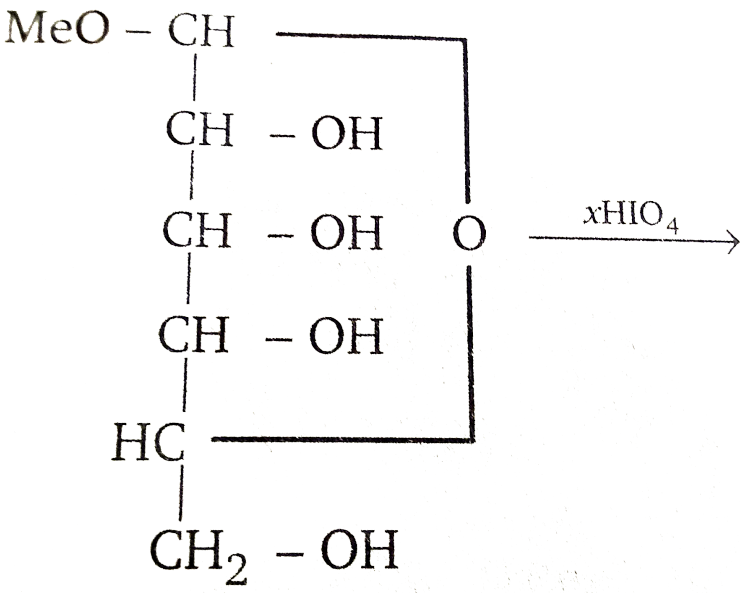

115. What is the maximum value of (x)?

A. 1

B. 2

C. 3

D. 4

Answer: B

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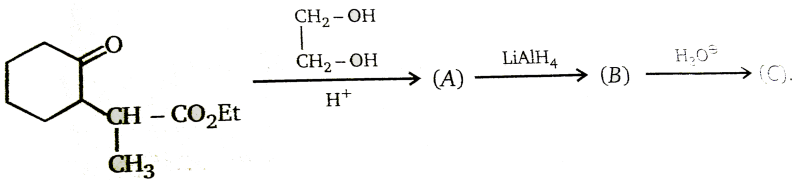
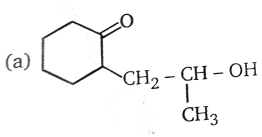
116.

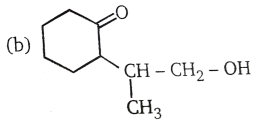


Product C is :

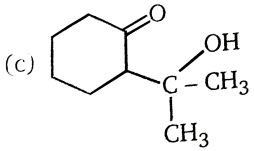
A.



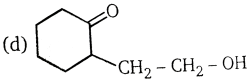
B.



C.



D.



Answer: B

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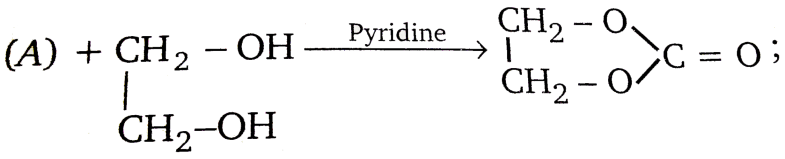

117.

Reactant A of the above reaction is :

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

B. $COCl_2$

C. $CH_3 - \overset{O}{\overset{||}{C}} - Cl$

D. $CH_3 - \overset{O}{\overset{||}{C}} - OEt$

Answer: B

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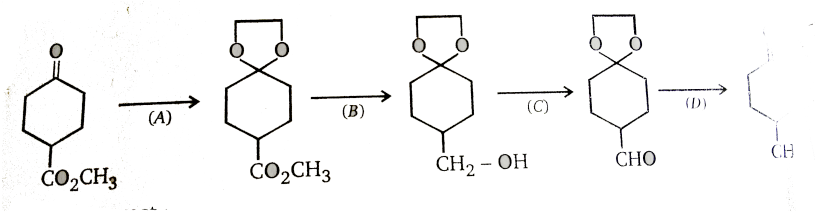
118. 

Identify correct combination :

A. $(A) = \begin{vmatrix} CH_2-OH \\ CH_2-SH \end{vmatrix}$

B. $(B) = NaBH_4$

C. $(C) = KMnO_4$

D. $(D) = H_3O^{\oplus}$

Answer: D

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119. In the Libermann's nitrose reaction, sequential changes in the colour of phenol occurs as :

A. Brown or red $\rightarrow$ green $\rightarrow$ deep blue

B. Red $\rightarrow$ deep blue $\rightarrow$ green

C. Red $\rightarrow$ green $\rightarrow$ white

D. White $\rightarrow$ red $\rightarrow$ green

Answer: B

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120. Ethanol when reacts with PCl_5 gives A, $POCl_3$ and HCl. A reacts with dry Ag_2O to form B (major product) and $AgCl$. A and B respectively are :

A. C_2H_5Cl and $C_2H_5OC_2H_5$

B. C_2H_4 and $C_2H_5OC_2H_5$

C. C_2H_6 and $C_2H_5OC_2H_5$

D. C_2H_6 and $C_2H_5NO_2$

Answer: A

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121. $CH_3-(CH_2)_3-OH \xrightarrow[ET_3N]{CH_3-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-Cl} (A) \xrightarrow{KCN} (B) \xrightarrow{H_3O^{\oplus}} (C)$

Product (C) is :

A. $CH_3-(CH_2)_3-CO_2H$

B. $CH_3-(CH_2)_3-.^{14}CO_2H$

C. CH_3-CO_2H

D. $CH_3-\overset{\overset{O}{\|}}{\underset{14}{C}}-O-H$

Answer: B

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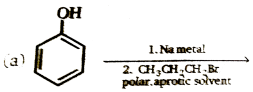
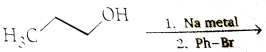
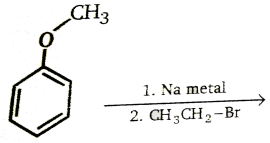
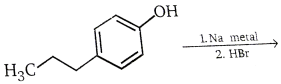
122. Choose the best synthesis of phenyl n- propyl ether.

A. 

B. 

C. 

D. 

Answer: A

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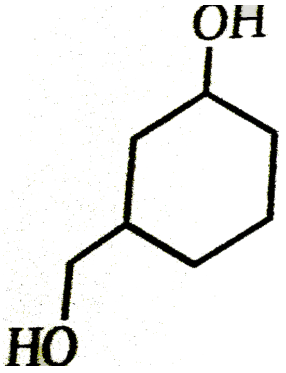
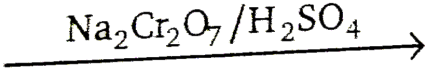
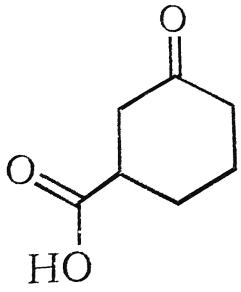
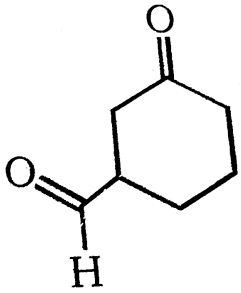
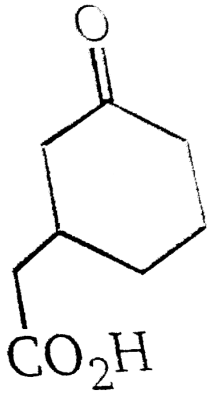
123. 



The product obtained is :

A. 

B. 

C. 

D. None of these

Answer: A

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124. What is true for the equilibrium reaction ?

$$CH_3 - \overset{O}{\overset{||}{C}} - OH + CH_3 - OH \overset{\text{cat.}}{\Longleftrightarrow} CH_3 - \overset{O}{\overset{||}{C}} - O - CH_3 + H_2O$$

A. The use of equimolar quantities of CH_3OH and CH_3COOH will give the greatest yield of the ester at equilibrium

B. Removal of water will increase the amount of ester at equilibrium

C. Addition of CH_3COOCH_3 will cause the fomation of equal an equal number of moles of water

D. Application of pressure increases the amount of ester at equilibrium

Answer: B

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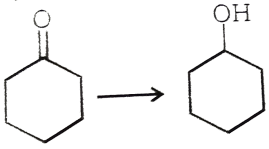
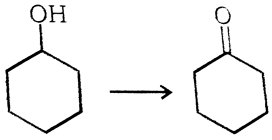
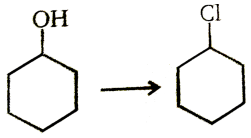
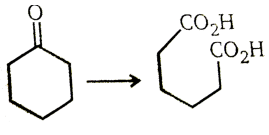
125. PCC (Pyridinium chloro chromate) is a good reagent for which of the following transformations?

