Organic Chemistry

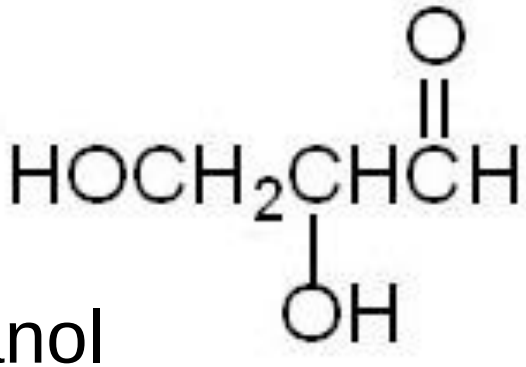
Carey/Giuliano

10th edition

Chapter 18

Question 1

What is the correct IUPAC name of the aldehyde at the right?



A) 2,3-dihydroxypropanol

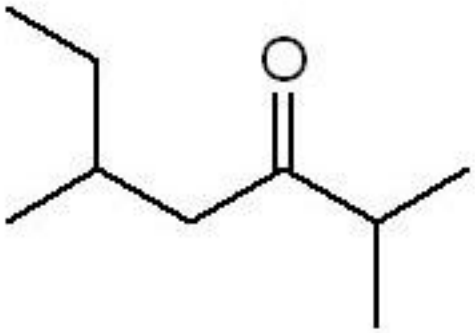
B) 1,2-dihydroxypropanal

C) 2,3-dihydroxypropanal

D) 2,3-propanediol-1-aldehyde

Question 2

What is the IUPAC name for the ketone shown below?



A) 5-ethyl-2-methyl-3-hexanone

B) 2,5-dimethyl-3-heptanone

C) 3,6-dimethyl-5-heptanone

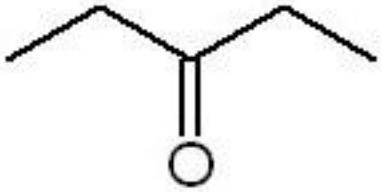
D) 2-ethyl-5-methyl-5-hexanone

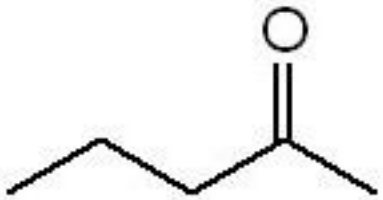
Question 3

Which compound has the lowest boiling point?

A) 

B) 

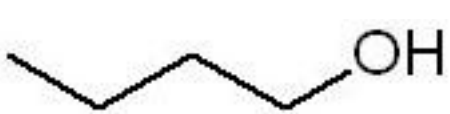
C) 

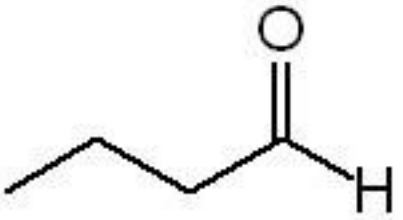
D) 

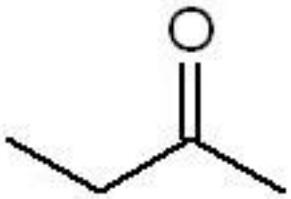
Question 4

Which compound is more soluble in water?

A) 

B) 

C) 

D) 

Question 5

What combination of reagents will transform 1-butyne into 2-butanone?

A) 1. O_3 2. H_2O, Zn

B) K_2Cr_2O7, H_2SO_4

C) H_2SO_4, $HgSO_4$

D) OsO_4 (cat), $(CH_3)_3COOH$, $(CH_3)_3OH$, HO-

Question 6

Which combination of reagents will produce 2-hexanone as the major organic product?

A) 2-hexanol + PCC in CH_2Cl_2

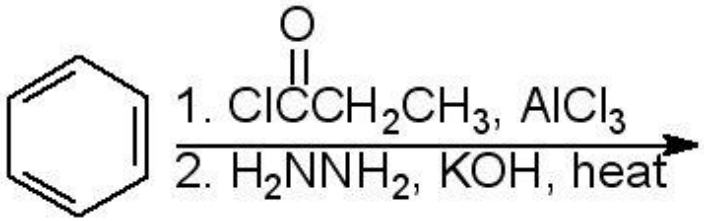
B) 1-hexene + H_2O, H_2SO_4, $HgSO_4$

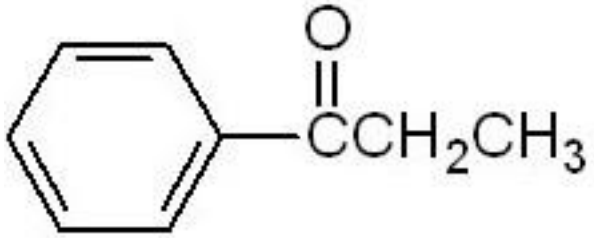
C) pentanal + methylmagnesium bromide followed by H_3O^+

