

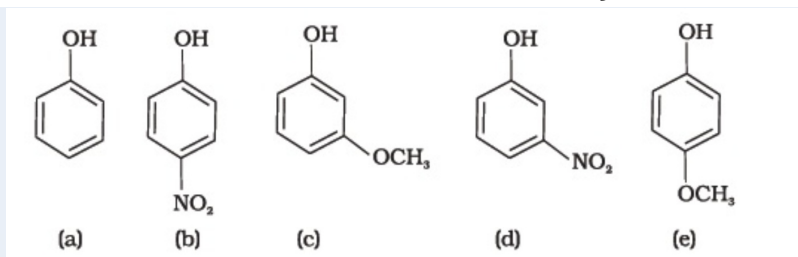
CBSE Test Paper-02

Class - 12 Chemistry (Alcohols, Phenols and Ethers)

1. Which of the following reactions will not result in the formation of carbon-carbon bond?

1. Friedel Crafts acylation
2. Wurtz reaction
3. Cannizzaro reaction
4. Reimer-Tieman reaction

2. What will be the correct order of acidity of the following compounds?



- a. $b > d > c > e > a$
- b. $b > d > c > a > e$
- c. $d > b > c > a > e$
- d. $b > d > a > c > e$

3. An organic compound X is oxidised by using acidified $K_2Cr_2O_7$. The product obtained reacts with Phenyl hydrazine but does not answer silver mirror test. The possible structure of X is

- a. $(CH_3)_2CHOH$
- b. None
- c. CH_3CHO
- d. CH_3CH_2OH

4. 3-Pentanol is an example of

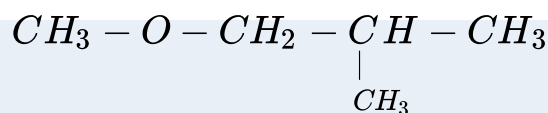
- a. Primary alcohol

- b. Secondary alcohol
- c. Tertiary alcohol
- d. Aromatic alcohol

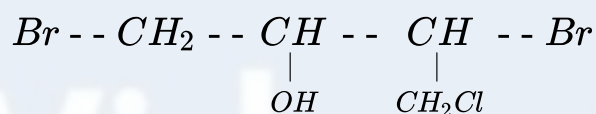
5. IUPAC name of the following compound is $CH_3 - \underset{\substack{| \\ CH_3}}{CH} - OCH_3$

- a. 2 – methoxy – 2 – methylethane
- b. 2 – methoxypropane
- c. isopropylmethyl ether
- d. 1 – methoxy – 1 – methylethane

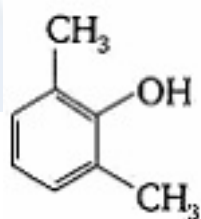
6. Write IUPAC names of the compounds.



7. Write IUPAC names of:-



8. Write IUPAC names of the compounds.



9. How are the following conversions carried out? (Write reactions with conditions).

- a. 1-propanol to 1-chloro-2-propanol
- b. phenol to salicylic acid.

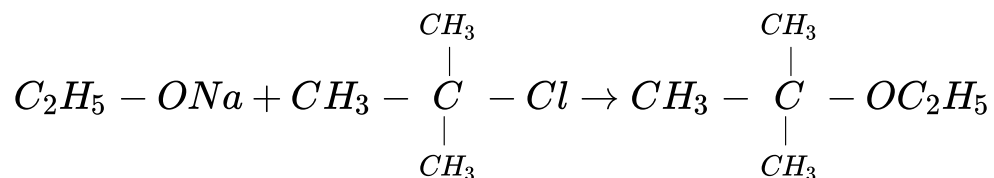
10. Write structural formula and give IUPAC name:-

Methylpropylether

11. Write structural formula and give IUPAC name:-

Ethylphenylether

12. Explain why is ortho nitrophenol more acidic than ortho methoxyphenol?
13. The following is not an appropriate reaction for the preparation of tert-butylethyl ether.



- What should be the major product of this reaction?
 - Write a suitable reaction for the preparation of tert-butylethyl ether.
14. How are the following conversions carried out:
- 1-propanol to 1-chloro-2-propanol.
 - Phenol to salicylic acid.
15. Write equations of the following reactions:
- Friedel-Crafts reaction-alkylation of anisole.
 - Nitration of anisole.
 - Bromination of anisole in ethanoic acid medium.
 - Friedel-Craft's acetylation of anisole.

