ALCOHOLS, PHENOLS AND ETHERS QUESTION BANK

1. The C–O–H bond angle in alcohol is

(a)slightly greater than 109°28'. (b) slightly less than 109° 28'. (c) slightly greater than 120°. (d) slightly less than 120

Which of the following acids reacts with acetic anhydride to form a compound Aspirin?

(a)Benzoic acid (b)Salicylic acid. (c) Phthalic acid (d) Acetic acid

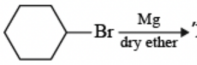
In the following reaction

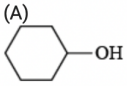
$CH_3-CH=CH-CH_2-OH \xrightarrow{PCC}$

the product formed is

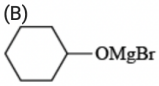
(A) CH_3-CHO and CH_3CH_2OH (C) $CH_3-CH=CH-CHO$

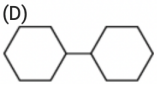
(B) $CH_3-CH=CH-COOH$ (D) $CH_3-CH_2-CH_2-CHO$

In the reaction  'X' $\xrightarrow{H_2O}$ 'Y' compound 'Y' is

(A) 

(C) 

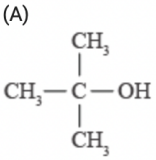
(B) 

(D) 

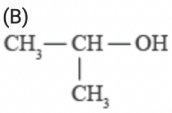
2.Case : Read the passage given below and answer the following questions (53-55).

Alcohols and Phenols are acidic in nature. Electron withdrawing groups in phenol increase its acidic strength and electron donating groups decrease it. Alcohols undergo nucleophilic substitution with hydrogen halides to give alkyl halides. On oxidation primary alcohols yield aldehydes with mild oxidising agents and carboxylic acids with strong oxidising agents while secondary alcohols yield ketones. The presence of-OH groups in phenols activates the ring towards electrophilic substitution. Various important products are obtained from phenol like salicylaldehyde, salicylic acid, picric acid etc.

Which of the following alcohols is resistant to oxidation? (A)

(A) 

(C) CH_3-CH_2-OH

(B) 

(D) CH_3-OH

3. Case : Read the passage given below and answer the following questions (53-55).

Alcohols and Phenols are acidic in nature. Electron withdrawing groups in phenol increase its acidic strength and electron donating groups decrease it. Alcohols undergo nucleophilic substitution with hydrogen halides to give alkyl halides. On oxidation primary alcohols yield aldehydes with mild oxidising agents and carboxylic acids with strong oxidising agents while secondary alcohols yield ketones. The presence of-OH groups

in phenols activates the ring towards electrophilic substitution. Various important products are obtained from phenol like salicylaldehyde, salicylic acid, picric acid etc.

Which of the following group increases the acidic character of phenol?

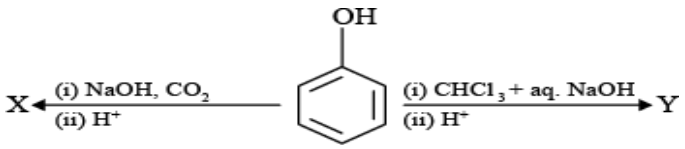
(a)CH_3O- (b)CH_3- (c)NO_2- (d)All of these

4. Case : Read the passage given below and answer the following questions (53-55).

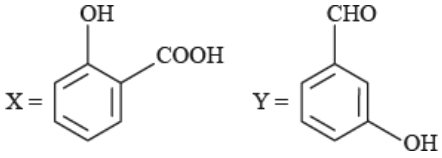
Alcohols and Phenols are acidic in nature. Electron withdrawing groups in phenol increase its acidic strength and electron donating groups decrease it. Alcohols undergo nucleophilic substitution with hydrogen halides to give alkyl halides. On oxidation primary alcohols yield aldehydes with mild oxidising agents and carboxylic acids with strong oxidising agents while secondary alcohols yield ketones. The presence of-OH groups

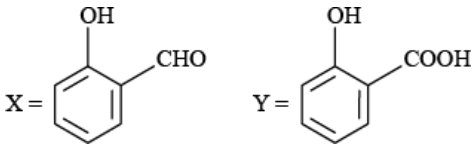
in phenols activates the ring towards electrophilic substitution. Various important products are obtained from phenol like salicylaldehyde, salicylic acid, picric acid etc.

