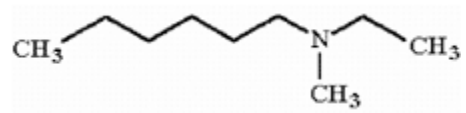


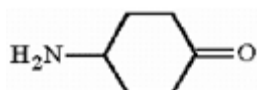
1) Draw the structure of *N*-ethyl-*N*-methyl-1-hexanamine.

Answer:



Diff: 2

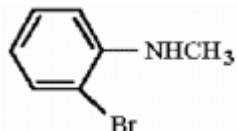
8) Provide the systematic name for the compound below.



Answer: 4-aminocyclohexanone

Diff: 2

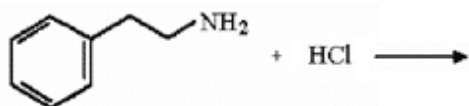
9) Provide the systematic name for the compound below.



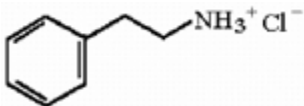
Answer: 2-bromo-N-methylaniline

Diff: 2

21) Provide the product of the reaction shown below.

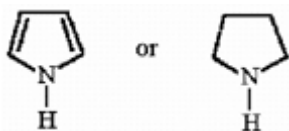


Answer:



Diff: 2

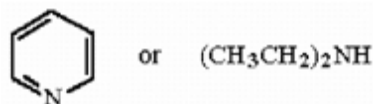
22) Circle the stronger base in the pair below, and briefly explain your choice.



Answer: Pyrrolidine is the stronger base. Protonation of pyrrole results in loss of aromaticity.

Diff: 3

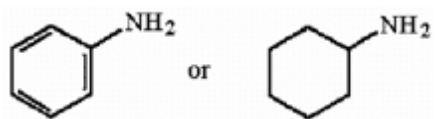
23) Circle the stronger base in the pair below, and briefly explain your choice.



Answer: Diethylamine is the stronger base. The lone pair electrons in pyridine are in an  $sp^2$  orbital which is lower in energy than the  $sp^3$  orbital of the lone pair in diethylamine.

Diff: 3

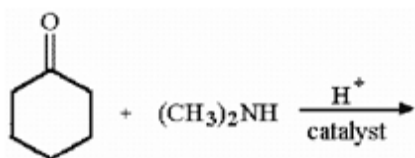
24) Circle the stronger base in the pair below, and briefly explain your choice.



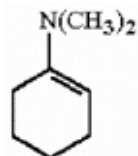
Answer: Cyclohexylamine is the stronger base. The lone pair electrons in aniline are delocalized into the adjacent aromatic  $\pi$  system.

Diff: 2

26) Provide the structure of the major organic product in the reaction below.

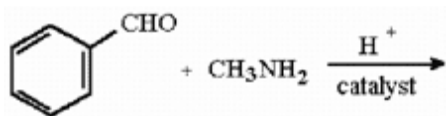


Answer:

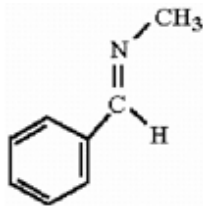


Diff: 2

27) Provide the structure of the major organic product in the reaction below.

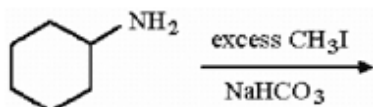


Answer:

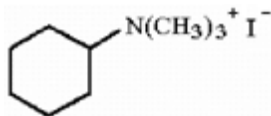


Diff: 2

35) Provide the structure of the major organic product in the reaction below.



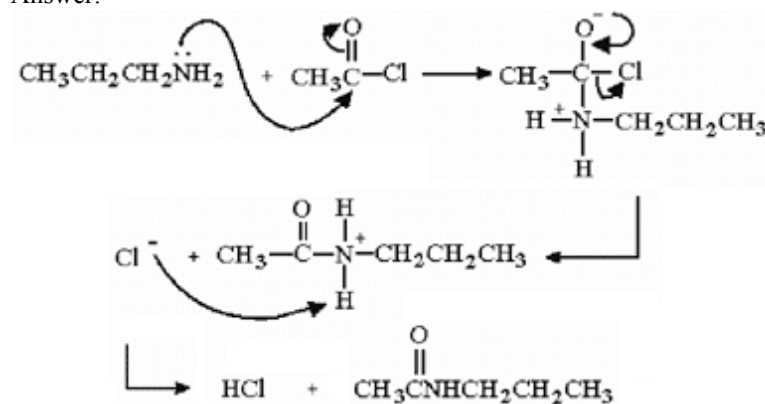
Answer:



