

## Chemistry 210 - Chapter 6 - quiz 2

Student: \_\_\_\_\_

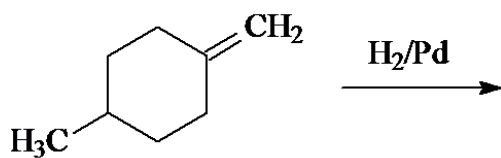
1. What is(are) the product(s) in the Pd-catalyzed hydrogenation of 1,2-dimethylcyclopentene?

- A. *trans*-1,2-dimethylcyclopentane
- B. *cis*-1,2-dimethylcyclopentane
- C. a mixture of *trans* and *cis*-1,2-dimethylcyclopentane
- D. 1,1-dimethylcyclopentane

2. Which alkene below is thermodynamically the most stable?

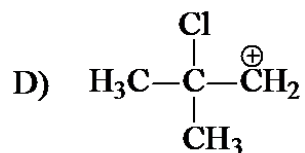
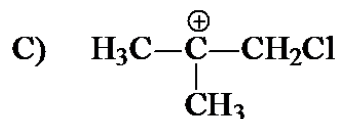
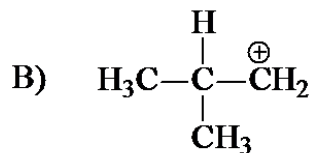
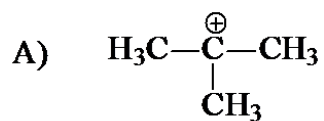
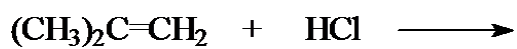
- A. 1-hexene
- B. *trans*-3-hexene
- C. *cis*-3-hexene
- D. 2-methyl-2-pentene

3. The product(s) in the following reaction is(are):



- A. only *trans*-1-4-dimethylcyclohexane
- B. only *cis*-1-4-dimethylcyclohexane
- C. both *trans* and *cis*-1-4-dimethylcyclohexane
- D. methylcyclohexane

4. What is the intermediate in the following reaction?

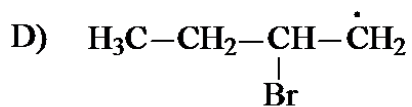
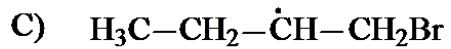


- A. A
- B. B
- C. C
- D. D

5. Addition of HCl to 3-methyl-1-pentene gives two products. One of these is 2-chloro-3-methylpentane. What is the other product?

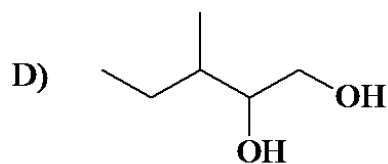
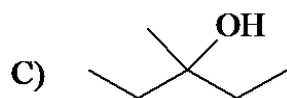
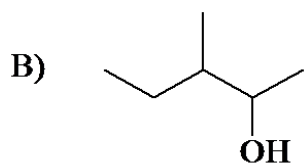
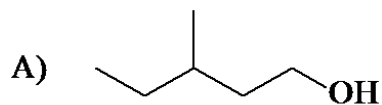
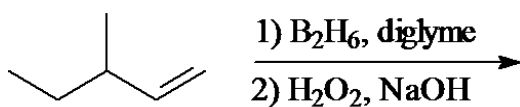
- A. 1-chloro-3-methylpentane
- B. 3-chloro-3-methylpentane
- C. 3-chloro-2-methylpentane
- D. 2-chloro-2-methylpentane

6. Which species below is the intermediate in the free radical addition of HBr to 1-butene?



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

7. What is the major product of the following reaction?

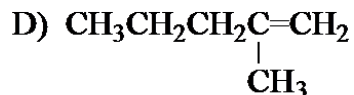
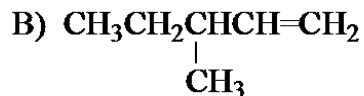
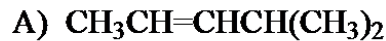


- A. A
- B. B
- C. C
- D. D

8. The hydroboration-oxidation reaction can be characterized as the \_\_\_\_\_ to an alkene.

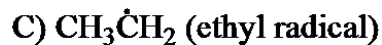
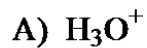
- A. anti-Markovnikov syn addition of water
- B. anti-Markovnikov anti addition of water
- C. Markovnikov syn addition of water
- D. Markovnikov anti addition of water

9. Which of the following alkenes gives 1-bromo-2-methyl-2-pentanol upon reaction with  $\text{Br}_2/\text{H}_2\text{O}$ ?