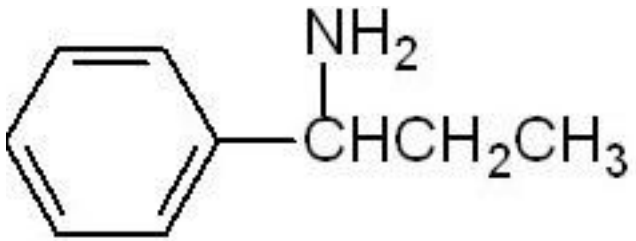
D) All of the above (a-c) will produce 2-hexanone as the major product.

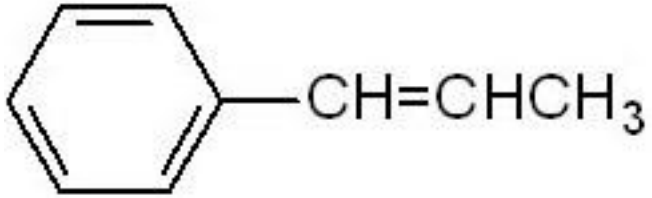
Question 7

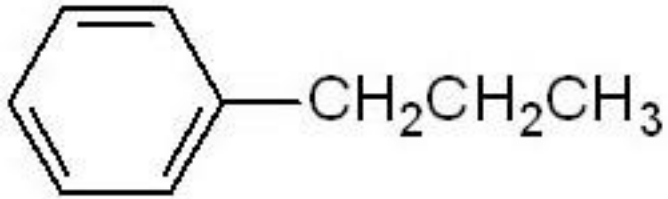
Which compound will be isolated from the synthetic sequence shown below?



A) 

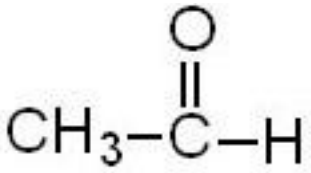
B) 

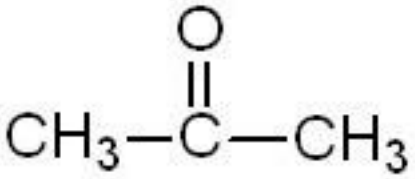
C) 

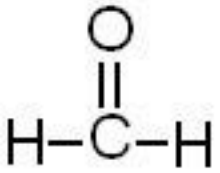
D) 

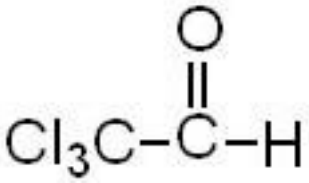
Question 8

Which one of the compounds below has a higher hydration rate?

A) 

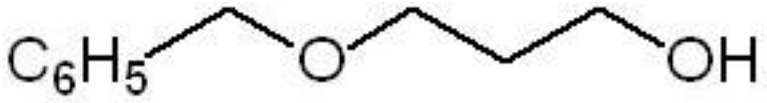
B) 

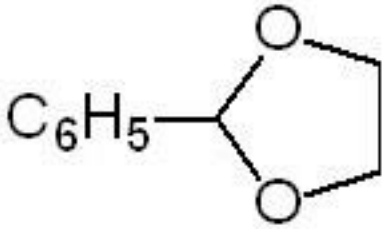
C) 

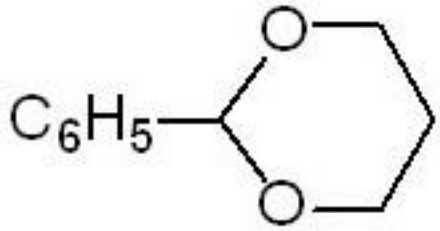
D) 

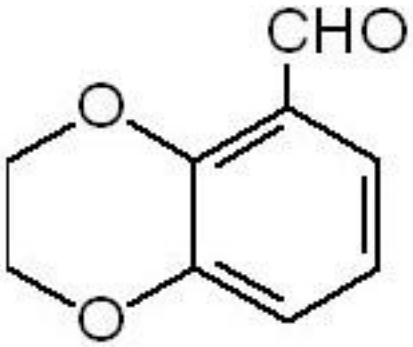
Question 9

What is the product of the reaction between benzaldehyde and 1,3-propanediol?