Diff: 1

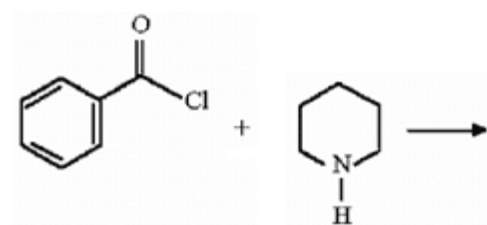
36) Provide a detailed, stepwise mechanism for the reaction of acetyl chloride with *n*-propylamine.

Answer:

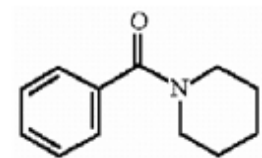


Diff: 3

37) Provide the structure of the major organic product in the reaction below.

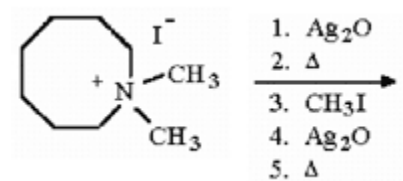


Answer:



Diff: 2

38) Provide the structure of the major organic product in the reaction below.

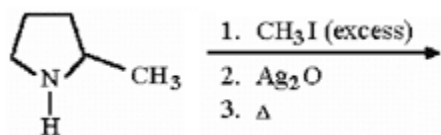


Answer:

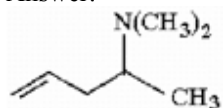


Diff: 3

40) Provide the structure of the major organic product in the reaction below.

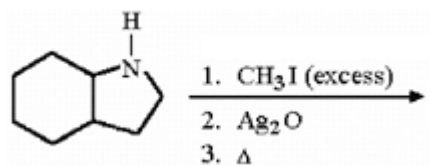


Answer:

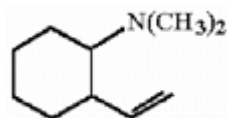


Diff: 2

41) Provide the structure of the major organic product in the reaction below.

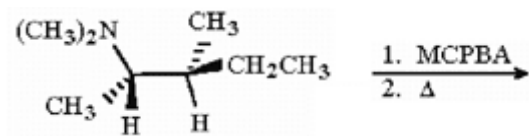


Answer:

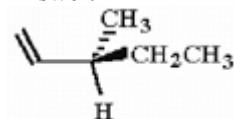


Diff: 2

43) Provide the structure of the major organic product in the reaction below.

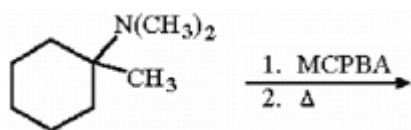


Answer:

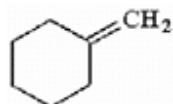


Diff: 3

44) Provide the structure of the major organic product in the reaction below.

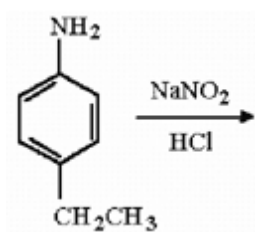


Answer:

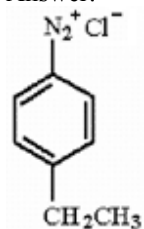


Diff: 2

46) Provide the structure of the major organic product in the reaction below.

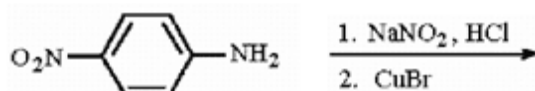


Answer:

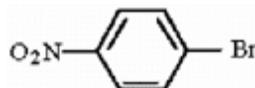


Diff: 1

47) Provide the structure of the major organic product in the reaction below.

