

Alcohol Phenol Ether

Multiple Choice Questions on Synthetic Uses of Grignard Reagents

1. Which product is obtained when a Grignard reagent reacts with formaldehyde?
 - a) Primary alcohol
 - b) Secondary alcohol
 - c) Tertiary alcohol
 - d) Carboxylic acid
2. The reaction of ethylmagnesium bromide with acetone followed by hydrolysis yields:
 - a) Ethanol
 - b) 2-Propanol
 - c) 2-Butanol
 - d) 3-Pentanol
3. When a Grignard reagent reacts with carbon dioxide followed by hydrolysis, the product is:
 - a) Alcohol
 - b) Ketone
 - c) Carboxylic acid
 - d) Aldehyde
4. Which compound is formed when phenylmagnesium bromide reacts with benzaldehyde followed by hydrolysis?
 - a) Benzyl alcohol
 - b) Benzoic acid
 - c) 1-Phenylethanol
 - d) 2-Phenylethanol
5. Which of the following reagents can be used to prepare a tertiary alcohol from a ketone?
 - a) RMgX
 - b) RLi
 - c) R_2CuLi
 - d) R_2AlH
6. Which of the following is NOT a product of the reaction of a Grignard reagent with an ester followed by hydrolysis?
 - a) Primary alcohol
 - b) Secondary alcohol
 - c) Tertiary alcohol
 - d) Ketone
7. The reaction of methylmagnesium bromide with ethylene oxide followed by hydrolysis produces:
 - a) Ethanol
 - b) Propanol
 - c) Butanol
 - d) Methanol

8. Grignard reagents react with nitriles to produce:
- Amines
 - Alcohols
 - Aldehydes
 - Ketones
9. Which compound is synthesized when a Grignard reagent reacts with an epoxide followed by hydrolysis?
- Alcohol
 - Ether
 - Ketone
 - Aldehyde
10. To synthesize 2-methyl-2-butanol, which Grignard reagent and carbonyl compound should be used?
- Ethylmagnesium bromide and acetone
 - Methylmagnesium bromide and 2-butanone
 - Propylmagnesium bromide and formaldehyde
 - Isopropylmagnesium bromide and acetaldehyde
11. The reaction of Grignard reagent with an aldehyde followed by hydrolysis generally yields:
- Primary alcohol
 - Secondary alcohol
 - Tertiary alcohol
 - Carboxylic acid
12. Which product is obtained when a Grignard reagent reacts with water?
- Alcohol
 - Alkane
 - Ether
 - Carboxylic acid
13. A Grignard reagent can be used to prepare which of the following compounds?
- Alcohols
 - Ketones
 - Carboxylic acids
 - All of the above
14. When propylmagnesium bromide reacts with butanal followed by hydrolysis, the product is:
- 1-Pentanol
 - 1-Hexanol
 - 2-Hexanol
 - 3-Hexanol
15. Which of the following Grignard reagents and carbonyl compounds is needed to prepare 3-phenyl-3-pentanol?
- Phenylmagnesium bromide and propanal
 - Phenylmagnesium bromide and butanone
 - Methylmagnesium bromide and acetophenone
 - Ethylmagnesium bromide and acetophenone

2. c) 2-Butanol
3. c) Carboxylic acid
4. c) 1-Phenylethanol
5. a) RMgX
6. d) Ketone
7. b) Propanol
8. d) Ketones
9. a) Alcohol
10. b) Methylmagnesium bromide and 2-butanone
11. b) Secondary alcohol
12. b) Alkane
13. d) All of the above
14. c) 2-Hexanol
15. b) Phenylmagnesium bromide and butanone

Answer Key:

1. a) Primary alcohol