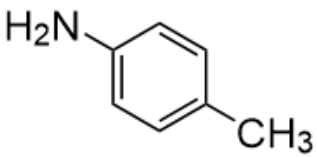
Organic Chemistry II CHM 3150
Dr. Laurie S. Starkey, Cal Poly Pomona
Chapter 22, Amines – Practice Problems

For clicker question voting, go to:
https://pollev.com/lauriestarke263

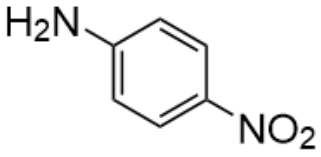
1 Provide both common and IUPAC names for each compound:

$CH_3CHNH_2CH_3$ $(CH_3)_2CHCH_2NH_2$ $(CH_3)_3CNH_2$ $N(CH_2CH_3)_3$

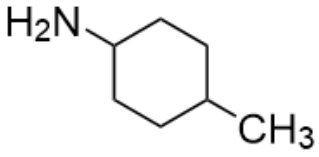
2 Which is the strongest base? Which is the weakest base? Explain briefly.



X

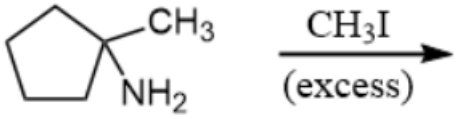


Y

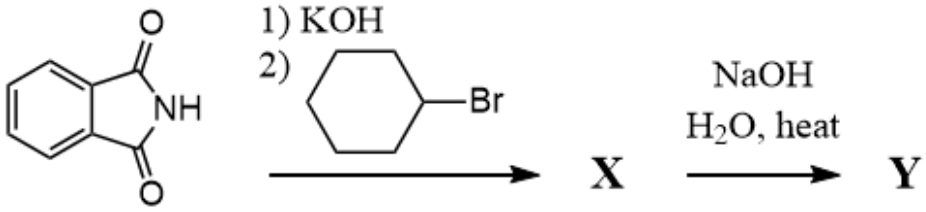


Z

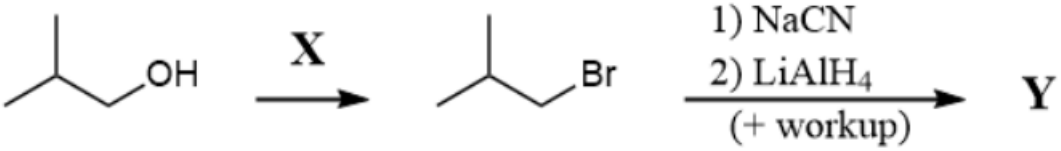
3 Predict the major product.



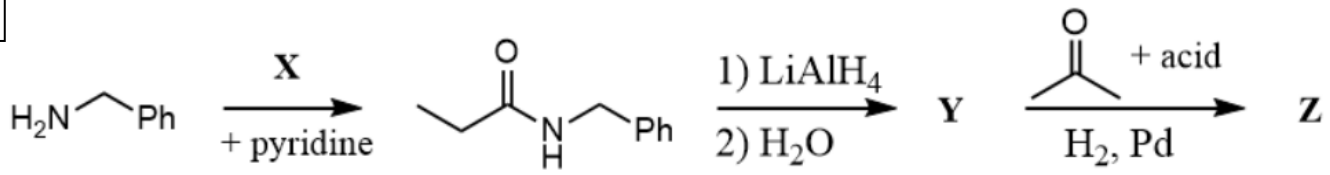
4 Predict the products **X** and **Y** and provide mechanisms for their formation.



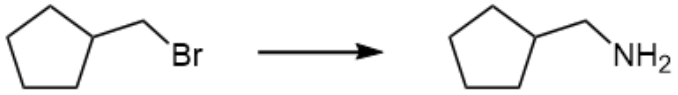
5 Identify the best reagent(s) **X** and the major product **Y**.

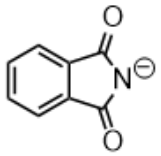


6 Provide the missing reagent **X** and predict the major products **Y** and **Z**.



7 Which of the following reagents are suitable for the given transformation?



I. 1) 

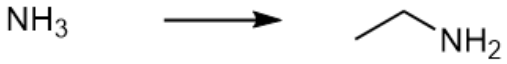
2) NaOH, H_2O, heat

II. 1) NaN_3; 2) H_2, Pt

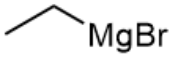
III. 1) NaCN; 2) H_2, Pt

IV. $NaNH_2$

8 Of the following reagents, which is BEST for the given transformation?

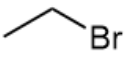


A) 1) $CH_2{=}CH_2$
2) H_3O^+

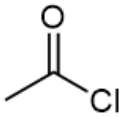
B) 

