Organic Chemistry

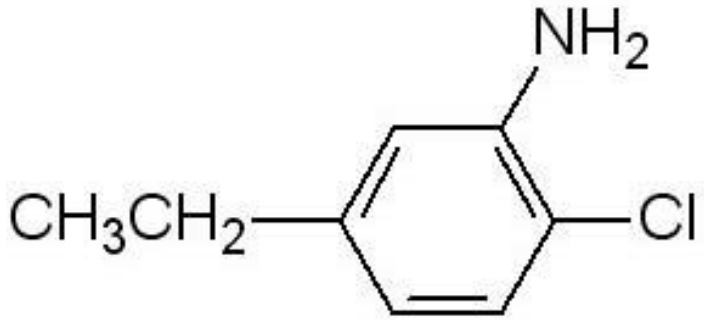
Carey/Giuliano

10th edition

Chapter 22

Question 1

What is the IUPAC name of the amine shown?



A) 6-chloro-3-ethylaniline

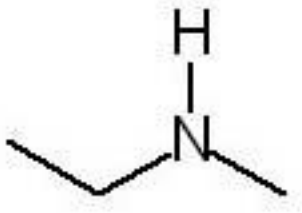
B) 3-amino-4-chlorotoluene

C) 2-chloro-5-ethylaniline

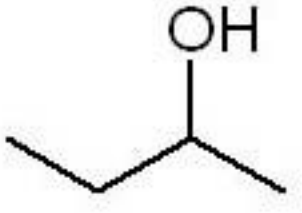
D) 2-chloro-5-ethylanisole

Question 2

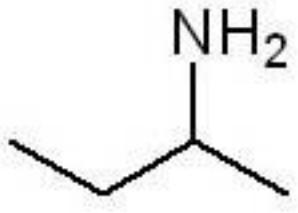
Rank the following compounds in order of increasing boiling point.



1



2



3

A) 2 < 1 < 3

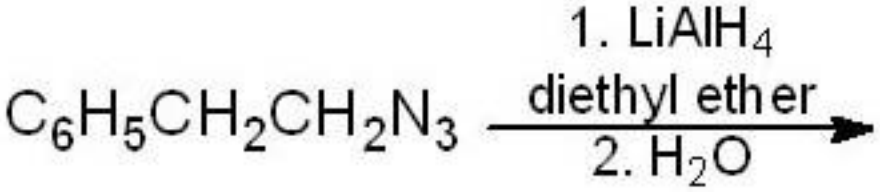
B) 1 < 2 < 3

C) 3 < 1 < 2

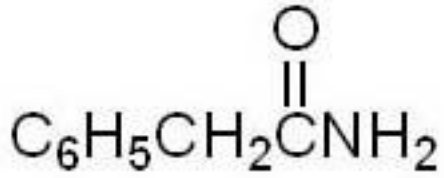
D) 1 < 3 < 2

Question 3

What is the product of the reaction shown?

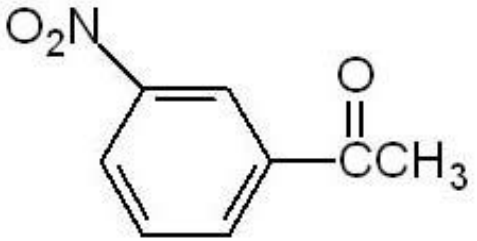


A) $C_6H_5CH_2CH_2NH_2$ B) $C_6H_5CH_2CH_2NO_2$

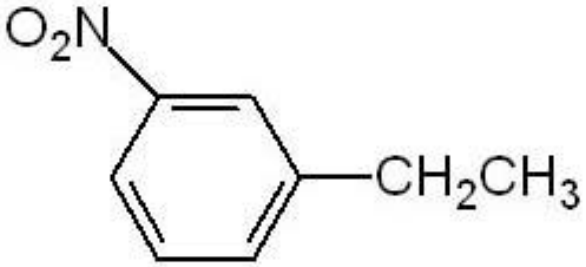
C)  D) $C_6H_5CH_2CH_3$

Question 4

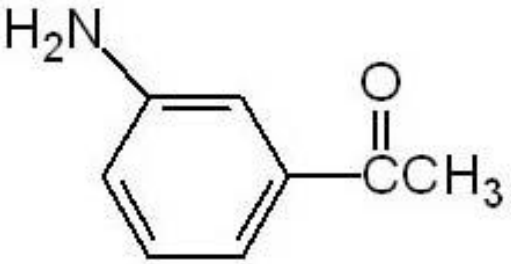
Which one of the following is produced when *m*-nitroacetophenone is treated with Sn and HCl followed by NaOH?



