One Two academy | Hydroxy Compounds and Ethers

Maximum Mark: 25 **Chemistry** **Time: 50 minutes**

Choose the correct answer: **3 x 1 = 3**

1. HO CH_2 CH_2 – OH on heating with periodic acid gives
   a) methanoic acid b) Glyoxal c) methanal d) CO_2
2. The major product obtained when phenol reacts with Con. H_2SO_4 at 280K is
   a) Salicylic acid b) Picric acid c) o-phenol sulphonic acid d) p-phenol sulphonic acid
3. Williamson synthesis of preparing dimethyl ether is a/an
   a) SN1 reaction b) SN2 reaction
   c) electrophilic addition d) electrophilic substitution

Answer Any four of the following: **4 x 2 = 8**

4. Identify the product (s) is / are formed when 1 – methoxy propane is heated with excess HI. Name the mechanism involved in the reaction.
5. How is picric acid prepared
6. What is metamerism? Give the structure and IUPAC name of metamers of 2-methoxy propane
7. How will you convert acetylene into n-butyl alcohol.
8. Can we use nucelophiles such as NH_3, CH_3O^- for the Nucleophilic substitution of alcohols

Answer any three of the following: **3 x 3 = 9**

9. Explain Swern Oxidation.
10. How is phenol prepared from i) chloro benzene ii) isopropyl benzene
11. What is saponification reaction? Explain with example.
12. Is it possible to oxidise t – butyl alcohol using acidified dichromate to form a carbonyl compound.

Answer the following: **1 x 5 = 5**

13. a) 3,3 – dimethylbutan -2-ol on treatment with conc. H_2SO_4 to give tetramethyl ethylene as a major product. Suggest a suitable mechanism.

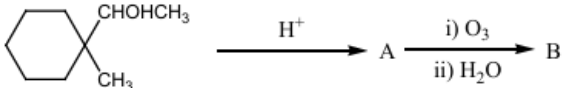
(Or)

b) b) Complete the following reactions:

i) $CH_3 - CH_2 - OH \xrightarrow{P\,Br_3} A \xrightarrow{aq.NaOH} B \xrightarrow{Na} C$

ii) $C_6H_5 - OH \xrightarrow{Zn\ dust} A \xrightarrow[Anhydrs\ AlCl_3]{CH_3Cl} B \xrightarrow{acid\ KMnO_4} C$

iii) Anisole $\xrightarrow[AlCl_3]{t\text{-butylchloride}} A \xrightarrow{Cl_2/FeCL_3} B \xrightarrow{HBr} C$

iv) 

All the Best

One Two academy

Answer Key attached in the next page !!!

This page is to prevent seeing answer key

One Two academy 2019

https://www.instagram.com/onetwoacademy2019/

One Two updates

https://www.instagram.com/onetwo_updates/

One two academy

https://onetwocoachingacad.wixsite.com/onetwo-academy

One two katral maiyam

https://www.onetwokatralmaiyam.com/

One Two academy

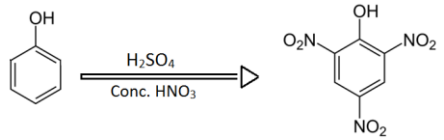
Answer Key

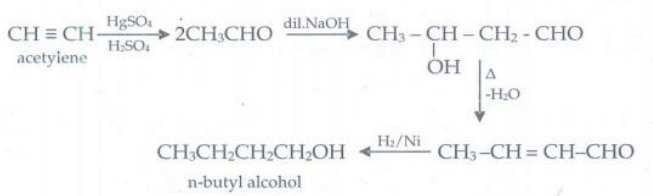
Choose the Correct answer:

1. – c) 2. – c) 3. – d)

Answer any four of the following:

4. 1- methoxy propane is heated with excess of HI, gives methyl iodide and n-propyl iodide.
   $CH_3{-}O{-}CH_2CH_2CH_3 + 2HI \xrightarrow{\Delta} CH_3I + CH_3CH_2CH_2I + H_2O$
   This reaction follows S_N2 pathway
5. **Picric acid:** When phenol reacts with nitrating mixture of Con. H_2SO_4 and con. HNO_3 the product formed is nitric acid.