(+ workup)

C) $(CH_3CH_2)_2CuLi$
(+ workup)

D) 

+ base

E) 1) 

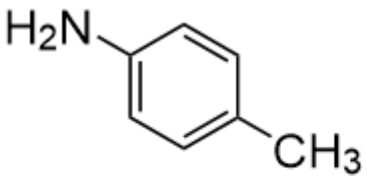
+ base
2) $LiAlH_4$; workup

1 Match the given compound with its correct common name.

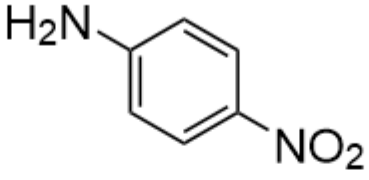
	$CH_3CHNH_2CH_3$	$(CH_3)_2CHCH_2NH_2$	$(CH_3)_3CNH_2$
A)	isopropyl amine	*n*-butyl amine	isobutyl amine
B)	*n*-propyl amine	*tert*-butyl amine	*sec*-butyl amine
C)	isopropyl amine	isobutyl amine	*tert*-butyl amine
D)	*n*-propyl amine	*n*-butyl amine	*tert*-butyl amine
E)	isopropyl amine	*tert*-butyl amine	isobutyl amine

$N(CH_2CH_3)_3$

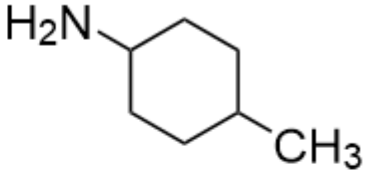
2 Which is the strongest base? Explain briefly.



X



Y



Z

A) **Y** is the strongest base because **Y** is destabilized by the EWG.

B) **Y** is the strongest base because its conj. acid is stabilized by NO_2.

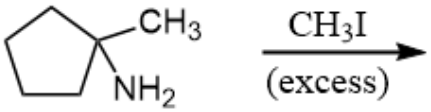
C) **Z** is the strongest base because it has the least stable conj. acid.

D) **Z** is the strongest base because the lone pair on N is localized.

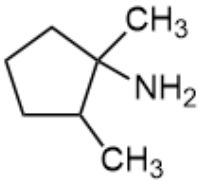
E) It's impossible to predict base strength without pK_a/pK_b data.

3

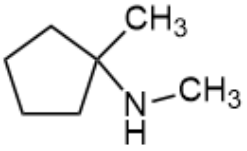
Predict the major product.



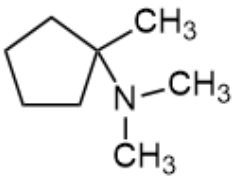
A)



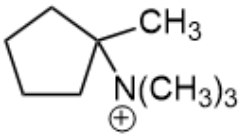
B)



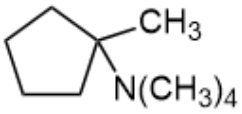
C)



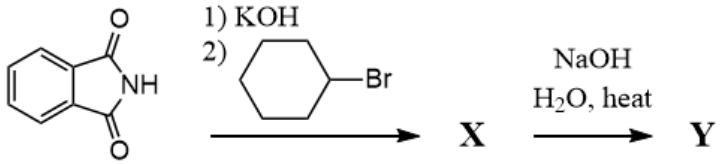
D)

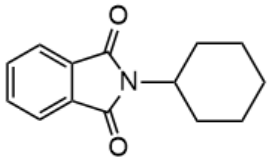
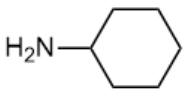
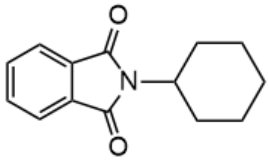
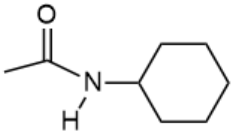
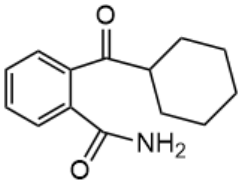
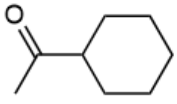
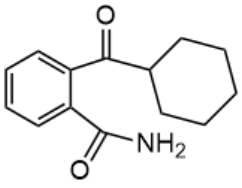
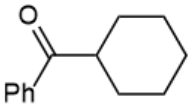


E)