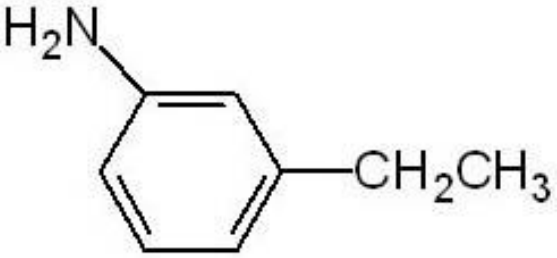
A)



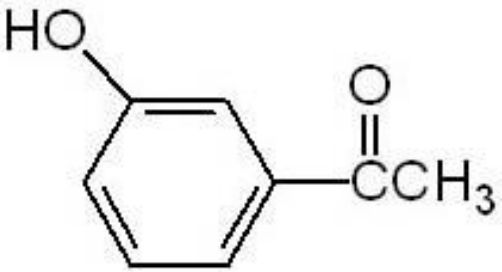
B)



C)

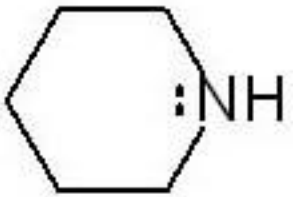


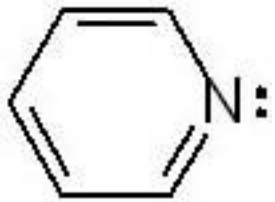
D)

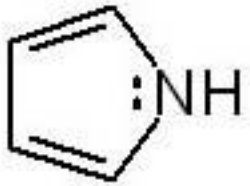


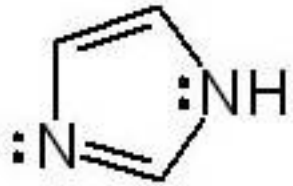
Question 5

Which of the following amines is more basic?

A) 

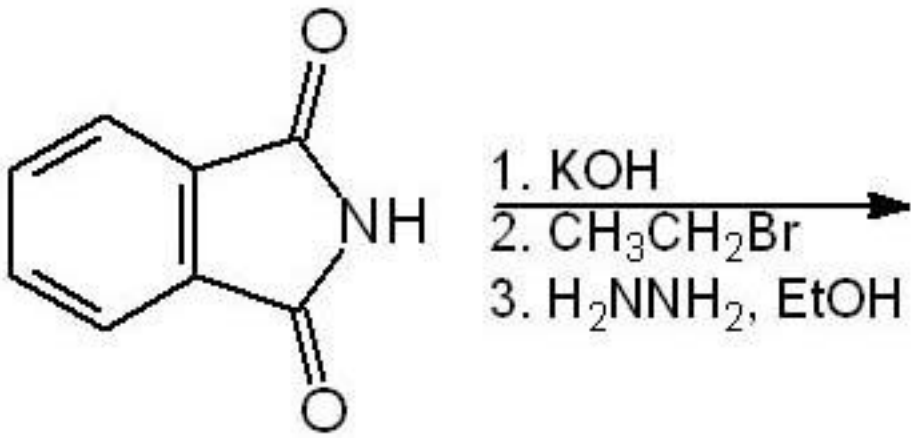
B) 

C) 

D) 

Question 6

What is the product of the Gabriel synthesis shown?



A) diethyl ether

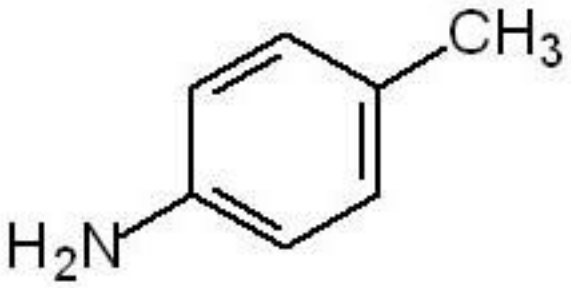
B) ethanol

C) ethyl amine

D) $CH_3CH_2NHNH_2$

Question 7

Starting with benzene, which of the sequences below will produce *p*-methylaniline as the major product of the reaction?