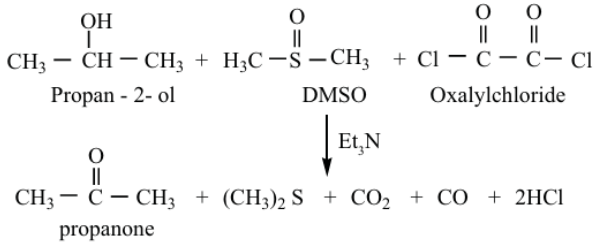
6. Metamerism: Metamerism arises due to different alkyl chains on either side of the functional group.
   i) CH_3-O-CH-CH_3
   |
   CH_3
   2 – methoxy propane
   ii) CH_3-O-CH_2-CH_2-CH_3
   1 – methoxy propane
   iii) CH_3-CH_2-O -CH_2-CH_3
   Ethoxy ethane
7. 

8. Both NH_3, CH_3O^- pick up a proton from the alcohol and thus gives NH_4^+ ion and CH_3OH. This considerably reduces the nucleophilic tendency of NH_3 and CH_3O towards alcohol.

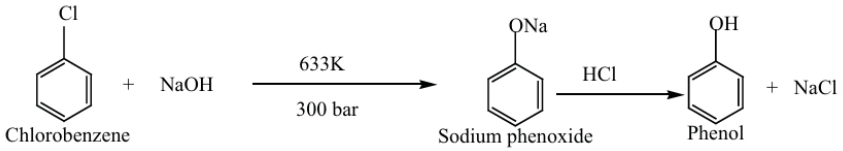
Answer any three of the following:

9. **Swern Oxidation:** In this method, dimethyl sulfoxide (DMSO) is used as the oxidising agent, which converts alcohols to ketones / aldehydes. In this method an alcohol is treated with DMSO and oxalyl chloride followed by the addition of triethylamine.

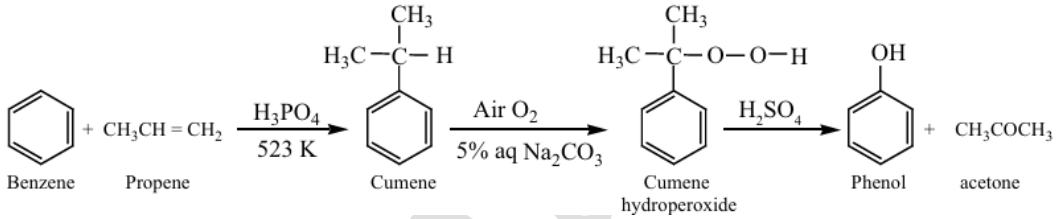
Orange academy



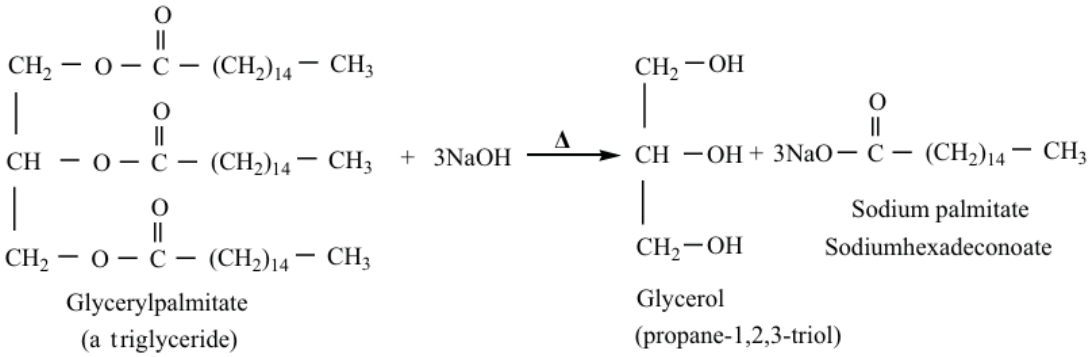
10. **i) chloro benzene (Dows process):** When Chlorobenzene is hydrolysed with 6-8% NaOHat 300 bar and 633K in a closed vessel,sodium phenoxide is formed which on treatment with dilute HCl gives phenol.



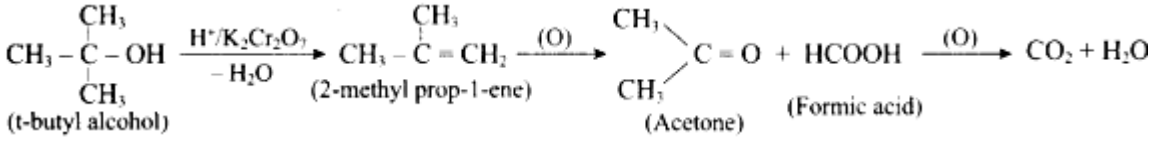
ii) isopropyl benzene:A mixture of benzene and propene is heated at 523K in a closed vessel in presence of HPO 3 4 catalyst gives cumene (isopropylbenzene). On passing air to a mixture of cumene and 5% aqueous sodium carbonate solution, cumene hydro peroxide is formed by oxidation. It is treated with dilute acid to get phenol and acetone.



