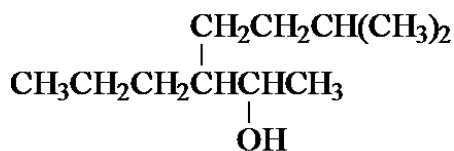


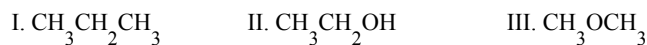
Chemistry 210 - Chapter 4 - Quiz 2

Student: _____

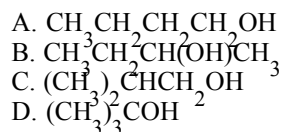
1. What is the IUPAC name of the compound below?



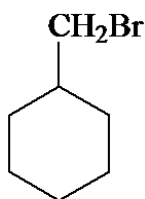
- A. 3-isobutyl-2-hexanol
 B. 2-methyl-5-(1-hydroxyethyl)octane
 C. 2-methyl-5-propyl-6-heptanol
 D. 6-methyl-3-propyl-2-heptanol
2. Rank the following three compounds in order of increasing boiling point.



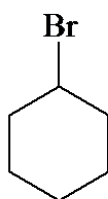
- A. I < II < III
 B. I < III < II
 C. II < III < I
 D. II < I < III
3. Which of the following is isobutyl alcohol?



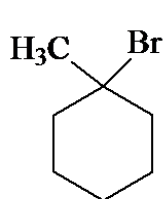
4. Identify the tertiary halide(s).



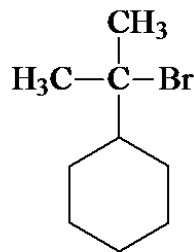
I



II



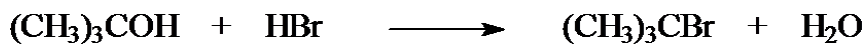
III



IV

- A. I and II
 B. II and III
 C. III and IV
 D. only IV

5. What is the nucleophile in the following substitution reaction?



A) $(\text{CH}_3)_3\text{COH}$

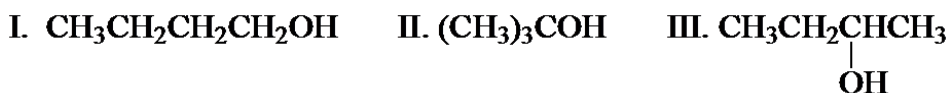
B) $(\text{CH}_3)_3\text{C}^\oplus$

C) Br^\ominus

D) H^\oplus

- A. A
B. B
C. C
D. D

6. Rank the following alcohols in order of increasing reaction rate with HBr.



- A. $\text{II} < \text{III} < \text{I}$
B. $\text{III} < \text{II} < \text{I}$
C. $\text{I} < \text{III} < \text{II}$
D. $\text{I} < \text{II} < \text{III}$

7. Which one of the following gives a single monochlorination product?

- A. 2,2-dimethylpropane
B. 2,2-dimethylbutane
C. 2,3-dimethylbutane
D. 2-methylpropane

8. Which method or methods would work to quantitatively prepare a sodium ethoxide solution?

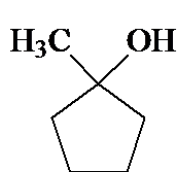
- I. $\text{CH}_3\text{CH}_2\text{OH} + \text{NaOH}$
II. $\text{CH}_3\text{CH}_2\text{OH} + \text{NaH}$
III. $\text{CH}_3\text{CH}_2\text{OH} + \text{Na}$

- A. I and II
B. I and III
C. II and III
D. I, II, and III

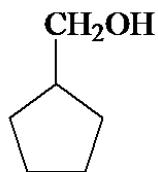
9. Which of the following is not a good method to make bromocyclopentane?

- A. cyclopentanol plus HBr
B. cyclopentanol plus NaBr
C. cyclopentanol plus PBr_3
D. cyclopentane plus Br_2 with light

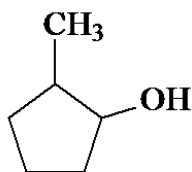
10. Arrange the following alcohols in order of their decreasing reactivity with HBr (most reactive first).