A) 

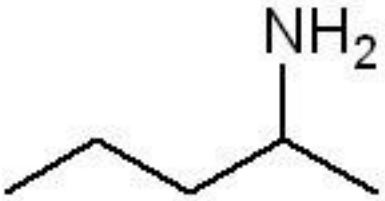
B) 

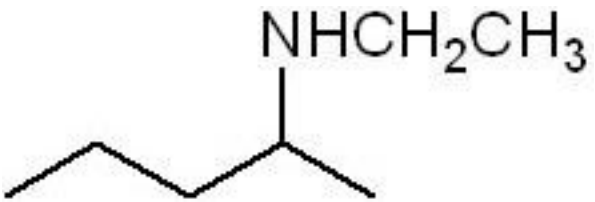
C) 

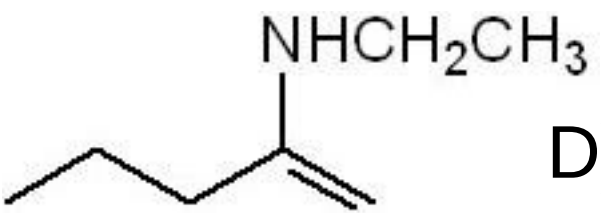
D) 

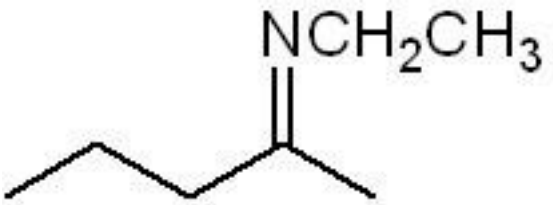
Question 10

What is the product of the reaction between 2-pentanone and ethylamine?

A) 

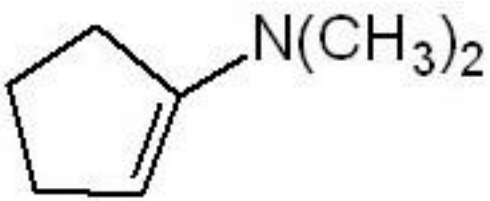
B) 

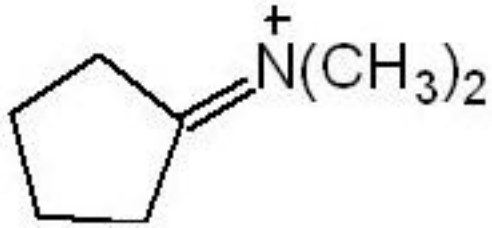
C) 

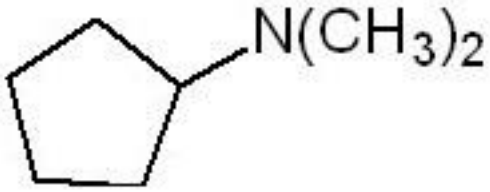
D) 

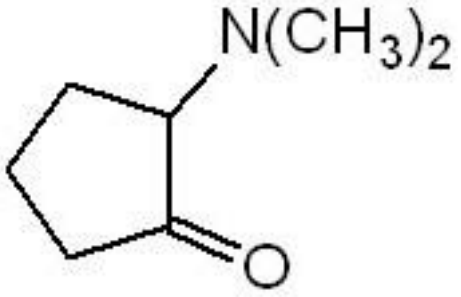
Question 11

Identify the product isolated when cyclopentanone reacts with dimethyl amine.

A) 

B) 

C) 

D) 

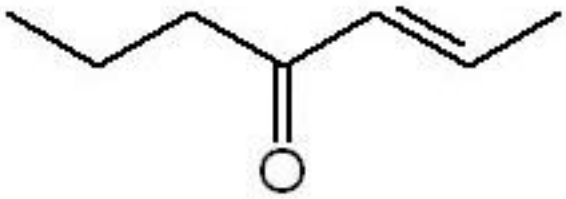
Question 12

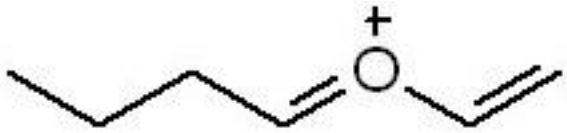
Select the product isolated when butanal reacts with the slide shown below.

butanal + $(C_6H_5)_3\overset{+}{P}-\overset{\cdot\cdot}{\underset{\cdot\cdot}{C}}HCH=CH_2$

A) 

B) 

C) 

D) 

Question 13

A compound ($C_7H_{14}O$) has a strong peak in its IR spectrum at 1710 cm^{-1}. Its ^{1}H-NMR spectrum consists of 3 singlets in the ratio 9:3:2 at δ1.0, δ2.1, and δ2.3, respectively. Identify this compound.

