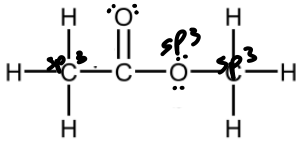
Organic and Biological Chemistry Sample Multiple Choice Questions Fall 2022

14/22

The number of sample questions does not reflect the number of questions that may appear on an In-term test.

✓ 1. How many sp^3 hybridized atoms are there in the following molecule?

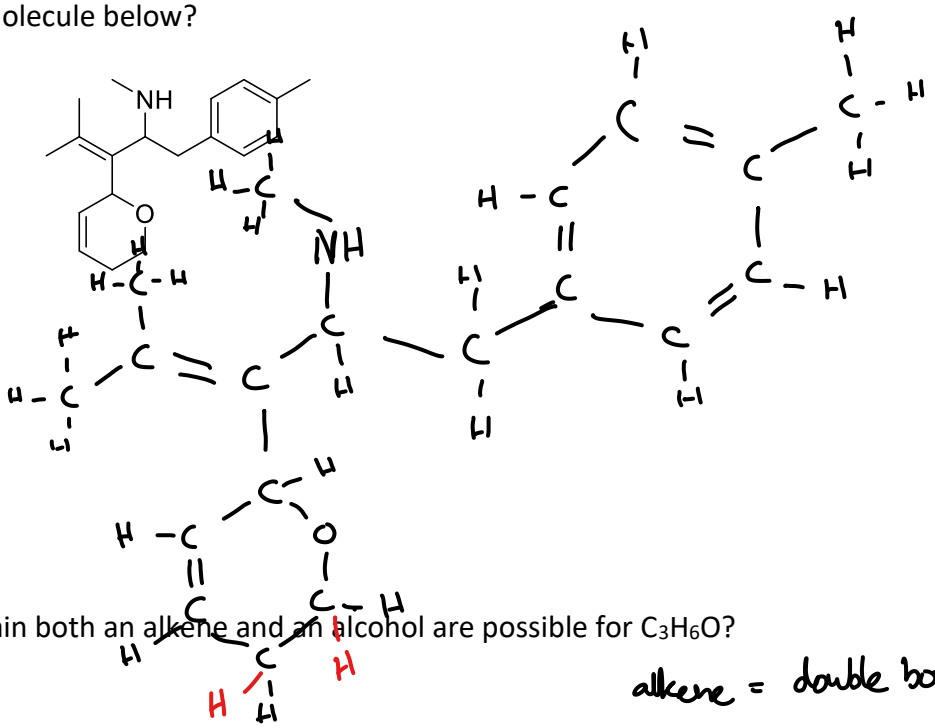


Count electron domains
sp = 2 ed sp³d = 5ed
sp² = 3 ed sp³d² = 6ed
sp³ = 4 ed

A. 1 B. 2 C. 3 D. 4 E. 5

✗ 2. What is the formula for the molecule below?

C = 19
H = 25

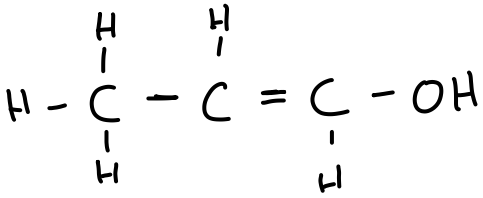


A. $C_{19}H_{27}NO$
B. $C_{18}H_{26}NO$
C. $C_{17}H_{25}NO$
D. $C_{19}H_{25}NO$
E. $C_{18}H_{27}NO$

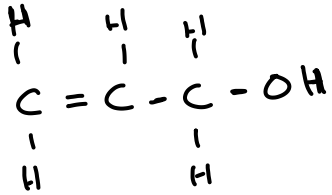
✗ 3. How many isomers that contain both an alkene and an alcohol are possible for C_3H_6O?

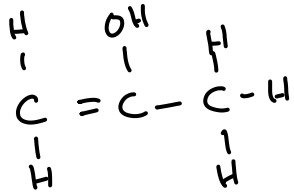
alkene = double bond

A. 9
B. 7
C. 5
D. 4
E. 3



C_2H_4 C_2H_2
CH_2 C_2H_4





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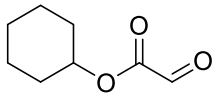
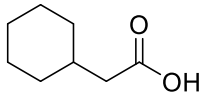
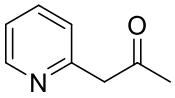
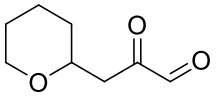
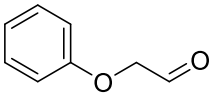
4. Which of the following compounds contains an ester?