A. 

B. 

C. 

D. 

Answer: B

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126. How many primary alcohols (including stereoisomers) are possible with formula $C_5H_{12}O$?

A. Two

B. Three

C. Four

D. Five

Answer: D

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127. 1-Phenylethanol can be prepared by the reaction of benzaldehyde with the product obtained in the reaction between :

A. CH_3I and Mg

B. C_2H_5I and Mg

C. CH_3Br and $AlCl_3$

D. CH_3OH and $ZnCl_2$

Answer: A

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128. $0.092g$ of a compound with the molecular formula $C_3H_8O_3$ on reaction with an excess of CH_3MgI gives $67.00mL$ of methane at STP. The number of active hydrogen atoms present in a molecule of the compound is :

A. one

B. two

C. three

D. four

Answer: C

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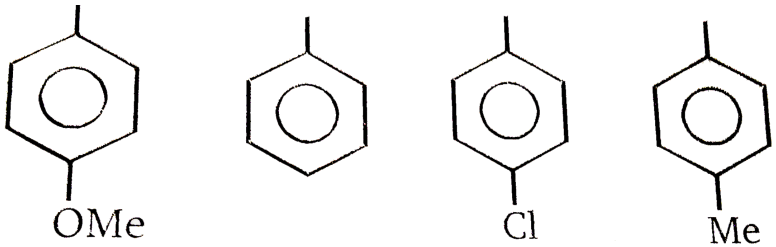
129. Migratory aptitude of the following in decreasing order is :



(a) (b) (c) (d)

A. $a > c > b > d$

B. $a > d > b > c$

C. $a > d > c > b$

D. $b > c > a > b$

Answer: B

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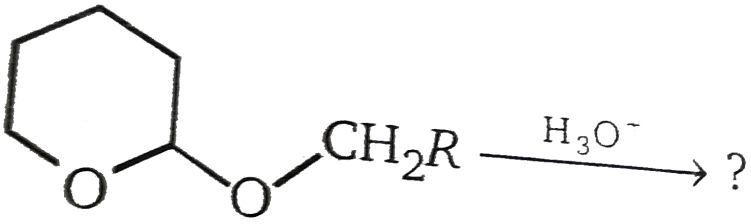
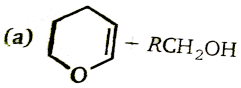
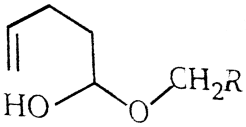
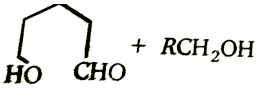
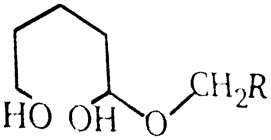
130. The major product formed in the reaction is :



A. 

B. 

C. 

D. 

Answer: C

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131. Reaction of R-2- butanol with p-toluenesulphonyl chloride in pyridine then $LiBr$ gives :

A. R-2- butyl bromide

B. S-2- butyl tosylate

C. R-2- butyl tosylate

D. S-2- butyl bromide

Answer: D

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132. Optically active 2- octanol rapidly loses its optical activity when exposed to :

A. dilute acid

B. dilute base

C. light

D. humisity

Answer: A

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133. If $(\pm)$ 2-methyl butanoic acid were esterified by reaction with $(\pm)$ 2-buranol, how many optically compounds would be present in the final equilibrium reaction mixture ?

A. 2

B. 3

C. 4

D. 6

Answer: C

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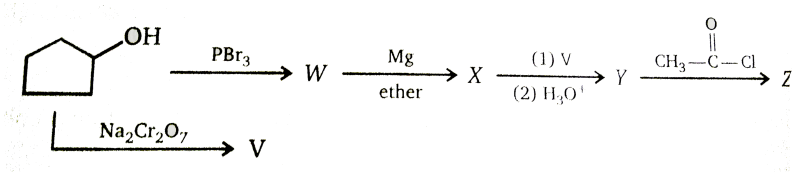
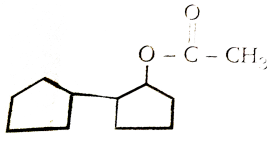
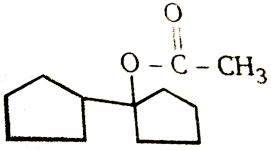
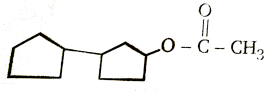
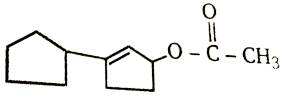
134. 

Product Z of above reaction is :

A. 

B. 

C. 

D. 

Answer: B

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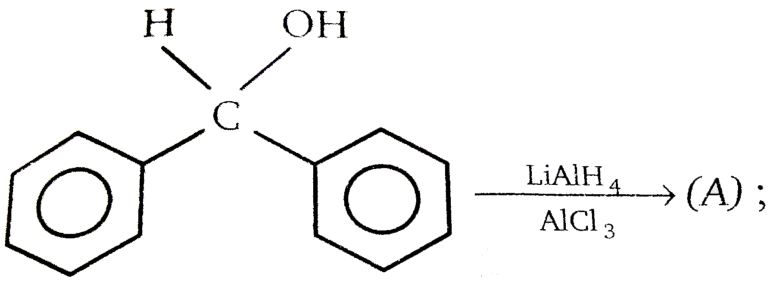
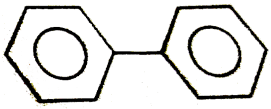
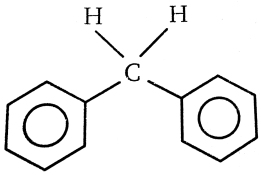
135. 

Identify the product :

A. No reaction

B. 

C. 

D. $Ph - \overset{O}{\overset{||}{C}} - Ph$

Answer: C

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136. $(EtO)_2CHCHO + CH_3MgI \xrightarrow{H_3O^{\oplus}} (A)$

Product obtained in the above reaction is :

A. $CH_3 - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} - H$

B. $CH_3 - \overset{OH}{\overset{|}{C}}H - CHO$

C. $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - OH$

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

Answer: B

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137. Reaction - (1) : $CH_3 - CH = CH - CH_3 \xrightarrow[\text{Cold}]{KMnO_4} (A) \xrightarrow{NaIO_4} (B) 2$ mole

Reaction - (2) : $CH_3 - CH = CH - CH_3 \xrightarrow{KMnO_4 / NaIO_4} (C) 2$ mole

Product (B) and (C) respectively are :

A. CH_3CHO, CH_3CO_2H

B. CH_3CO_2H, CH_3CHO

C. CH_3CHO in both reaction

D. CH_3CO_2H in both reaction

Answer: A

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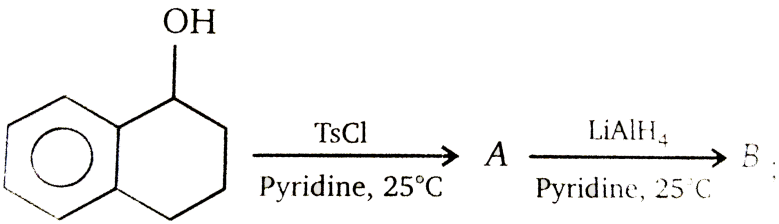
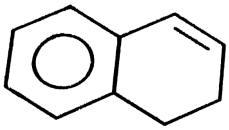
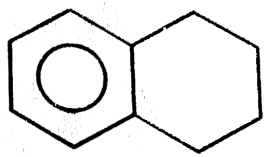


138. ,Product

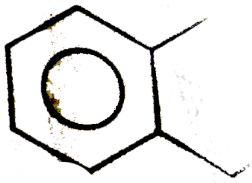
(B) is :

A. 

B.



C.



D.