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

10. Which of the following is least likely to react with an alkene?



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

11. Which species below acts as the nucleophile in the acid-catalyzed addition of water to an alkene?

- A.  $\text{H}_3\text{O}^+$
- B. the carbocation
- C.  $\text{OH}^-$
- D.  $\text{H}_2\text{O}$

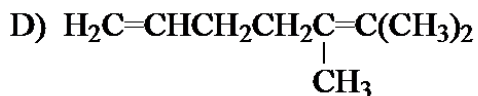
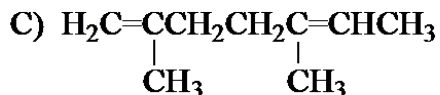
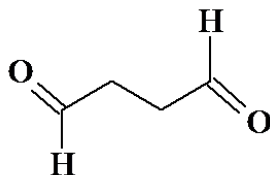
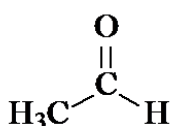
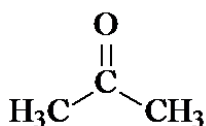
12. A compound,  $C_{15}H_{24}$ , is reacted with excess hydrogen using a metal catalyst. One equivalent of the compound consumed three equivalents of hydrogen. How many rings did the original compound have?

- A. 1 only
- B. 2 only
- C. 3 only
- D. none

13. Determine the SODAR (sum of double bonds and rings) for a compound with the formula of  $C_6H_9BrO$ .

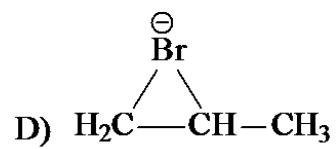
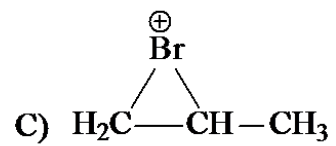
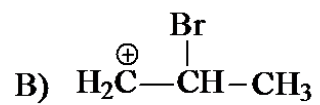
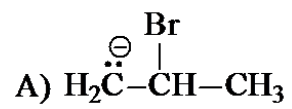
- A. one
- B. two
- C. three
- D. four

14. A compound is treated with ozone followed by zinc in water to give the following three products. Which structure below best fits the data?



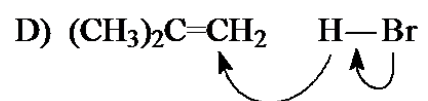
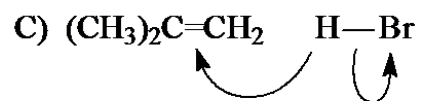
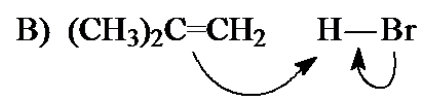
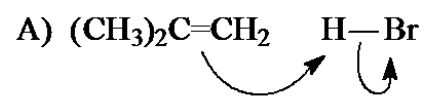
- A. A
- B. B
- C. C
- D. D

15. Which of the following species is the intermediate in the bromination of propene?



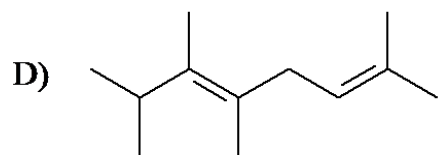
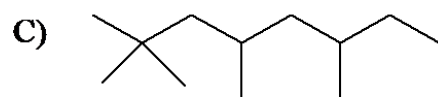
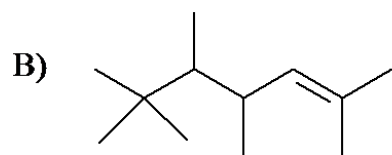
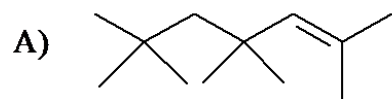
- A. A
- B. B
- C. C
- D. D

16. Which of the following correctly depicts the mechanistic first step in the addition of HBr to 2-methylpropene?



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

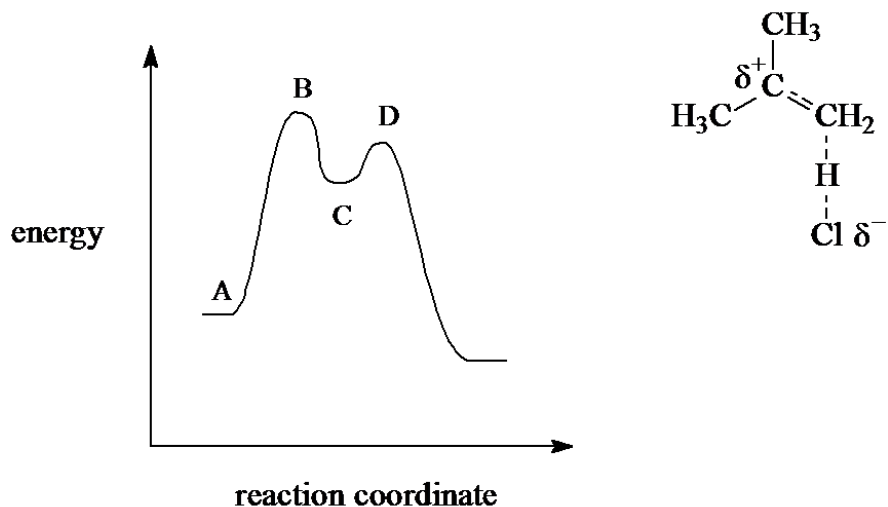
17. Which structure corresponds to the trimer of  $(\text{CH}_3)_2\text{C}=\text{CH}_2$  formed under conditions of cationic polymerization?