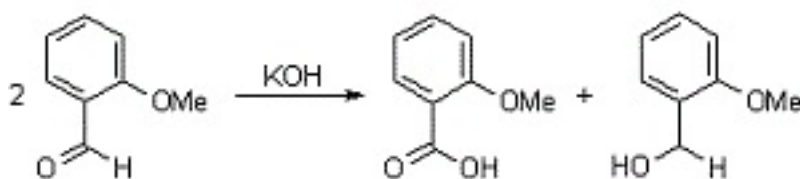
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Class - 12 Chemistry (Alcohols, Phenols and Ethers)

Solutions

1. (c) Cannizzaro reaction

Explanation: The Cannizzaro reaction, named after its discoverer Stanislao Cannizzaro, is a chemical reaction that involves the base-induced disproportionation of an aldehyde lacking a hydrogen atom in the alpha position.



This redox disproportionation of non-enolizable aldehydes to carboxylic acids and alcohols is conducted in concentrated base.

2. (b) $b > d > c > a > e$

Explanation: The acidity of phenols depends on the group attached to the benzene ring. Groups showing electron withdrawing nature i.e. -I and -R effect will increase the acidity while group showing electron donating nature like +I and +R effect will decrease acidity. Resonance effect of group (-R or +R) attached to benzene system is operative only ortho and para position of the benzene system, while at meta position only inductive effect is operative.

Clearly, b will be most acidic because $-\text{NO}_2$ group attached will show strong -R effect.

In d, $-\text{NO}_2$ is present at meta position where only -I is effective. -I effect of $-\text{NO}_2$ is more than $-\text{OCH}_3$ group so, d will be more acidic than c, e will be least acidic as $-\text{OCH}_3$ group is attached at para position and shows +R effect.

3. (a) $(\text{CH}_3)_2\text{CHOH}$

Explanation: Secondary alcohol on oxidation forms ketone which reacts with hydrazine but does not give silver mirror test.

4. (b) Secondary alcohol

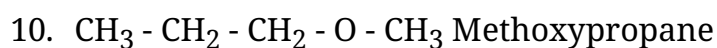
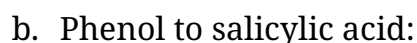
Explanation: A secondary alcohol is a compound in which a hydroxy group, $-\text{OH}$, is attached to a saturated carbon atom which has two other carbon atoms attached to it.

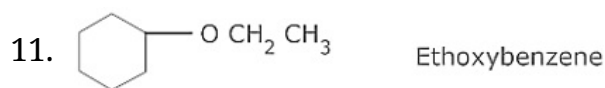


A diagram of a methyl group, represented by a central carbon atom bonded to three other atoms. The bonds are labeled 1, 2, and 3. Bond 1 is a vertical line pointing downwards. Bond 2 is a line pointing diagonally down and to the right. Bond 3 is a line pointing diagonally up and to the right. The three bonds (1, 2, and 3) are highlighted in yellow.

If the oxygen is not attached to the end of the main alkane chain, then the whole shorter alkyl-plus-ether group is treated as a side-chain and prefixed with its bonding position on the main chain. Thus $\text{CH}_3\text{OCH}(\text{CH}_3)_2$ is 2-methoxypropane.

6. 1-Methoxy 2-Methylpropane
7. 1,3 -- Dibromo - 4 - chloro - 2 - butanol
8. 2, 6-Dimethylphenol
9. a. 1-propanol to 1-chloro-2-propanol:





12. The nitro-group is an electron-withdrawing group. The presence of this group in the ortho position decreases the electron density in the O-H bond. As a result, it is easier to lose a proton. Also, the o-nitrophenoxide ion formed after the loss of protons is stabilized by resonance. Hence, ortho nitrophenol is a stronger acid.

On the other hand, methoxy group is an electron-releasing group. Thus, it increases the electron density in the O-H bond and hence, the proton cannot be given out easily. For this reason, ortho-nitrophenol is more acidic than ortho-methoxyphenol.

13. i. The major product of the given reaction is 2-methylprop-1-ene. It is because sodium ethoxide is a strong nucleophile as well as a strong base. Thus, elimination reaction predominates over substitution.