Answer: C

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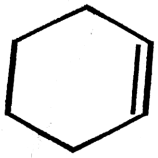
139.  $\longrightarrow \mathrm{HO-(CH_2)_6-OH,}$ this conversion can be achieved by

A. O_3, Zn, then $LiAlH_4$

B. O_3 / H_2O_2, then $LiAlH_4$

C. Cold dil. $KMnO_4$, HIO_4, then $LiAlH_4$

D. All of these

Answer: D

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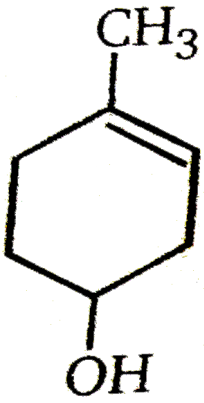
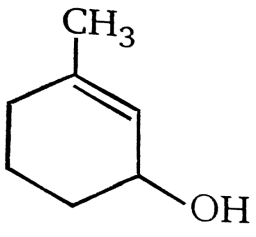
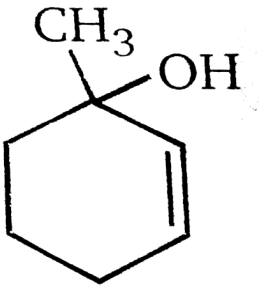
140. Which of the following alcohol on treatment with HCl give 3-chloro -3- methyl cyclohexene as a product ?

A.



B. 

C. 

D. All of these

Answer: D

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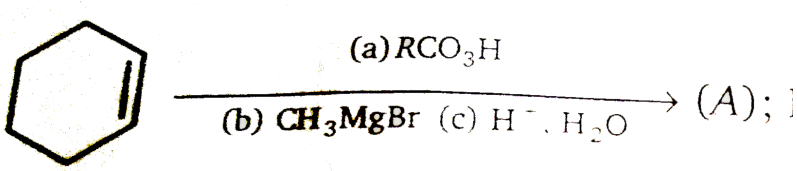
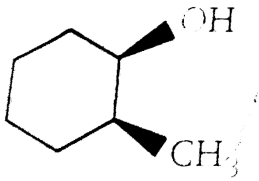
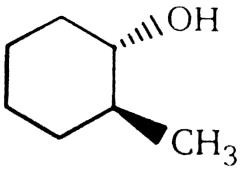


141. Product of the reaction is :

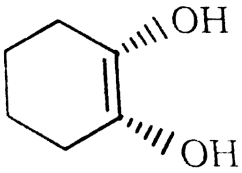
A.



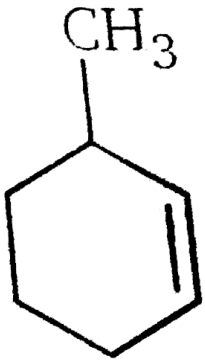
B.



C.



D.



Answer: B

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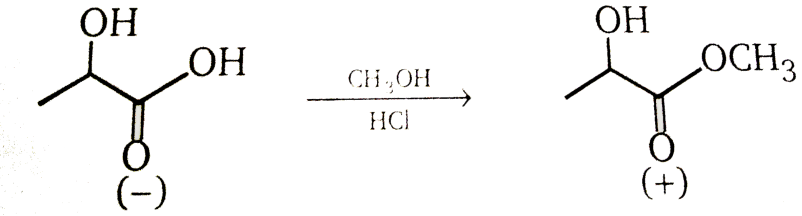
142. Esterification (shown below) is a reaction converting a carboxylic acid to its ester. It involves only the carbonyl carbon. Esterification of (-) -lactic acid with methanol yield (+) -methyl lactate. Assuming that there are no side reactions, what is true about this reactin?



A. AnS_{N^2} process has occurred, inverting the absolute configuration of the chiral center

B. An S_{N^1} reaction at the chiral center has the optical rotation

C. A diastereomer has beem produced, diastereomers have different physical properties including optical rotation

D. Optical rotation is not directly related to ansolute sonfiguration, so the change in sign of rotation is merely a coincidence

Answer: D

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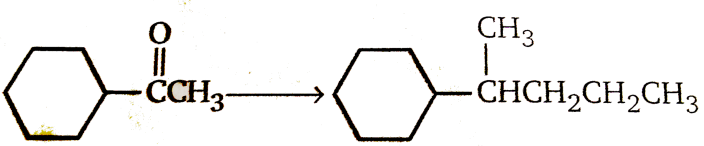
143. Which of the following sets of reagents, used in the order shown, would successfully accomplish the conversion shown?



A. $CH_3CH_2CH_2MgBr$, H_3O^+, PCC, CH_2Cl_2

B. $CH_3CH_2CH_2MgBr$, H_3O^+, H_2SO_4, heat PCC, CH_2Cl_2

C. $(C_6H_5)_3\overset{+}{P}-\overline{\overset{\cdot\cdot}{C}}HCH_2CH_3$, B_2H_6, CH_3CO_2H

D. $(C_6H_5)_3\overset{+}{P}-\overline{\overset{\cdot\cdot}{C}}HCH_2CH_3$, H_2O

Answer: C

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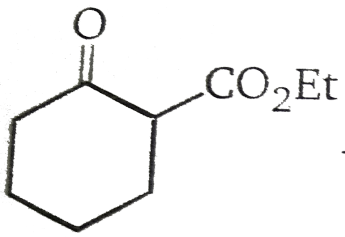
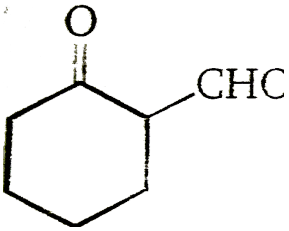
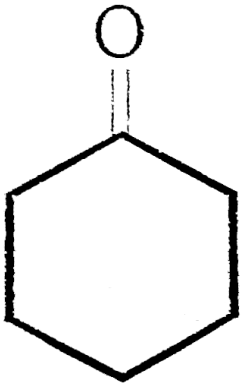
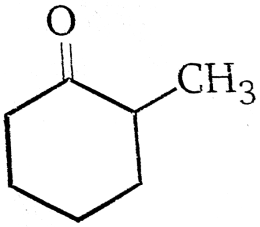
144. 

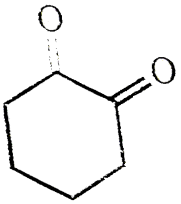
$\xrightarrow[(2)\,\Delta]{(1)\ H_3O^+}$ Product ;

Product of the reaction is :

A. 

B. 

C. 

(d) 

D.

Answer: B

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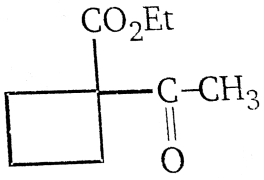
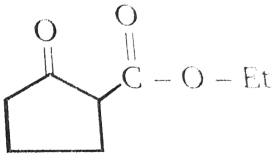
145. Which of the following compound on hydrolysis followed by heating gives a product, which gives positive iodoform test?

A. $CH_3 - \underset{\displaystyle CO_2Et}{\underset{|}{CH}} - \overset{\displaystyle O}{\overset{||}{C}} - CH_2 - CH_3$

B. 

C. $CH_3 - \underset{\displaystyle CO_2Et}{\underset{|}{CH}} - CO_2Et$

D. 

Answer: B

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146. Treatement of a $2^{\circ} OH$ with CrO_3 / H_2SO_4 yields an /a :

A. aldehyde

B. craboxylic acid

C. ester

D. ketone

Answer: D

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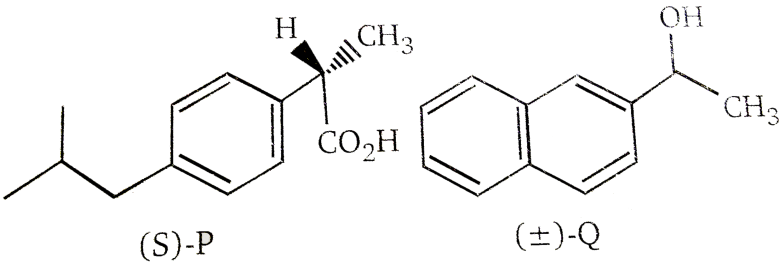
147. Esterification of the acid P with the alcohols Q will give :



(S)-P (±)-Q

A. only one enantiomer

B. a mixture of diastereomers

C. a mixture of enantiomers

D. only one diastereomer

Answer: B

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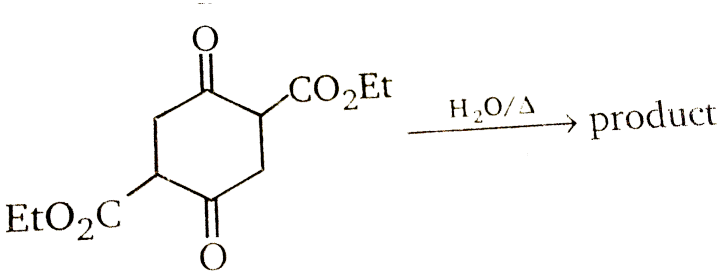
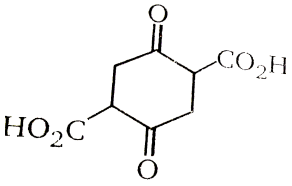


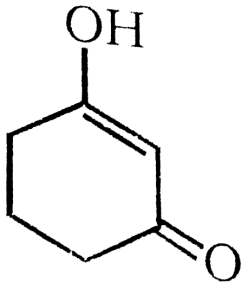
148.