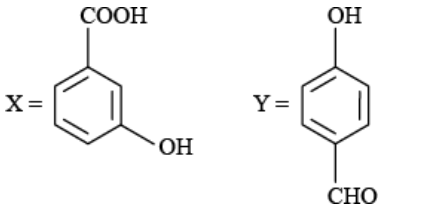
'Consider the following reaction :

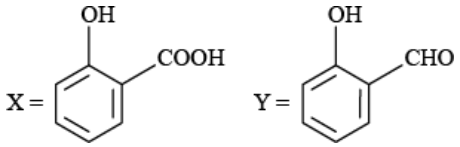


the products X and Y are

(a) 

(b) 

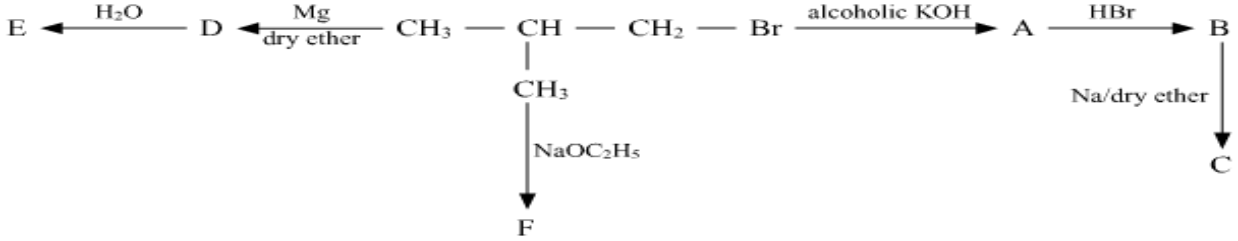
(C) 

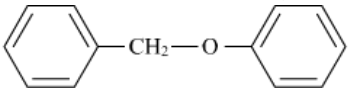
(d) 

YEAR 2020

1. Assertion (A) : Ortho and para-nitrophenols can be separated by steam distillation.
Reason (R) : Ortho isomer associates through intermolecular hydrogen bonding while Para isomer associates through intramolecular hydrogen bonding

2. Identify A, B, C, D, E and F in the following:



3. Give the structures of final products expected from the following reactions:
(i)Hydroboration of propene followed by oxidation with H_2O_2 in alkaline medium.
(ii)Dehydration of (CH3)3 C – OH by heating it with 20% H3PO4 at 358 K.
(iii) Heating of  with HI.

4. How can you convert the following?
(i)Phenol to o-hydroxy benzaldehyde
(ii)Methanal to ethanol
(iii)Phenol to phenyl ethanoate

5. Assertion (A): The C-O-C bond angle in ethers is slightly less than tetrahedral angle.
Reason (R) : Due to the repulsive interaction between the two alkyl groups in ethers

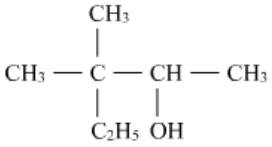
YEAR 2019.

1. (a) How do you convert the following:
(i) Phenol to Anisole (ii) Ethanol to Propan-2-ol
(b) Write mechanism of the following reaction:

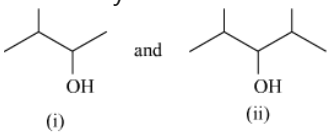
$$C_2H_5OH \xrightarrow[443K]{H_2SO_4} CH_2 = CH_2 + H_2O$$

(c) Why phenol undergoes electrophilic substitution more easily than benzene?
2. (a) Account for the following:
(i) o-nitrophenol is more steam volatile than p-nitrophenol.
(ii) t-butyl chloride on heating with sodium methoxide gives 2-methylpropene instead of t-butylmethylether.
(b) Write the reaction involved in the following:
(i) Reimer-Tiemann reaction (ii) Friedal-Crafts Alkylation of Phenol
(c) Give simple chemical test to distinguish between Ethanol and Phenol.

1. Write the IUPAC name of the following :



2. Identify the chiral molecule in the following pair :

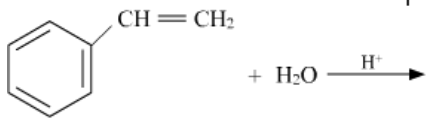


3. Write the structure of the product when chlorobenzene is treated with methyl chloride in the presence ofsodium metal and dry ether.

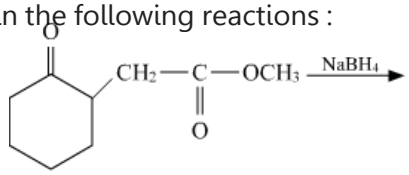
4. Write the structure of the alkene formed by dehydrohalogenation of 1-bromo-1methylcyclohexane withalcoholic KOH

5. Write the structures of the main products in the following reactions :

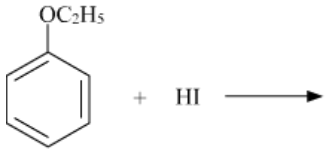
(i)



(ii)



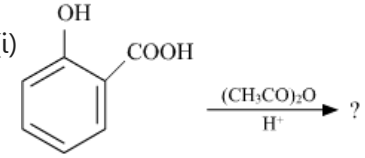
(iii)



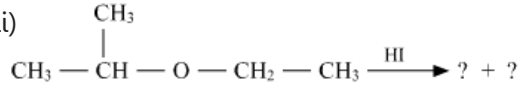
YEAR 2017.