11. **Saponification:** Glycerol occurs in many natural fats, and it is also found in long chain fatty acids in the form of glyceryl esters (Triglycerides). The alkaline hydrolysis of these fats gives glycerol, and the reaction is known as saponification.

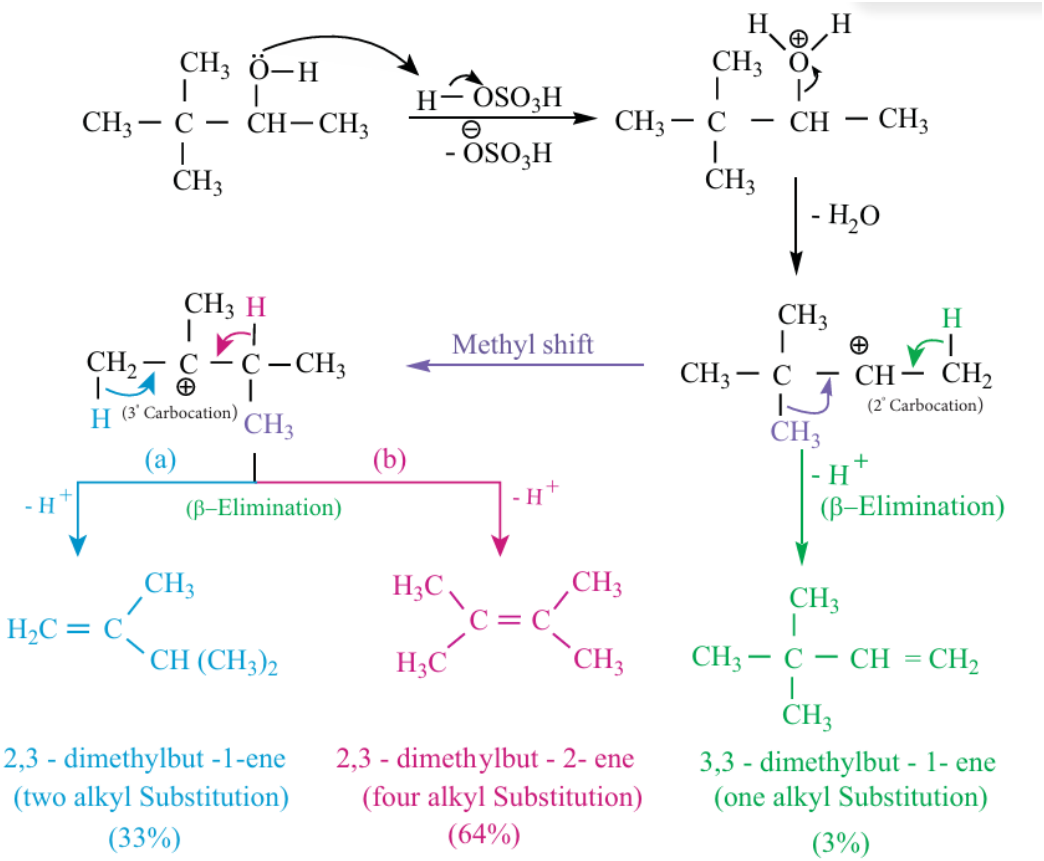


12. No, Tertiary alcohols are stable to oxidation under normal conditions. But at elevated temperature, Cleavage of C=C bond takes place to give a mixture of carboxylic acid with lesser number of carbon atoms.



Answer the following:

13. a)



Saytzeff rule: According to saytzeff rule in dehydrohalogenation reactions the preferred product is alkene which has the greater number of alkyl groups attached to the double bonded carbon atoms.

(OR)

b) **Complete the following reactions:**

(i) **A:** CH_3CH_2Br**; B:** CH_3CH_2OH**; C:** CH_3CH_2ONa

(ii) **A:** Benzene; **B:** Toluene; **C:** Benzoic acid

(iii) **A:** p-tert-butyl anisole; **B:** 2-chloro-4-tert-butyl anisole; **C:** 2-chloro-4-tert-butyl phenol

(iv) **A:** Alkene (dehydration product); **B:** Cyclohexanone derivative + acetaldehyde