I



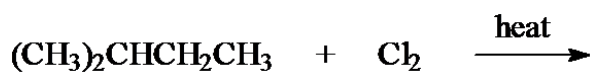
II



III

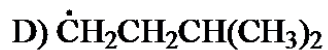
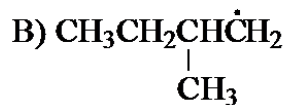
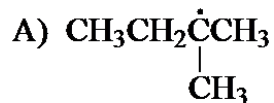
- A. I > II > III
- B. I > III > II
- C. III > I > II
- D. II > III > I

11. How many monochlorination products do you expect in the following reaction?



- A. two
- B. three
- C. four
- D. five

12. Which of the following is the most stable radical?



- A. A
- B. B
- C. C
- D. D

13. What is the product of the following reaction?



- A. $\text{ClCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
- B. $\text{BrCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{SH}$
- C. $\text{BrCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$
- D. $\text{ClCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{SOCl}$

14. Which constitutional isomer of C_6H_{14} gives only two monochlorination products?

- A. 2-methylpentane
- B. 3-methylpentane
- C. 2,2-dimethylbutane
- D. 2,3-dimethylbutane

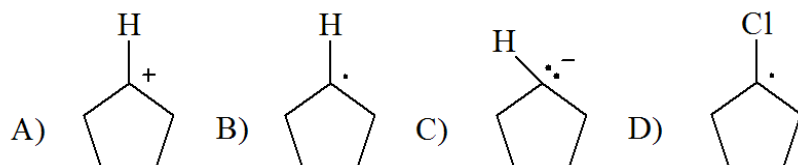
15. The central carbon of the *tert*-butyl carbocation, $(\text{CH}_3)_3\text{C}^+$, is:

- A. sp_2^2 hybridized with a +1 formal charge
- B. sp_3 hybridized with a 0 formal charge
- C. sp_3 hybridized with a +1 formal charge
- D. sp^1 hybridized with a 0 formal charge

16. Studies indicate that the methyl radical is trigonal planar. Based on this, which of the following best describes the methyl radical?

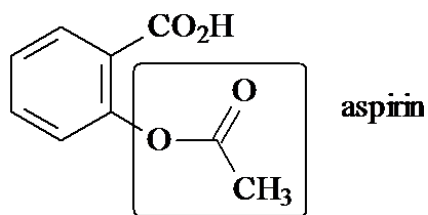
- A. The carbon is sp_2^2 hybridized and the unpaired electron occupies an sp^2 orbital.
- B. The carbon is sp_3 hybridized and the unpaired electron occupies a $2p$ orbital.
- C. The carbon is sp_3 hybridized and the unpaired electron occupies an sp^3 orbital.
- D. The carbon is sp^1 hybridized and the unpaired electron occupies a $2p$ orbital.

17. Which of the following is the key intermediate in the chlorination reaction below?



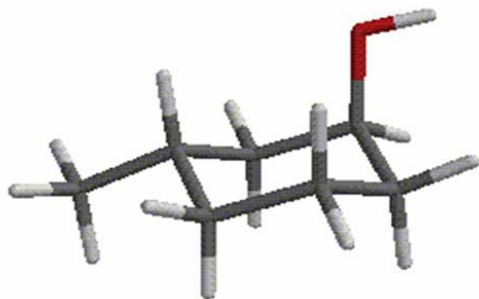
- A. A
- B. B
- C. C
- D. D

18. Identify the functional group in the boxed area:



- A. ester
- B. ketone
- C. carboxylic acid
- D. ether

19. What is the name of the following compound?



- A. *cis*-3-methylcyclohexanol
- B. *trans*-3-methylcyclohexanol
- C. *cis*-2-methylcyclopentanol
- D. *trans*-3-methylcyclopentanol

20. How many $\text{C}_3\text{H}_6\text{Cl}_2$ constitutional isomers do you expect in the dichlorination of propane?

- A. two
- B. three
- C. four
- D. five

Chemistry 210 - Chapter 4 - Quiz 2 Key

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

Chemistry 210 - Chapter 4 - Quiz 2 **Summary**

<i>Category</i>	<i># of Questions</i>
Carey - 004 Alcohols...	20