A) 

B) 

C) 

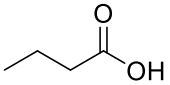
D) 

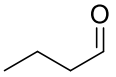
E) 

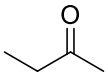
5. What is the product of the reaction between an alcohol and a carboxylic acid?

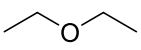
A. ether
B. ester
C. aldehyde
D. ketone
E. amide

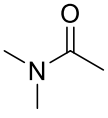
6. Which of the following compounds reacts with NaOH to give a salt?

A) 

B) 

C) 

D) 

E) 

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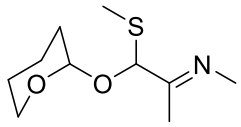
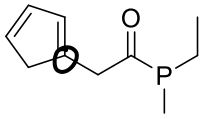
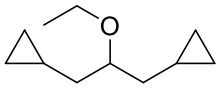
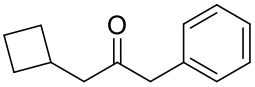
✓ 7. Which of the following compounds has a total of 4 optical isomers?

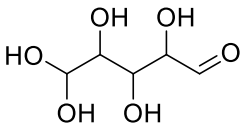
i.e 2 chiral carbons

A) 

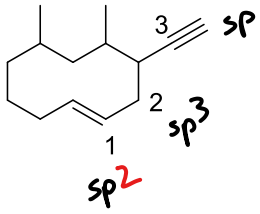
B) 

C) 

D) 

E) 

✗ 8. What is the hybridization at the carbon atoms labelled 1, 2, 3?



A) sp^3, sp^3, sp
B) sp, sp^3, sp^2
C) sp, sp^2, sp^3
D) sp^2, sp^2, sp
E) sp^2, sp^3, sp

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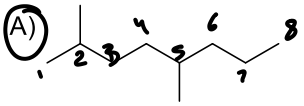
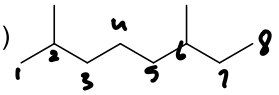
9. Which of the following is a skeletal structure for 2,5-dimethyloctane?

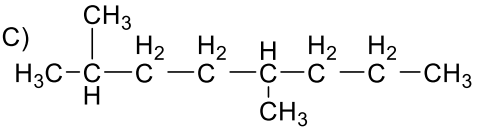
A)



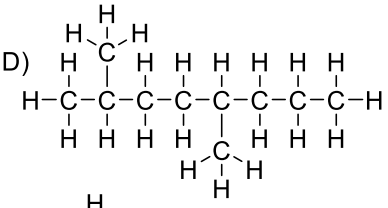
B)



C)

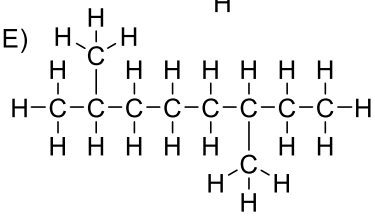


D)



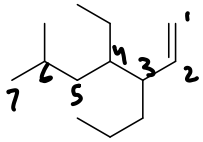
2,5-dimethyloctane

E)



2,6-dimethyloctane

10. Which of the following compounds is represented by the structure shown?



heptene

3 propyl

6 methyl

4 ethyl

A) 6-methyl-4-ethyl-3-propyl-1-heptene
B) 4-ethyl-6-methyl-3-propyl-1-heptene
C) 3-propyl-6-methyl-4-ethyl-1-heptene
D) 3-propyl-7-methyl-5-ethyloctene
E) 4-ethyl-2-methyl-5-propyl-6-heptene

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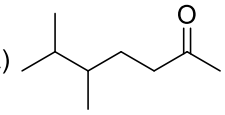
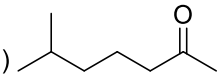
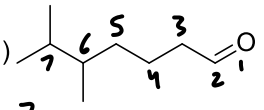
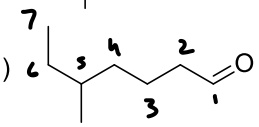
11. Which of the following structures represents 6-methylheptanal?