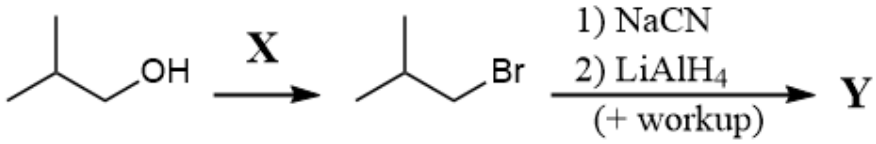


4



	X	**Y**
A)		
B)		
C)		
D)		

5 Identify the best reagent(s) and the major product.



reagent(s) **X**

A) HBr

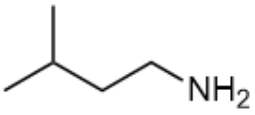
B) HBr, ROOR

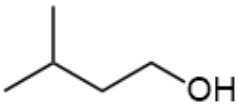
C) PBr_3

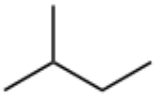
D) Br_2, hv

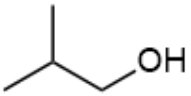
E) Br_2, H_2O

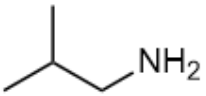
product **Y**

A) 

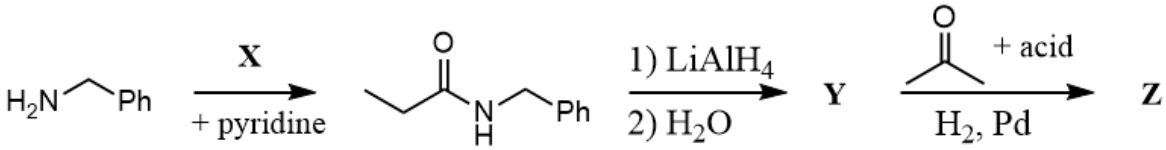
B) 

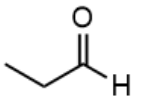
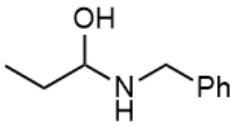
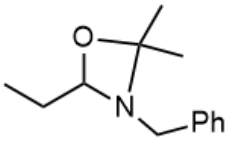
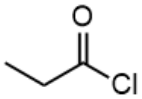
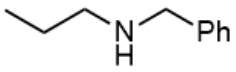
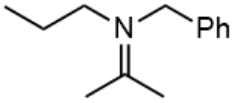
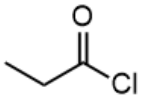
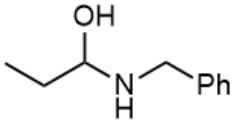
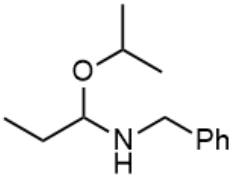
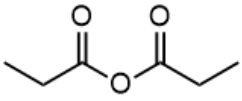
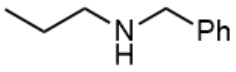
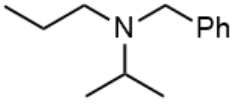
C) 

D) 

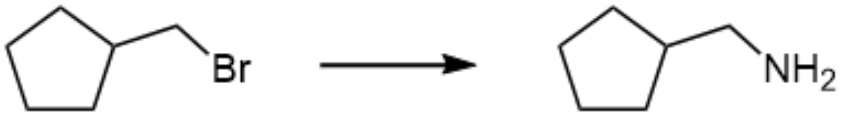
E) 

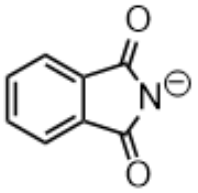
6 Provide the missing reagent **X** and predict the major products **Y** and **Z**.



	X	Y	Z
A)			
B)			
C)			
D)			

7 Which of the following reagents are suitable for the given transformation?



I. 1) 

2) NaOH, H_2O, heat

II. 1) NaN_3; 2) H_2, Pt

III. 1) NaCN; 2) H_2, Pt

IV. $NaNH_2$

A) I and II only

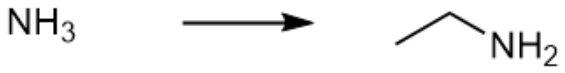
B) II and IV only

C) I, II and IV only

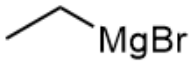
D) I, II, III and IV

8

Of the following reagents, which is BEST for the given transformation?

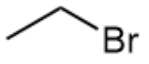


A) 1) $CH_2{=}CH_2$
2) H_3O^+

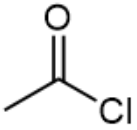
B) 

(+ workup)

C) $(CH_3CH_2)_2CuLi$
(+ workup)

D) 

+ base

E) 1) 

+ base
2) $LiAlH_4$; workup