Identify major product of the reaction,when the given compound is hydrolysed and heated strongly :

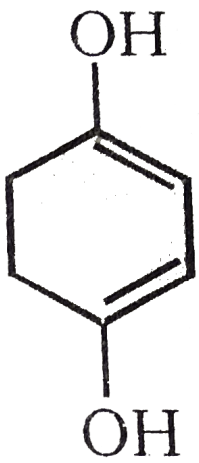
A.



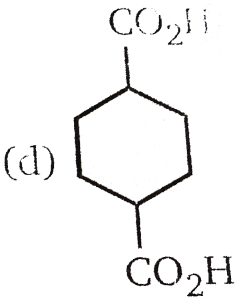
B.



C.



D.



Answer: C

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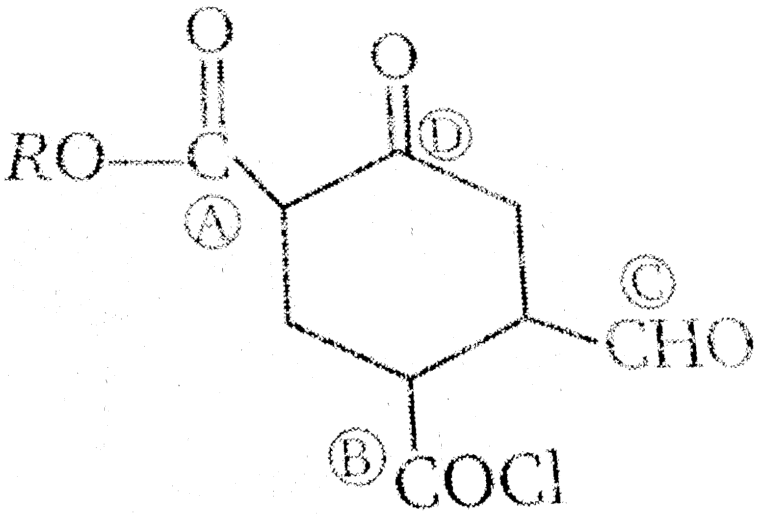

149. find out the reactivity order with $LiAlH_4$:

A. $A > B > C > D$

B. $B > C > D > A$

C. $D > C > B > A$

D. $B > D > C > A$

Answer: B

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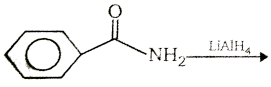
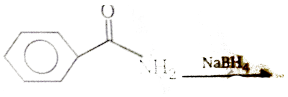
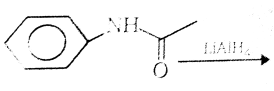
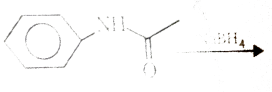
150. Find out the reaction in which obtained product give possitive isocyanide test:

A. 

B. 

C. 

D. 

Answer: A

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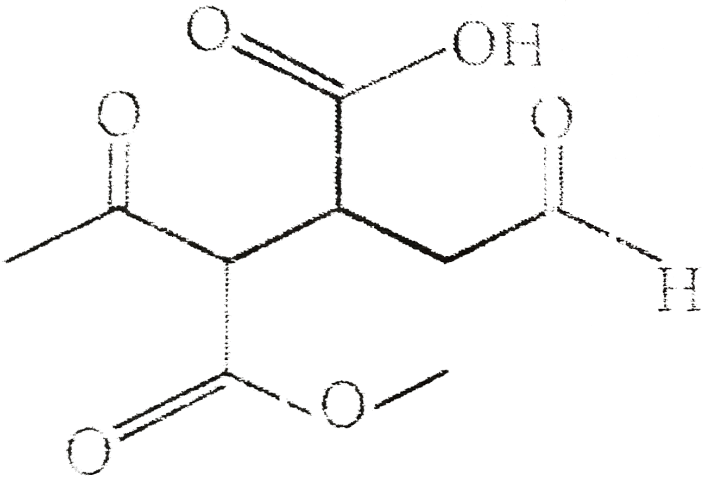

151.

In the above given compound how many functional group reduced by LAH (lithium aluminium hydride) and SBH (sodium borohydride) respectively?

A. $4, 4$

B. $4, 3$

C. $3, 4$

D. $4, 2$

Answer: D

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152. An unknown compound (A) (molarmass =180) on acylation gives a product (molar mass = 390) than find the number of hydroxyl group present in compound (A).

A. 5

B. 6

C. 10

D. 1

Answer: A

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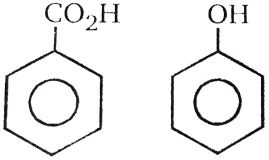
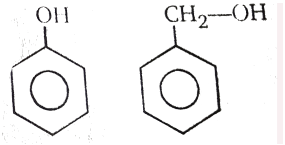
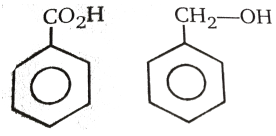
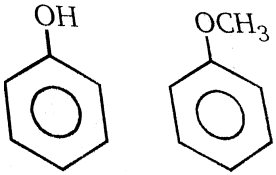
153. Which of the following compound is differentiated by $NaHCO_3$ as well as by $NaOH$?

A. 

B. 

C. 

D. 

Answer: C

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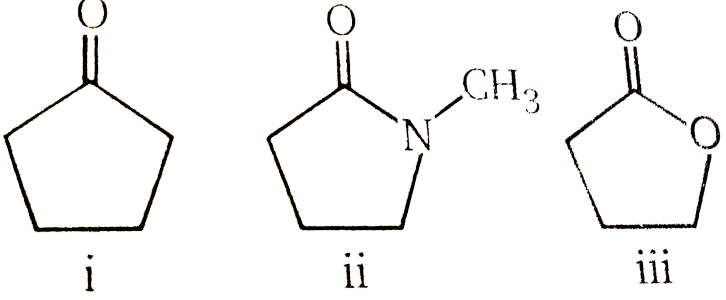
154. Arrange the following compounds in order of their reactivity toward $LiAlH_4$.



A. $i < ii < iii$

B. $i < iii < ii$

C. $ii < i < iii$

D. $ii < iii < i$

Answer: D

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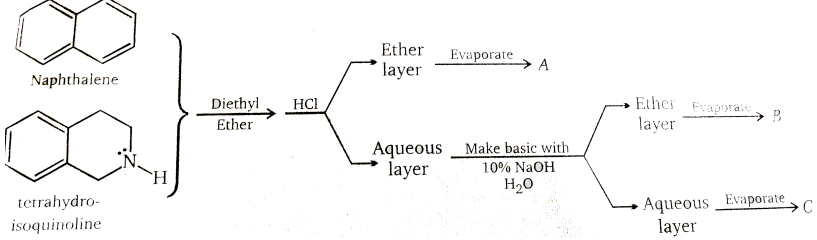
155. Choose the statement that is true about A, B and C in the following separation scheme.



