ChemHL Benzene&Reduction G11

* 您的姓名:

* 1. The reagents used for the reaction from CH_3CH_2CHO to $CH_3CH_2CH_2OH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B and D can be used.

* 2. The reagents used for the reaction from $CH_3CH_2COCH_3$ to $CH_3CH_2CHOHCH_3$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.

F. All of A, B & D can be used.

* 3. The reagents used for the reaction from $C_6H_5NO_2$ to $C_6H_5NH_2$ is

A. Heat with NaBH4 in acidic solution

B. Heat with LiAlH4 in dry ether, followed with acidic solution

C. Heat with tin and conc. HCl, followed with NaOH solution

D. Heat with H2 with Ni catalyst

E. Both A & B can be used.

F. All of A, B & D can be used.

* 4. The reagents used for the reaction from C_6H_6 to cyclohexane is

A. Heat with NaBH4 in acidic solution

B. Heat with LiAlH4 in dry ether, followed with acidic solution

C. Heat with tin and conc. HCl, followed with NaOH solution

D. Heat with H2 with Ni catalyst

E. Both A & B can be used.

F. All of A, B & D can be used.

* 5. The reagents used for the reaction from $CH_3CH{=}CHCH_3$ to $CH_3(CH_2)_2CH_3$ is

A. Heat with NaBH4 in acidic solution

B. Heat with LiAlH4 in dry ether, followed with acidic solution

C. Heat with tin and conc. HCl, followed with NaOH solution

D. Heat with H2 with Ni catalyst

E. Both A & B can be used.

F. All of A, B & D can be used.

* 6. The reagents used for the reaction from $CH_3COCOOH$ to $CH_3CHOHCH_2OH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 7. The reagents used for the reaction from $CH_3COCOOH$ to $CH_3CHOHCOOH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 8. The reagents used for the reaction from $CH_2=CHCOCOOH$ to $CH_2=CHCHOHCH_2OH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 9. The reagents used for the reaction from CH_2=CHCOCOOH to $CH_3CH_2CHOHCOOH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 10. The reagents used for the reaction from O2NC6H4COOH to O2NC6H4CH2OH is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 11. The reagents used for the reaction from $O_2NC_6H_4COOH$ to $H_2NC_6H_4COOH$ is

- A. Heat with NaBH4 in acidic solution
- B. Heat with LiAlH4 in dry ether, followed with acidic solution
- C. Heat with tin and conc. HCl, followed with NaOH solution
- D. Heat with H2 with Ni catalyst
- E. Both A & B can be used.
- F. All of A, B & D can be used.

* 12. Why a catalyst is required for the chlorination of benzene but not for the chlorination of propene?

- A. Benzene only undergoes substitution while propene undergoes addition.
- B. Benzene is liquid under RTP while propene is a gas.
- C. Benzene has a lower bond order of C-C bond so is weaker than that in propene.
- D. The electron density on the carbon atoms in benzene is lower than in the carbon atoms involved in C=C bond in propene.

* 13. The balanced equation of the reaction between methylbenzene and nitric acid is (fill in with condensed structural formula, methylbenzene first. For products, organic product prior to inorganic one.)

[ ] + [ ] ---> [ ] + [ ]

The catalyst of this reaction is [ ] .

* 14. When methylbenzene reacts with nitric acid, substitution occurs on C4 (with the methyl group on C1). Write the mechanism for this reaction. Also show the chemical equation of the formation of the electrophile in this reaction and the chemical equation of the regeneration of the catalyst.

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