A) 1. HNO_3, H_2SO_4; 2. CH_3Cl, $AlCl_3$; 3. Fe, HCl; 4. NaOH

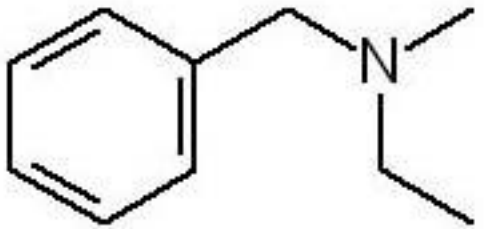
B) 1. HNO_3, H_2SO_4; 2. Fe, HCl; 3. NaOH; 4. CH_3Cl, $AlCl_3$

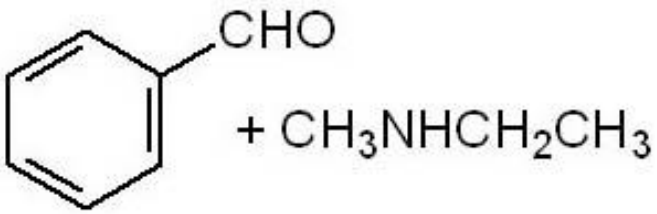
C) 1. CH_3Cl, $AlCl_3$; 2. HNO_3, H_2SO_4; 3. Fe, HCl; 4. NaOH

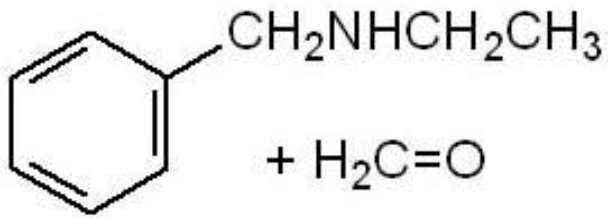
D) 1. CH_3Cl, $AlCl_3$; 2. HNO_3, H_2SO_4; 3. H_2

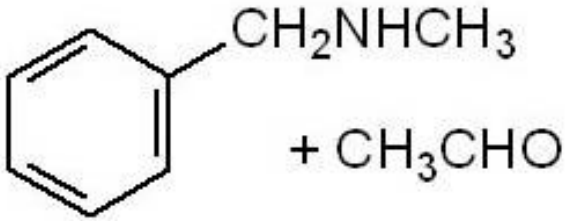
Question 8

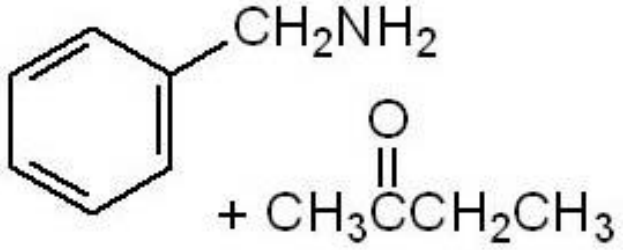
Which combination of reactants will **not** produce the amine at the right under reductive amination conditions?



A) 

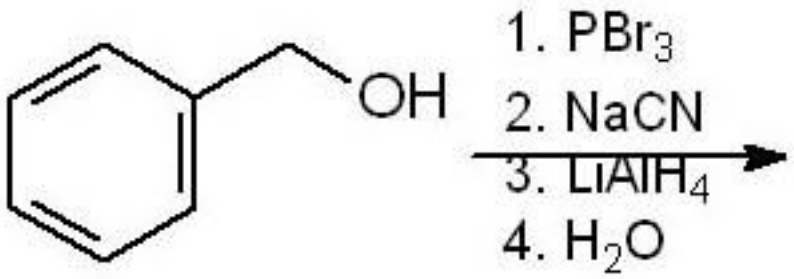
B) 

C) 

D) 

Question 9

What is the major organic product of the synthesis shown?



A) $C_6H_5CH_2CN$

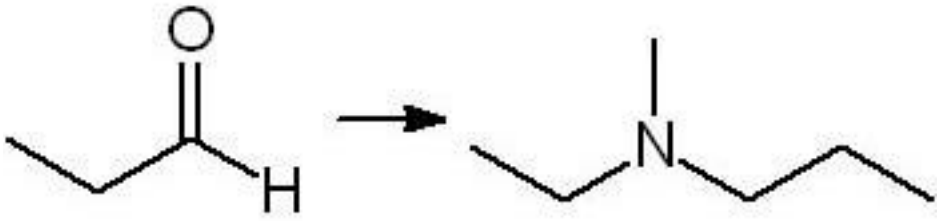
B) $C_6H_5CH_2CHO$

C) $C_6H_5CH_2CH_2NH_2$

D) $C_6H_5CH_2NH_2$

Question 10

How would you accomplish the conversion of propanal into *N*-ethyl-*N*-methylpropanamine?