A. A = tetrahydroisoquinoline, B naphthalene and C = inorganic ions such as Na^+ and Cl^-

B. A = napthalene, B = tetrahydroisoquinoline and C = inorganic ions such as Na^+ and Cl^-

C. A = inorganic ions such as Na^+ and Cl^-, B = naphthalene and C = tetrahydroisoquinoline

D. A= inorganic ions such as NA^+ and Cl^-, B = naphthalene and C = tetrahydroisoquinoline

Answer: B

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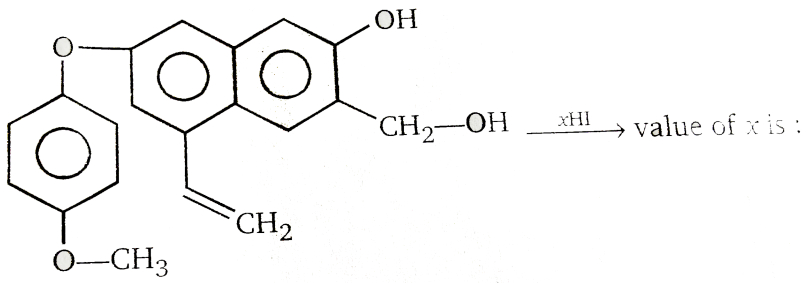
156. 

value of x is :

A. 2

B. 3

C. 4

D. 5

Answer: B

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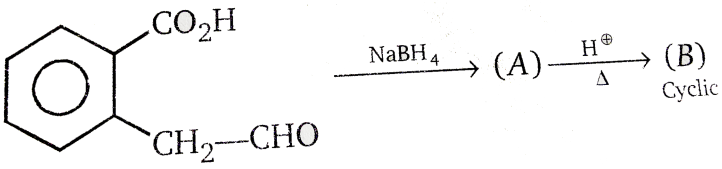
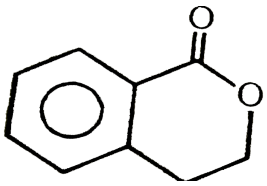
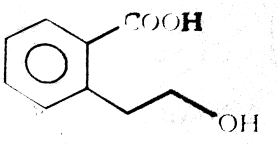
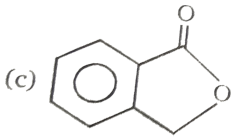


157.

Compound (B) is :

A. 

B. 

C. 

D. (a) and (c) both

Answer: A

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158. 1- Phenoxypropane is treated with excess of conc. HI at $0^{\circ}C$ and the mixture of products is treated with thionyl chloride. The products formed are

A. n- propanol + Chlorobenzene

B. Phenol + n-propyl iodide

C. n- propyl chloride + Chlorobenzene

D. n- propyl chloride + Phenol

Answer: B

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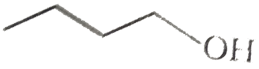
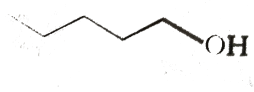
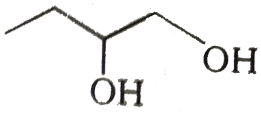
159. Amongst the following compounds, the compound having the lowest boiling point is

A. 

B. 

C. 

D. 

Answer: C

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160. Which statement /s are true about product P & Q.

(A) $CH_3 - CH = CH - CH_2 - OH \xrightarrow[\substack{\text{ether} \\ \text{(6 member T.S.)}}]{SOCl_2} P$

(B) $CH_3 - \underset{\underset{OH}{|}}{CH} - CH = CH_2 \xrightarrow[\substack{\text{ether} \\ \text{(6 member T.S.)}}]{SOCl_2} Q$

A. P & Q are position isomers

B. P shown geometrical isomerism but Q not

C.

$P \equiv CH_3 - \underset{\underset{Cl}{|}}{CH} - CH = CH_2 \qquad Q \equiv CH_3 - CH = CH - CH_2$

D.

$$P \equiv CH_3 - CH = CH - CH_2 - Cl \qquad Q \equiv CH_3 - \underset{\underset{Cl}{|}}{CH} - CH =$$

Answer: A::C

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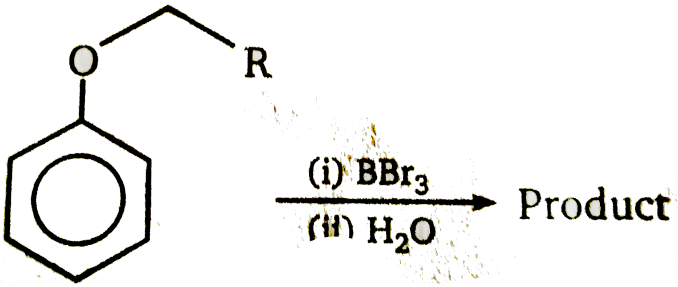
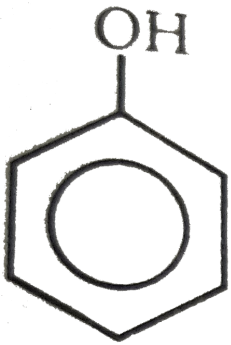
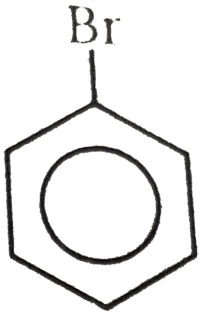


161.

Which of the following is/are possible end product of the above reaction?

A. 

B. 

C. 

D. both (a) and (c)

Answer: D

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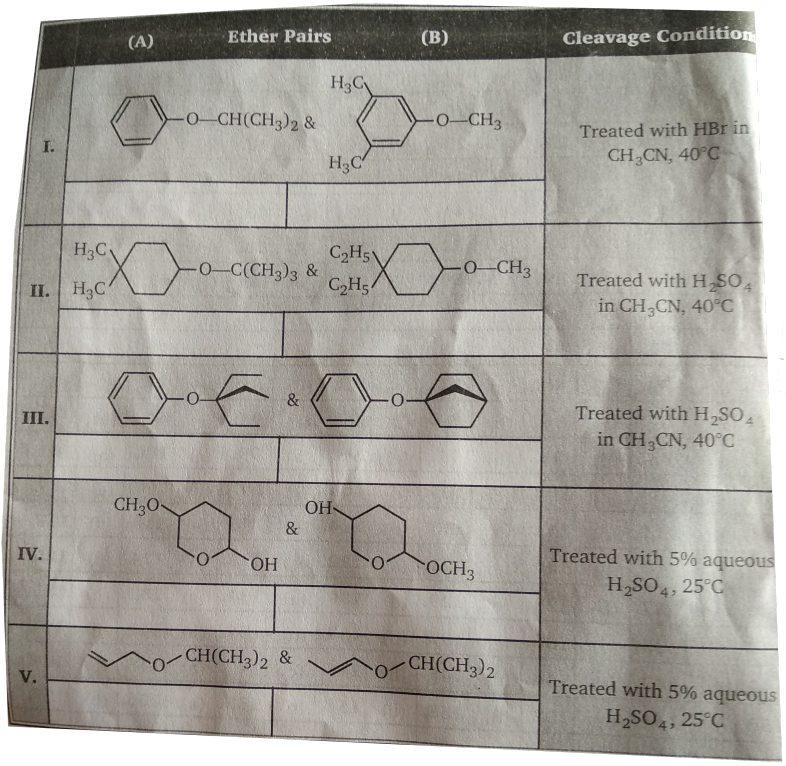
162. Consider the pairs of ethers, numbered I through V, shown below. To the right of each pair is a description of reaction conditions to be applied to each. One compound of the pair will react more rapidily than the other. Which ether of the two be more rapidily cleaved?

write your answer in box.



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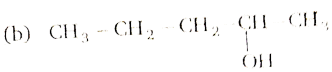
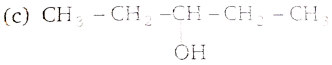
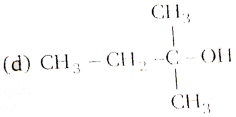
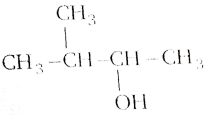
(a) 

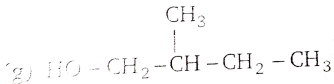
(b) 

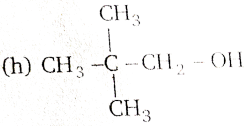
(c) 

(d) 

(e) 

(f) 

(g) 

(h) 

163. Above compounds (a) to (h) are isomers of $C_5H_{12}O$.

Based on the above isomer answer the following (a to h).

Which isomer is most reactive towards dehydration by conc. H_2SO_4?

Watch Video Solution

(a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$

(b) $CH_3-CH_2-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(c) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-CH_3$

(d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-OH$

(e) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-OH$

(f) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(g) $HO-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

(h) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-OH$

Above compounds (a) to (h) are isomers of $C_5H_{12}O$.

164.