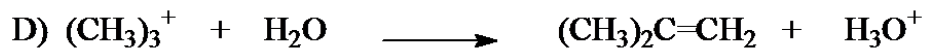
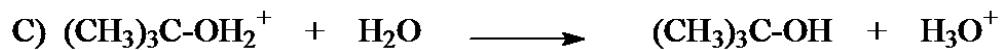
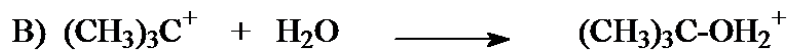
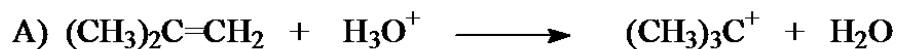
- A. A
- B. B
- C. C
- D. D



18. Which point on the potential energy diagram corresponds to the species below for the reaction of 2-methylpropene with hydrogen chloride?

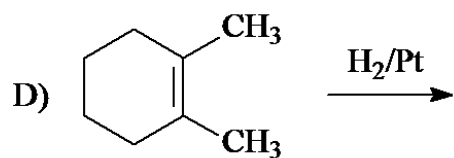
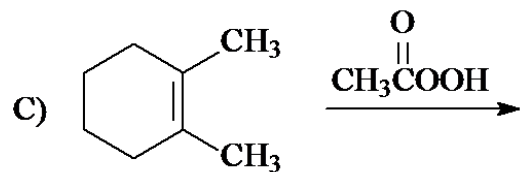
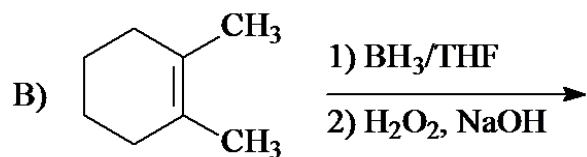
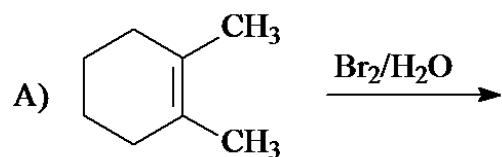


- A. A  
 B. B  
 C. C  
 D. D
19. Which of the following is the rate-determining step in the acid-catalyzed addition of water to 2-methylpropene?



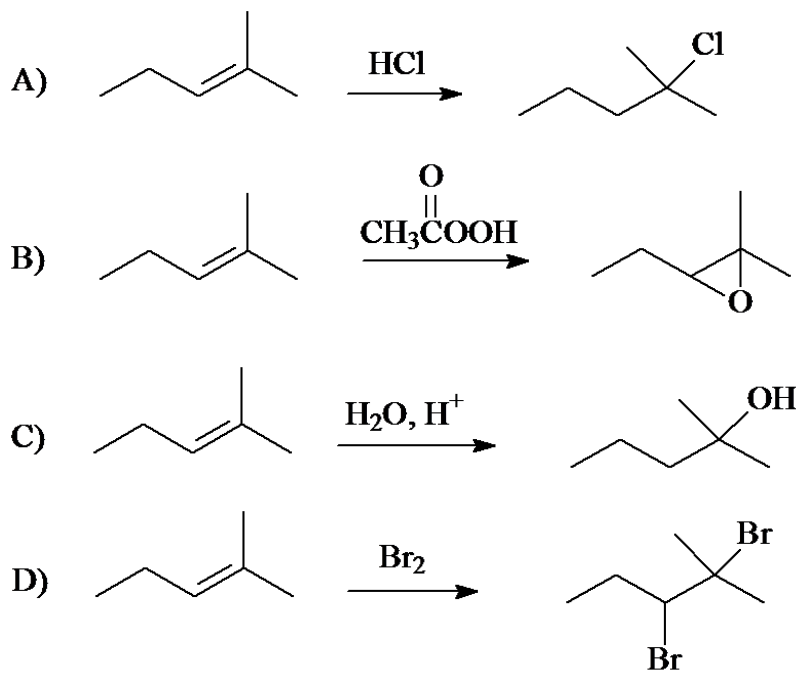
- A. A  
 B. B  
 C. C  
 D. D

20. Which reaction proceeds by anti addition?



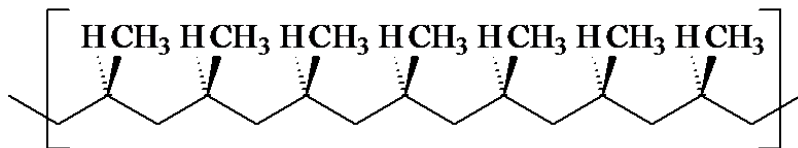
- A. A
- B. B
- C. C
- D. D

21. Which of the following reactions occurs by a one-step mechanism as opposed to a two-step mechanism?



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

22. Identify the following polymer.



- A. polyethylene
- B. polypropylene
- C. polyisobutylene
- D. polybutylene

## Chemistry 210 - Chapter 6 - quiz 2 **Key**

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

## Chemistry 210 - Chapter 6 - quiz 2 **Summary**

<i>Category</i>	<i># of Questions</i>
Carey - 006 Reactions...	22