A) NH_3, $NaBH_3CN$; CH_3I; CH_3CH_2I

B) CH_3NH_2, $NaBH_3CN$; CH_3COCl, pyridine; $LiAlH_4$; H_2O

C) CrO_3, H_2SO_4; $SOCl_2$, pyridine; 2 equiv CH_3NH_2; CH_3I

D) $CH_3CH_2NH_2$, H_2, Ni; $(CH_3CO)_2O$, pyridine; $NaBH_4$

Question 11

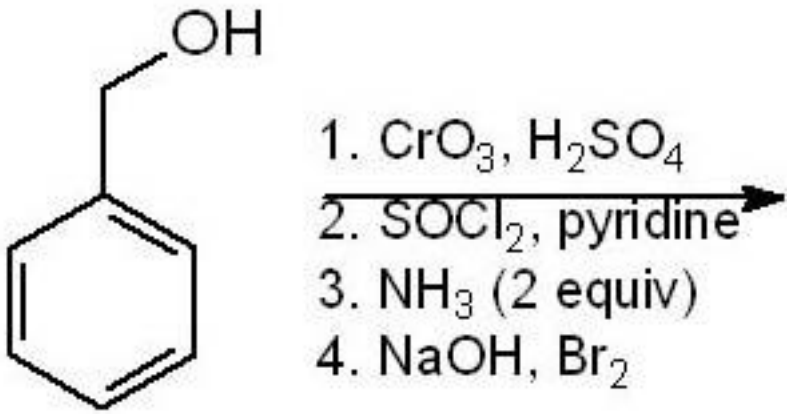
Identify the product of the synthesis shown.

A) $C_6H_5NH_2$

B) $C_6H_5CH{=}NH$

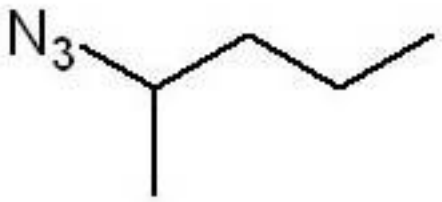
C) $C_6H_5CH_2NH_2$

D) $C_6H_5C(=O)NH_2$

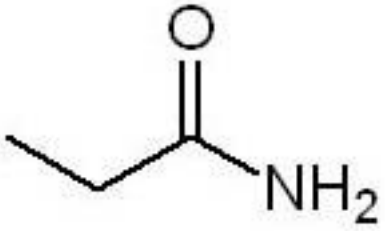


Question 12

Which of the following **cannot** be reduced to a primary amine?

A) 

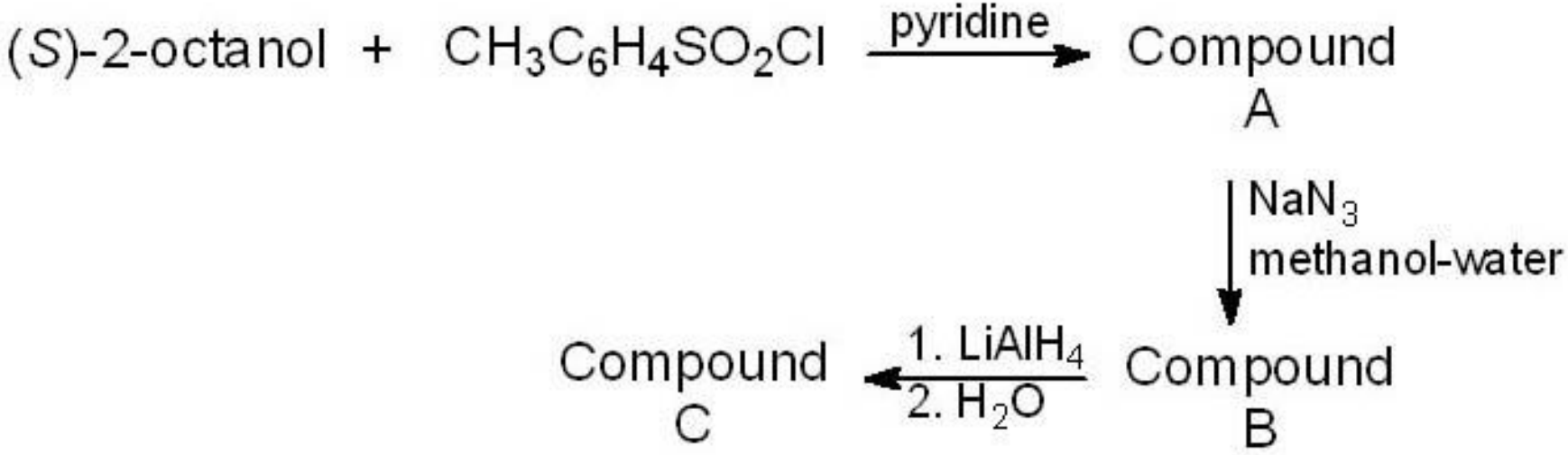
B) 