A) 3-heptanone

B) 2,2-dimethyl-3-pentanone

C) 4,4-dimethyl-2-pentanone

D) 2,4-dimethyl-3-pentanone

Question 14

A ketone of molecular formula $C_7H_{14}O$ has 4 singlets in its ^{13}C-NMR spectrum: one at 210 ppm and the other 3 below 50 ppm. Identify the ketone.

A) 4-heptanone

B) 2,4-dimethyl-3-pentanone

C) 4,4-dimethyl-2-pentanone

D) 5-methyl-3-hexanone

Question 15

The compound below is best classified as a(n)

$(CH_3)_3CCH_2CH{=}NCH_3$

A) carbinolamine.
B) enamine.
C) hydrazone.
D) imine.

Question 16

When a nucleophile encounters a ketone, the site of attack is

A) the carbon atom of the cabonyl.

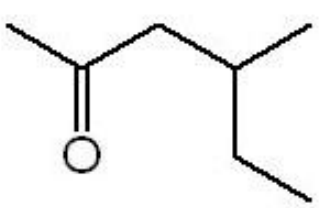
B) the oxygen atom of the carbonyl.

C) both the carbon and oxygen atoms, with equal probability.

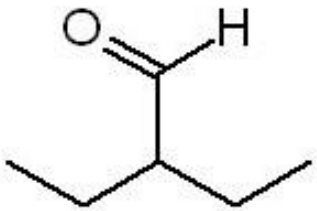
D) No attack occurs--ketones do not react with nucleophiles.

Question 17

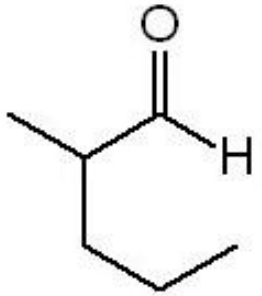
Which of the compounds shown is(are) correctly named as pentane derivatives, either as pentanals or pentanones?



1



2



3

A) 1 only

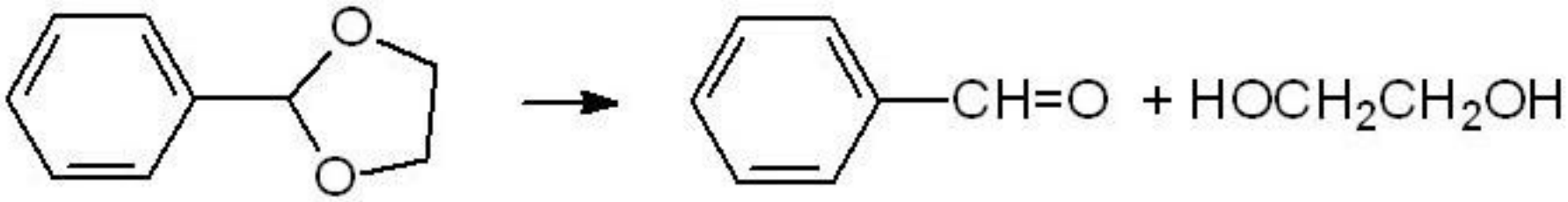
B) 2 only

C) 3 only

D) 1 and 3

Question 18

What reagent and/or reaction conditions would you choose to bring about the following conversion?



A) 1. $LiAlH_4$; 2. H_2O

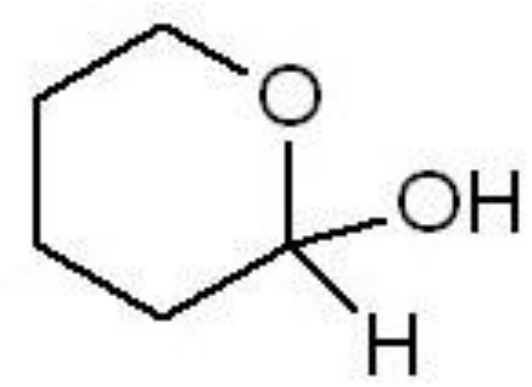
B) H_2O, H_2SO_4, heat

C) H_2O, NaOH, heat

D) PCC, CH_2Cl_2

Question 19

The structure shown at the right would be best classified as a(n)



A) acetal.

B) hemiacetal.

C) hydrate.

D) cyanohydrin.

Question 20

The compound $(CH_3)_2CCH_2CH{=}NCH_3$ is best classified as a(n)

A) carbinolamine.

B) enamine.

C) hydrazone.

D) imine.

Answer Key – Chapter 18

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