Based on the above isomer answer the following (A to F).

Which isomer will undergo rearrangement when treated with conc. H_2SO_4 ?

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(a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$

(b) $CH_3-CH_2-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(c) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-CH_3$

(d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-OH$

(e) $CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-OH$

(f) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(g) $HO-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

(h) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-OH$

165. Above compounds (a) to (h) are isomers of $C_5H_{12}O$.

Based on the above isomer answer the following (A to F).

Which isomers on dehydration with conc. H_2SO_4 give alkene is capable to show geometrical isomerism ?

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(a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$ (b) $CH_3-CH_2-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(c) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-CH_3$ (d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-OH$

(e) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-OH$ (f) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(g) $HO-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$ (h) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-OH$

Above compounds (a) to (h) are isomers of $C_5H_{12}O$.

166.

Based on the above isomer answer the following (A to F).

Which isomer is least acidic ?

Watch Video Solution

(a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$

(b) $CH_3-CH_2-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(c) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-CH_3$

(d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-OH$

(e) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2-OH$

(f) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(g) $HO-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

(h) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-OH$

167. Above compounds (a) to (h) are isomers of $C_5H_{12}O$.

Based on the above isomer answer the following (A to F).

Which isomers on dehydration give most stable alkene?

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(a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$ (b) $CH_3-CH_2-CH_2-\underset{\underset{OH}{|}}{CH}-CH_3$

(c) $CH_3-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-CH_3$ (d) $CH_3-CH_2-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-OH$

(e) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-CH_2-OH$ (f) $CH_3-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(g) $HO-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_2-CH_3$ (h) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-OH$

168.

Based on the above isomer answer the following (A to F).

Which isomer on dehydration with conc, H_3PO_4 undergo maximum rearrangement?

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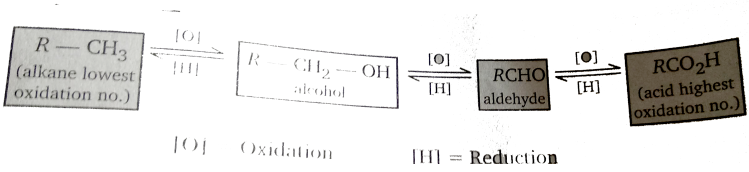

169.

Conversion $(CH_3-CH_3 \rightarrow CH_3-CH_2-OH)$ alkane $\rightarrow$ alcohol is achieved by :

A. Br_2 / hv, alc. KOH

B. Br_2 / hv, aq. KOH

C. Br_2 / CCl_4, $LiAlH_4$

D. Br_2 / CCl_4, $NaBH_4$

Answer: B

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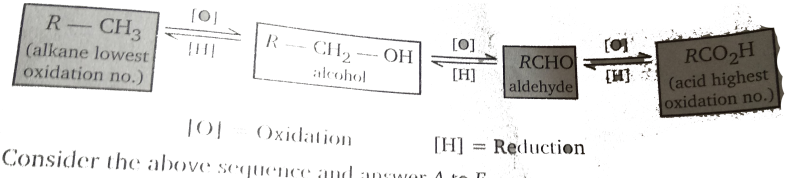

170. Consider the above sequence and answer A to D.

Coversion $R - CH_2 - OH \rightarrow R - CHO$ can be done by :

A. PCC / CH_2Cl_2

B. Cu, $300^\circ C$

C. CrO_3

D. All of these

Answer: D

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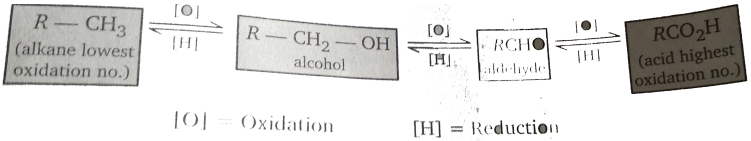

171. Consider the above sequence and answer A to F.

Conversion $R - CHO \rightarrow R - CO_2H$ can be done by :

A. $KMnO_4$

B. H_2CrO_4

C. $K_2Cr_2O_7$

D. All of these

Answer: D

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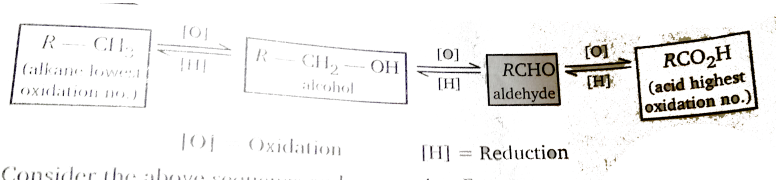

172. Consider the above sequence and answer A to F.

Conversion $R - CO_2H \rightarrow R - CHO$ can be done by :

A. $LiAlH_4$

B. $NaBH_4$

C. $DIBAL - H$

D. All of these

Answer: C

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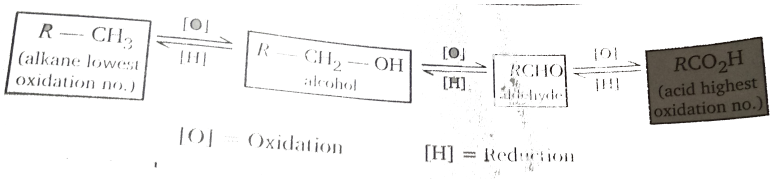

173.

Conversion $R - CHO \rightarrow R - CH_2 - OH$ can be done by :

A. $LiAlH_4$

B. $NaBH_4$

C. H_2 / Ni

D. All of these

Answer: D

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174. Reduction of $R - CH_2OH - RCH_3$ can be carried out by:

A. $LiAlH_4$

B. $NaBH_4 - AlCl_3$

C. $H_2 - Ni$

D. $RedP + HI$

Answer: D

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175. Which of the following is true for 3-methylbutanol ?

a.	This compound may be classified as an aldehyde.
b.	This compound may be classified as a ketone
c.	An aldol reaction takes place on treatment with NaOH solution.
d.	There is no reaction with $LiAlH_4$ in ether solution.
e.	An excess of CH_3MgBr in ether reacts to give 4-methyl-2-pentanol.
f.	Wolff-Kishner reduction gives butane.
g.	This compound is an isomer of 3-pentanone.

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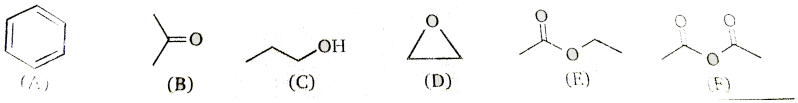
176. This problem is an introduction to the planning of multistep syntheses.

For use, you have six reactant compound (A through F), and eight reagents (1 through 8), shown below.

Following these lists, five multistep syntheses are outlined. For each of these, certain reactants or reagents must be identified by writing an appropriate letter or number in designated answer boxes. Write a single letter or number, indicating your choice of the best reactant, in each

answer box.

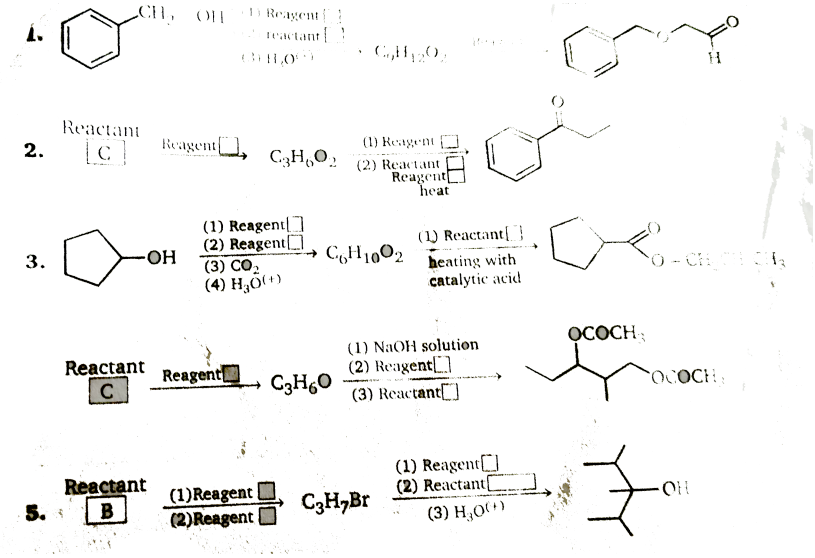


(1) Jones' reagent $[Na_2Cr_2O_7$ in $H_3O^+]$, (2) $PCC[CrO_3$ in pyridine $+HCl]$