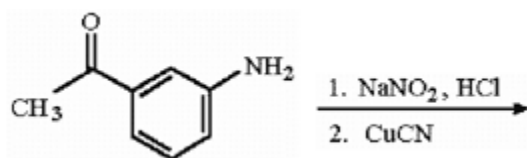


Answer:

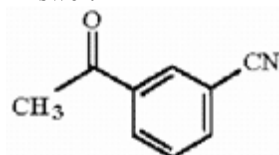


Diff: 2

48) Provide the structure of the major organic product in the reaction below.

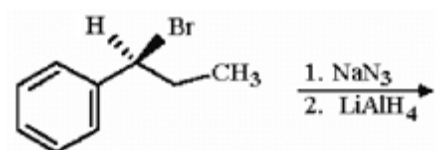


Answer:

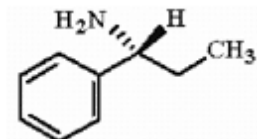


Diff: 2

49) Provide the structure of the major organic product in the reaction below.

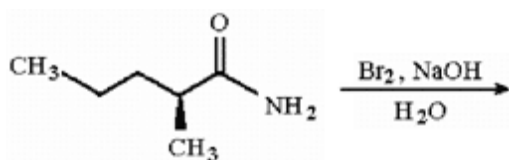


Answer:

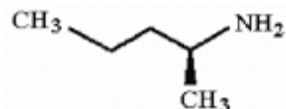


Diff: 2

50) Provide the structure of the major organic product in the reaction below.



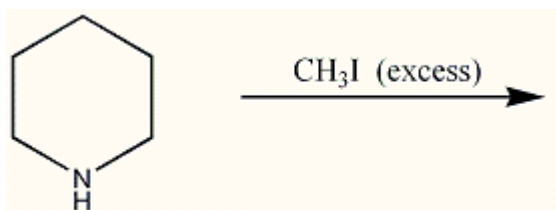
Answer:



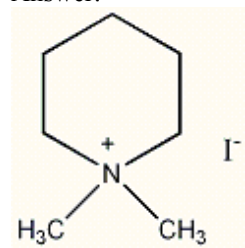
Diff: 2



88) Provide the major organic compound in the following reaction.

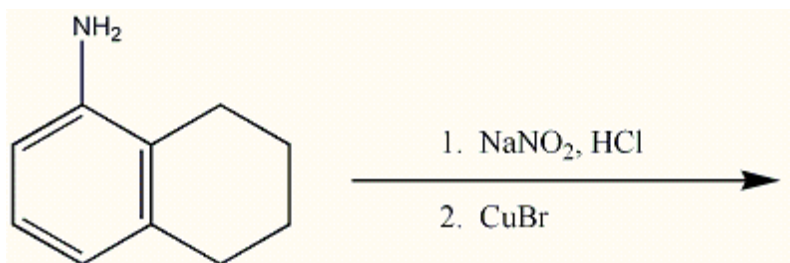


Answer:

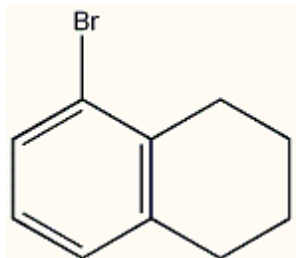


Diff: 2

89) Provide the major organic compound in the following reaction.

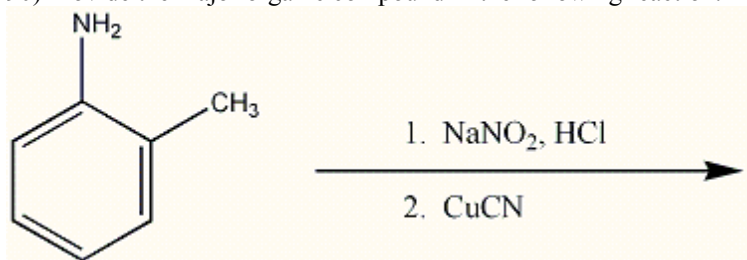


Answer:

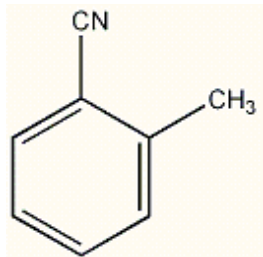


Diff: 2

90) Provide the major organic compound in the following reaction.



Answer:



Diff: 2