C) 

D) 

Question 13

Identify **compound C** formed in the synthetic sequence below.



A) (*R*)-2-octanamine B) (*S*)-2-octanamine

C) (*R*)-2-octanol D) octane

Question 14

Which of the sequences below is the best way to prepare propanamine from propanol?

A) 1. NaN_3 2. $NaOCH_2CH_3$, CH_3CH_2OH

B) 1. HBr 2. NH_3

C) 1. PBr_3 2. NaN_3 3. $LiAlH_4$ 4. H_2O

D) 1. H_2SO_4 2. $NaNH_2$ 3. H_2O

Question 15

Which of the following arylamines will not form a diazonium salt on reaction with sodium nitrite in hydrochloric acid?

A) *m*-Ethylamine

B) 4-Chloro-2-nitroaniline

C) *p*-Aminoacetophenone

D) *N*-Ethyl-2-methylaniline

Question 16

N-potassiophthalimide is used in the first step of the Gabriel synthesis. What conversion does the Gabriel synthesis achieve?

A) amide to nitrile

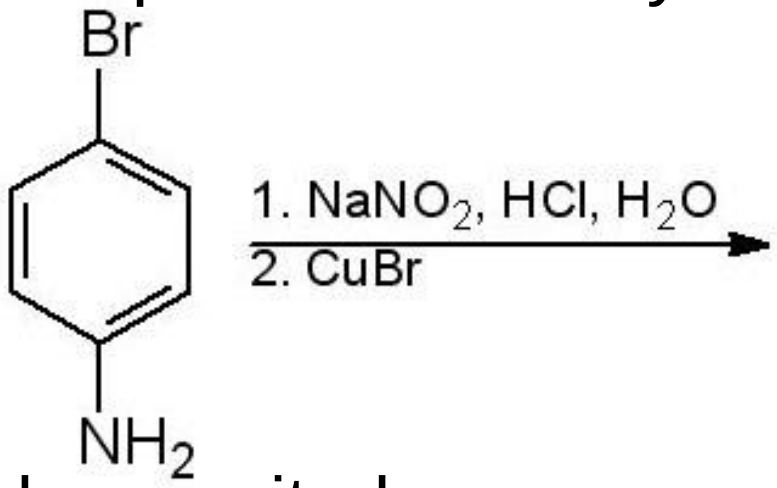
B) alkyl halide to primary amine

C) aryl diazonium salt to ArH

D) alkyl halide to nitrile

Question 17

What is the product of the synthesis shown?



A) *m*-bromonitrobenzene

B) *p*-dibromobenzene

C) *p*-bromonitrobenzene

D) 4-bromophenol

Question 18

Identify the product isolated from the reaction of *p*-nitroaniline with $NaNO_2$ in H_2SO_4 followed by the addition of potassium iodide (KI).

A) nitrobenzene

B) p-iodoaniline

C) p-iodonitrobenzene

D) p-diiodonitrobenzene

Question 19

Which set of reagents is best to chlorinate benzene?

A) HCl, peroxides

B) Cl_2, *hv*

C) Cl_2, CCl_4

D) Cl_2, $FeCl_3$

Answer Key – Chapter 22

1. C
2. D
3. A
4. B
5. D
6. C
7. C
8. D
9. C
10. B
11. A
12. D
13. A
14. C
15. D
16. B
17. B
18. C
19. D