(3) Sodium hydride NaH, (4) Sodium borohydride $NaBH_4$

(5) Thionyl chloride $SOCl_2$, (6) Phosphorus tribromide PBr_3

(7) Aluminium trichloride $AlCl_3$, (8) Magnesium turnings in ether



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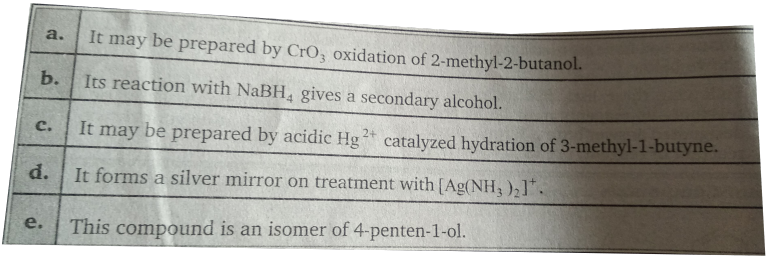
177. Which of the following is true for 3-methyl-2-butanone ?



a.	It may be prepared by CrO_3 oxidation of 2-methyl-2-butanol.
b.	Its reaction with $NaBH_4$ gives a secondary alcohol.
c.	It may be prepared by acidic Hg^{2+} catalyzed hydration of 3-methyl-1-butyne.
d.	It forms a silver mirror on treatment with $[Ag(NH_3)_2]^+$.
e.	This compound is an isomer of 4-penten-1-ol.

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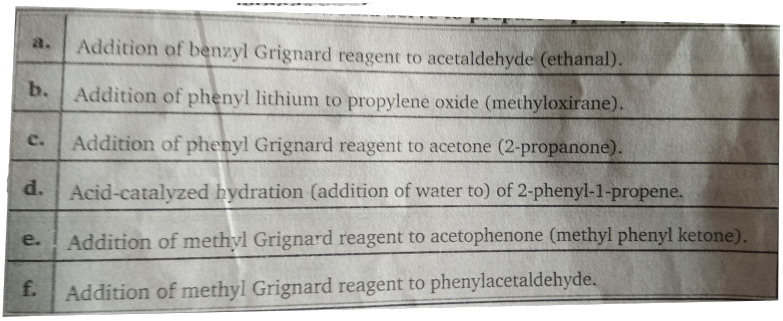
178. Which of these methods would serve to prepare 1-phenyl-2- propanol ?



a.	Addition of benzyl Grignard reagent to acetaldehyde (ethanal).
b.	Addition of phenyl lithium to propylene oxide (methyloxirane).
c.	Addition of phenyl Grignard reagent to acetone (2-propanone).
d.	Acid-catalyzed hydration (addition of water to) of 2-phenyl-1-propene.
e.	Addition of methyl Grignard reagent to acetophenone (methyl phenyl ketone).
f.	Addition of methyl Grignard reagent to phenylacetaldehyde.

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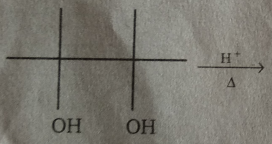
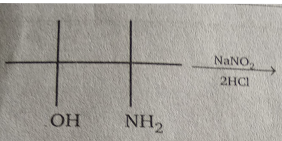
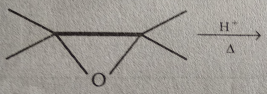
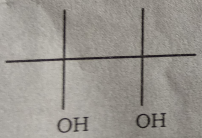
179. Match the Column (I) and (II).

Column (I)		Column (II)	
Reaction		Name of Reaction	
(a)		(p)	Pinacol-Pinacolone rearrangement
(b)		(q)	Semi-Pinacol reaction
(c)		(r)	Pinacolic-Diazotization
(d)		(s)	Pinacol fashion reaction

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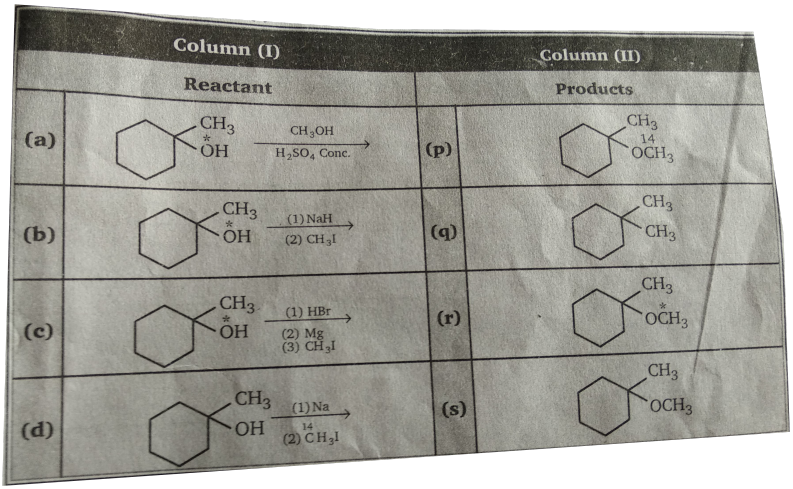
180. Match the Column (I) and (II).



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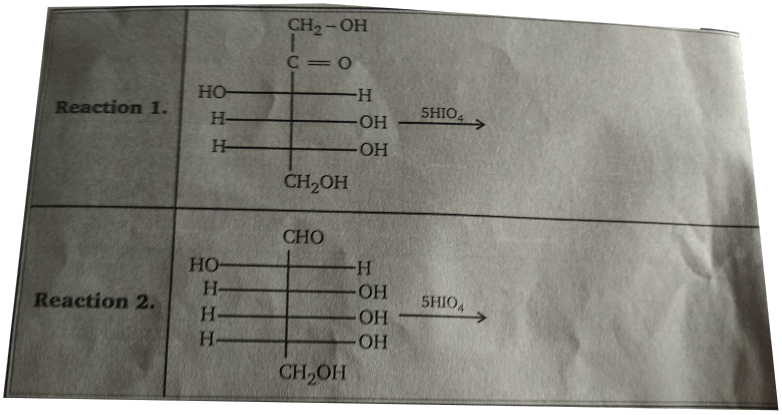
181. Complete the following reaction



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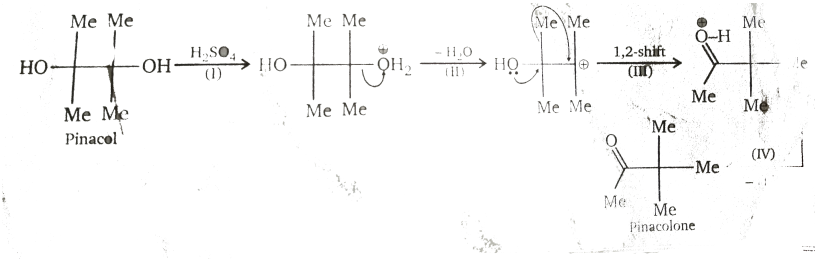
182. Di-tert-glycols rearrange in the presence of acid to give α-trtiary ketones. The trivial name of the simplest glycol of this type is pinacol, and this type of reaction therefore is named pinacol rearrangement (in this specific case, the reaction is called a pinacol-pinacolone rearrangement). The rearrangement involves 4 steps. one of the hydroxyl group is protonated in the first step. A molecule of water is eliminated in the second step and a tertiary carbocation is formed. the carbocation rearranges in the third step into a more stable carboxonium ion via a [1, 2] rearrangement. In the last step, the carboxonium ion is deprotonated and the product ketone is obtained.



What is R.D.S. of pinacol-pinacolone rearrangement ?

A. I step

B. II step

C. III step

D. IV step

Answer: B

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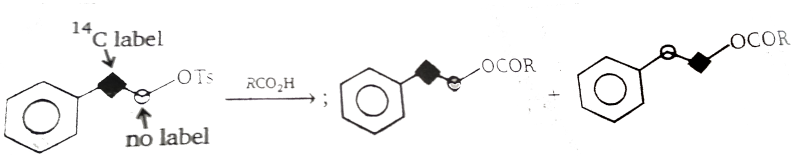
Level 1 (Q.1 To Q.30)

1. 