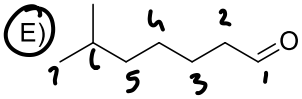
hept = 7

A) 

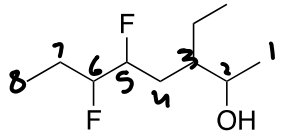
B) 

C) 

D) 

E) 

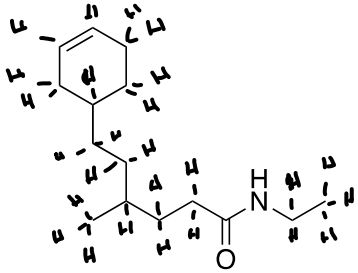
12. Which of the following compounds has the structure shown below?



A 3,4-difluoro-5-ethyl-7-octanol
B 3-ethyl-5,6-difluoro-2-octanol
C 3-ethyl-5,6-difluoro-2-octanone
D 3,4-difluoro-6-ethyl-7-octanal
E None of the above

13. What is the formula for the molecule shown below?

C = 15
H = 27



A $C_{15}H_{27}NO$ **B** $C_{15}H_{26}NO$ **C** $C_{16}H_{26}NO$ **D** $C_{16}H_{28}NO$ **E** $C_{15}H_{28}NO$

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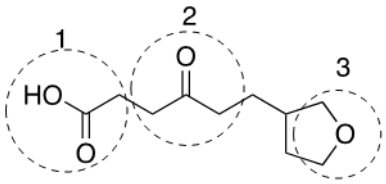
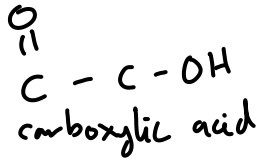
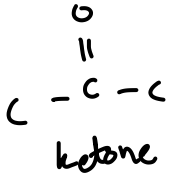
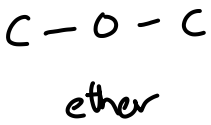
✓ 14. What are the names of the functional groups labelled 1,2 3?



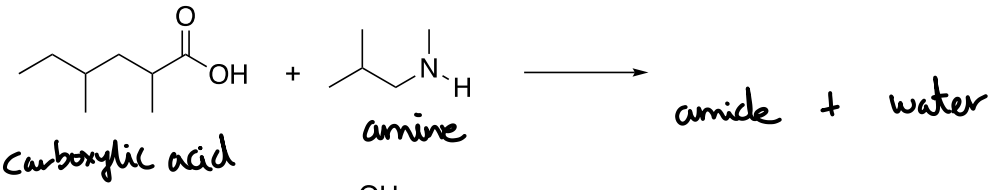




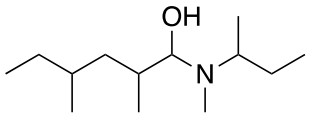


A aldehyde, alcohol, ketone
B aldehyde, ketone, ether
C carboxylic acid, ketone, ether
D ketone, aldehyde, alcohol
E alcohol, ether, ketone

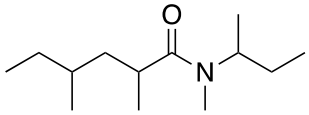
✗ 15. Which answer is the correct organic product for the reaction shown below?



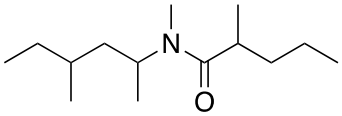
A



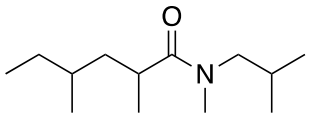
B



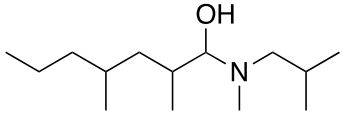
C



D



E



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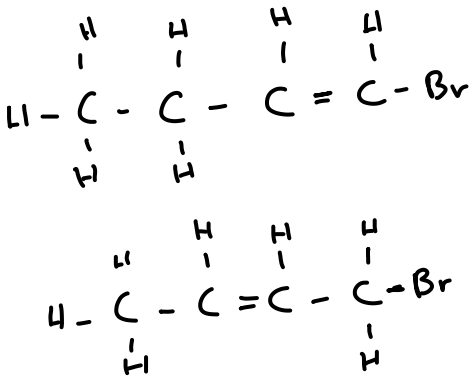
16. How many constitutional isomers of C_4H_7Br are capable of having a geometric isomer?