1. (a)Write the product(s) in the following reactions :

(i)



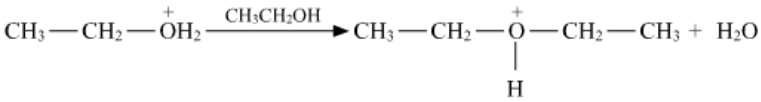
(ii)



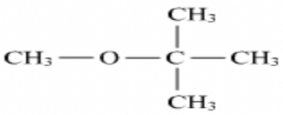
(iii) $CH_3 - CH = CH - CH_2 - OH \xrightarrow{PCC} ?$

2. (a)Give simple chemical tests to distinguish between the following pairs of compounds :
(i)Ethanol and Phenol (ii)Propanol and 2-methylpropan-2-ol
(b)Write the formula of reagents used in the following reactions :
(i)Bromination of phenol to 2,4,6-tribromophenol
(ii)Hydroboration of propene and then oxidation to propanol.

3. (a)Arrange the following compound groups in the increasing order of their property indicated :
(i)p-nitrophenol, ethanol, phenol (acidic character)
(ii)Propanol, Propane, Propanal (boiling point)
(b) Write the mechanism (using curved arrow notation) of the following reaction :



4. Write the IUPAC name of the following compound:



5. (a)Arrange the following compounds in the increasing order of their acid strength**: p-cresol, p-nitrophenol, phenol**

(b)Write the mechanism (using curved arrow notation) of the following reaction:

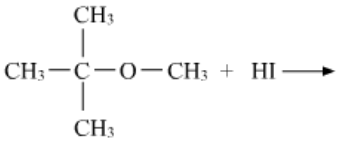
$$CH_2 = CH_2 \xrightarrow{H_3O^+} CH_3 - CH_2^+ + H_2O$$

(c)Write the structures of the products when Butan-2-ol reacts with the following:
(i) CrO_3 (ii). $SOCl_2$

1. Write the mechanism of the following reaction

$$2\ CH_3CH_2OH \xrightarrow[413\ K]{\text{Conc. } H_2SO_4} CH_3 - CH_2 - O - CH_2 - CH_3$$

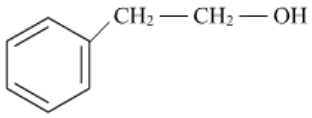
2. Write the main product(s) in each of the following reactions:

(i) 

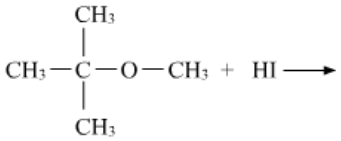
(ii) $CH_3-CH=CH_2 \xrightarrow[(ii)\ 3H_2O_2/OH^-]{(i)\ B_2H_6}$

(iii) $C_6H_5-OH \xrightarrow[(ii)\ CO_2,\ H^+]{(i)\ aq.\ NaOH}$

3. Write the IUPAC name of the given compound :



4. Write the final product(s) in each of the following reactions:

(i) 

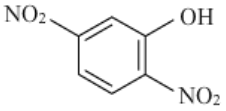
(ii) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3 \xrightarrow{Cu/573K}$

(iii) $C_6H_5-OH \xrightarrow[(ii)\ CO_2\ /\ H^+]{(i)\ NaOH}$

5. Name the compound formed when ethanol is heated in excess of conc. sulphuric acid at 443 K. Also, write the chemical equation of the reaction stating the role of conc. sulphuric acid in it. What would happen if hydrogen is added to the product of this reaction in the presence of a catalyst such as palladium or nickel?

YEAR 2015.

1. Write the IUPAC name of the given compound:

(i) $CH_3=\underset{\displaystyle CH_3}{\underset{|}{C}}-CH_2-OH$ (ii) $HO-CH_2-CH=\underset{\displaystyle CH_3}{\underset{|}{C}}-CH_3$ (iii) 

2. Name the reagents used in the following reactions:

(i) $CH_3-CO-CH_3 \longrightarrow CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

(ii) $C_6H_5-CH_2-CH_3 \longrightarrow C_6H_5-COO^-K^+$

3. How do you convert the following :

(i)Phenol to anisole

(ii)Propan-2-ol to 2-methylpropan-2-ol

(iii)Aniline to phenol

1. (a)Write the equations involved in the following reactions:

(i)Reimer–Tiemann reaction

(ii)Williamson synthesis

(b)Which of the following isomers is more volatile: *o*-nitrophenol or *p*-nitrophenol?