A. S_{N^1}

B. S_{N^2}

C. $SN-NGP$

D. $SN-Ar$

Answer: C

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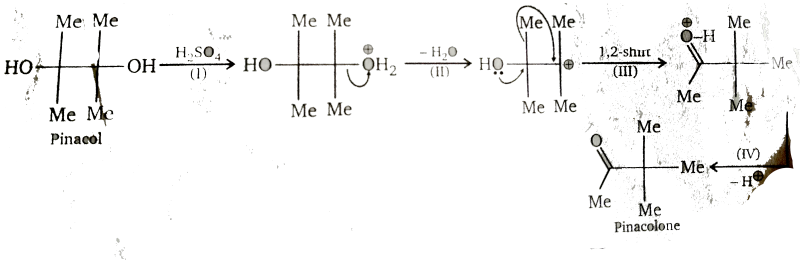
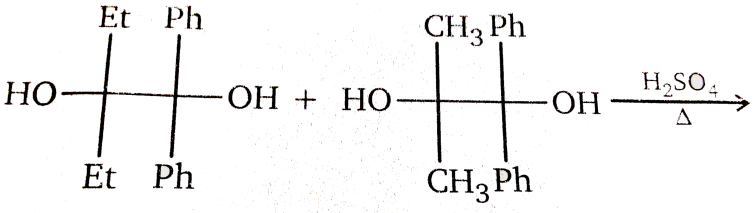
Level 2

1. Di-tert-glycols rearrange in the presence of acid to give α-trtiary ketones. The trivial name of the simplest glycol of this type is pinacol, and this type of reaction therefore is named pinacol rearrangement (in this specific case, the reaction is called a pinacol-pinacolone rearrangement). The rearrangement involves 4 steps. one of the hydroxyl group is protonated in the first step. A molecule of water is eliminated in the second step and a tertiary carbocation is formed. the carbocation rearranges in the third step into a more stable carboxonium ion via a [1, 2] rearrangement. In the last step, the carboxonium ion is deprotonated and the product ketone is obtained.





How many products obtained in above reaction ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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2. Di-tert-glycols rearrange in the presence of acid to give α-trtiary ketones. The trivial name of the simplest glycol of this type is pinacol, and this type of reaction therefore is named pinacol rearrangement (in this specific case, the reaction is called a pinacol-pinacolone rearrangement). The rearrangement involves 4 steps. one of the hydroxyl group is

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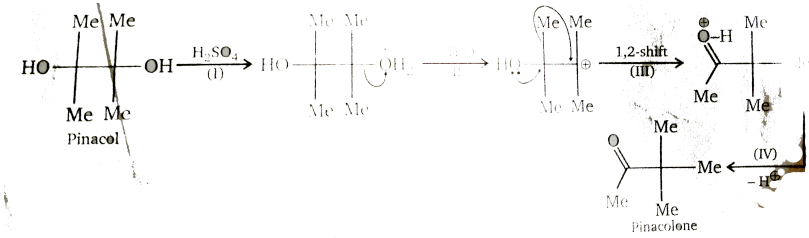
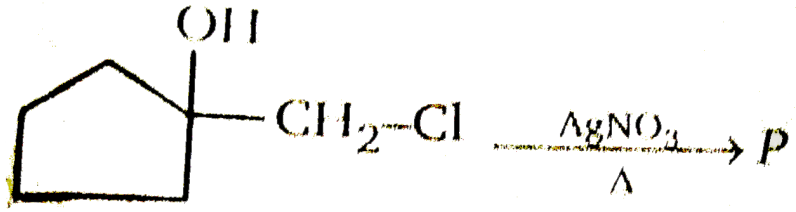
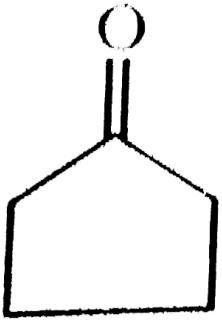


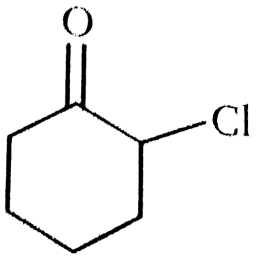


Product 'P' is :

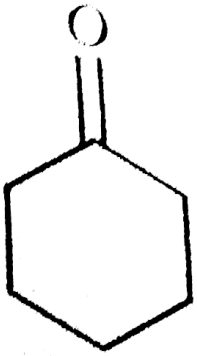


A.

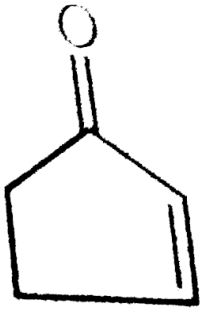
B.



C.



D.



Answer: C

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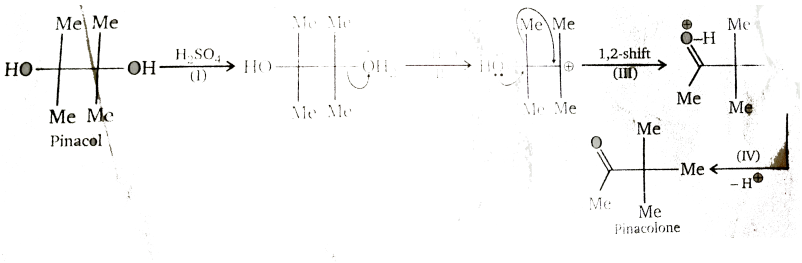
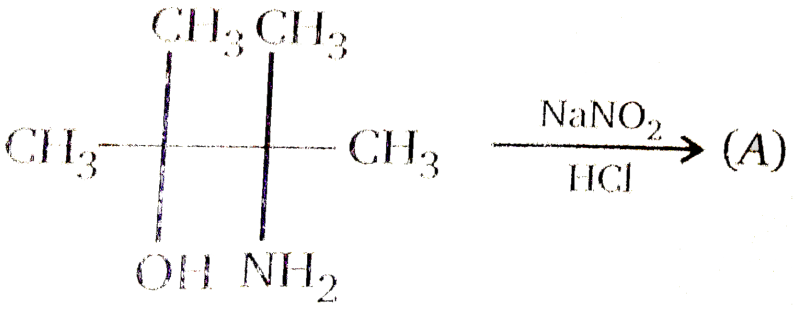
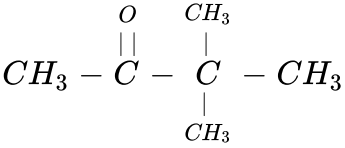
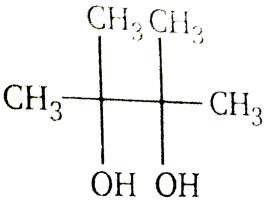
3. Di-tert-glycols rearrange in the presence of acid to give α-trtiary ketones. The trivial name of the simplest glycol of this type is pinacol, and this type of reaction therefore is named pinacol rearrangement (in this specific case, the reaction is called a pinacol-pinacolone rearrangement). The rearrangement involves 4 steps. one of the hydroxyl group is protonated in the first step. A molecule of water is eliminated in the second step and a tertiary carbocation is formed. the carbocation rearranges in the third step into a more stable carboxonium ion via a [1, 2] rearrangement. In the last step, the carboxonium ion is deprotonated and the product ketone is obtained.

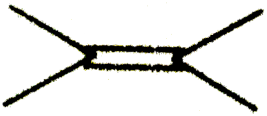




Product (A) is :

A. 

B. 

C. 

D. None of these

Answer: A

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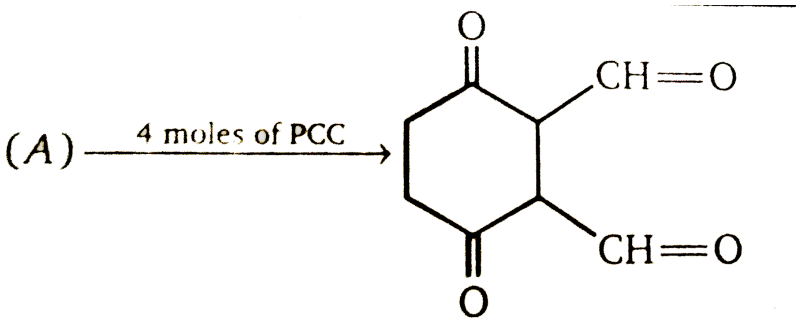
Subjective Problems

1.



Maximum number of moles of Ac_2O consumed by reactant (A) is :

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