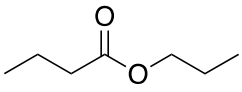
A 1
B 2
C 3
D 4
E 5

?

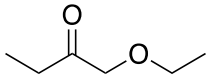


17. Which of the following compounds is an ester?

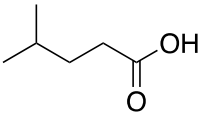
A



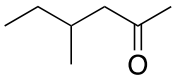
B



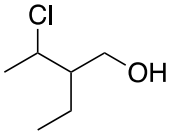
C



D



E

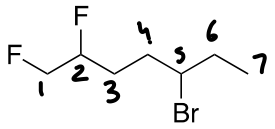


Organic and Biological Chemistry Sample Multiple Choice Questions Fall 2022

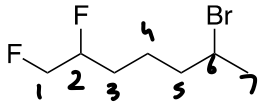
18. Which of the following structures is a skeletal structure for 6-bromo-1,2-difluoro-heptane?

hept = 7

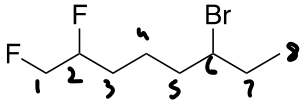
A



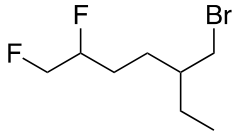
B



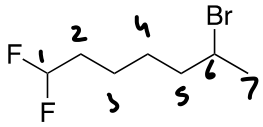
C



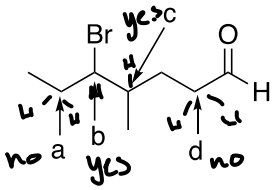
D



E



19. Are the labelled atoms (a,b,c and d) chiral?



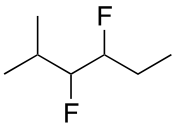
A no, yes, yes, yes
B yes, yes, yes, no
C yes, yes, no, no
D yes, no, yes, no
E no, yes, yes, no

Organic and Biological Chemistry Sample Multiple Choice Questions Fall 2022

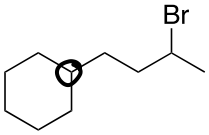
20. Which molecule has 2 optical isomers?

1 chiral carbon

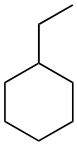
A



B

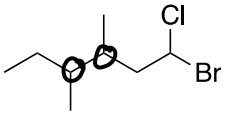


C

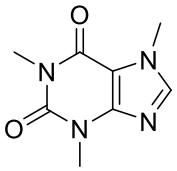


D

E



21. Which functional groups are present in the caffeine molecule shown?



A) ketone and amine
B) ether and amine
C) aldehyde and amine
D) acetylene and amine
E) amide and amine

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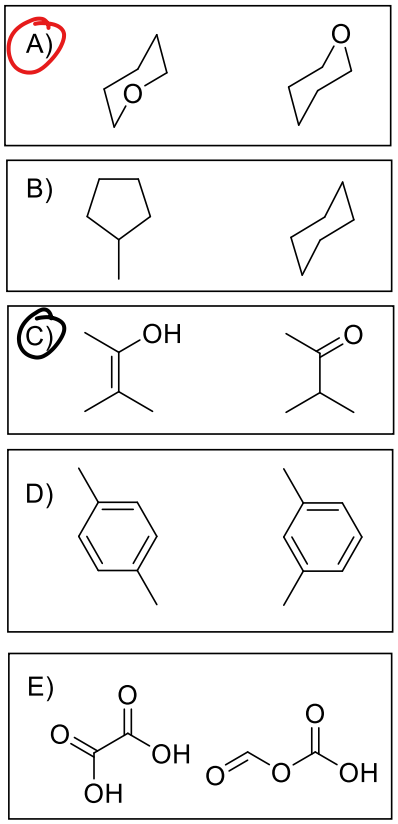
22. Which molecular representations below are NOT constitutional isomers of each other?



Question	Answer
1	C
2	A
3	D
4	A
5	B
6	A
7	A
8	E
9	A
10	B
11	E
12	B
13	A
14	C

15	D
16	C
17	A
18	B
19	E
20	B
21	E
22	A