

Key Terms: Fill in the blank in the following 10 statements with one of the key terms in the table. Each key term may only be used once. Print legibly. Each question is worth 1 point.

Organic chemistry	Saturated compound	Functional group	Aliphatic	Aromatic
Carbonyl group	Isomers	Free radical	Conformation	Alkene
Fehling and Benedict's tests	Cracking	Markovnikov's rule	Macromolecule	Copolymer
Tollen's test	Thermoplastic polymer	Condensation polymer	Secondary alcohol	Saytzeff's rule

1. A _____ (e.g., nylon) is formed when monomers bond together with a loss of water.
2. _____ states that when a hydrogen-containing unsymmetric molecule (HX) adds to a double bond, the hydrogen will add to the carbon with the greatest number of hydrogens.
3. A _____ is a carbon-oxygen double bond. Both aldehydes and ketones contain this group.
4. In the _____, blue Cu^{2+} is reduced to form Cu_2O , a reddish brown precipitate. Aldehydes are oxidized; simple ketones do not react.
5. _____ states that when there is a choice of positions for the formation of a carbon-carbon double bond, the more highly substituted alkene is preferred.
6. _____ is another term that is often in used instead of "polymer". These kinds of compounds commonly contain thousands of atoms.
7. Molecules with different structural formulas that have the same molecular formula are _____ of each other.
8. A _____ is an atom or group of atoms that has an unpaired electron.
9. _____ represent different classes of compounds.
10. _____ is the chemistry of carbon compounds.

Multiple Choice: Each of the following 10 multiple choice questions is worth 3 points. Please circle the best answer. There will only be one correct answer for each question.

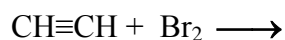
11. How many dichloro isomers are possible for propane?

- a) 3 b) 4 c) 5 d) 7

12. Friedrich Wohler disproved the vital force theory by:

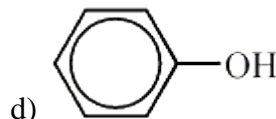
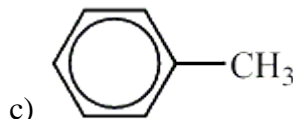
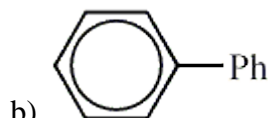
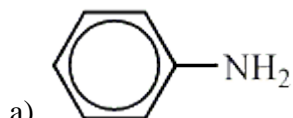
- a) Isolating urea from a nonliving source.
b) Producing an inorganic compound from an organic compound.
c) Producing an organic compound from nonliving materials.
d) Both (a) and (c) are correct.

13. When bromine is present in excess, the product for the reaction below is:



- a) $\text{CH}_2\text{BrCH}_2\text{Br}$ b) CH_3CBr_3
c) $\text{CH}_3\text{CH}_2\text{Br}$ d) $\text{CHBr}_2\text{CHBr}_2$

14. Which of the following is the correct structure for phenol?



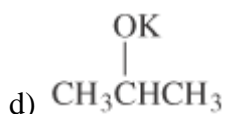
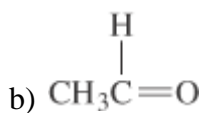
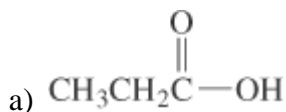
15. Over 50% of all polymers produced and used in the United States are:

- a) thermoplastic
 b) made from ethylene and related compounds
 c) made from 1,3-butadiene or its derivatives
 d) slowly disintegrated by microorganisms

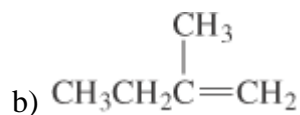
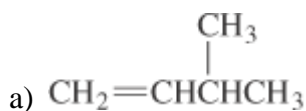
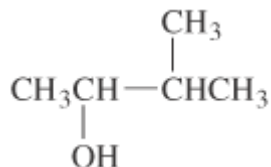
16. Natural rubber is a polymer which contains:

- a) all-cis configurations about the double bonds
 b) all-trans configurations about the double bonds
 c) a mixture of cis and trans and trans configurations about the double bond
 d) all of the above

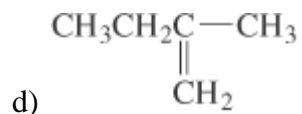
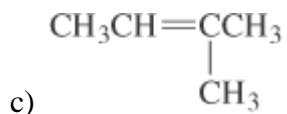
17. When 1-propanol is oxidized with KMnO_4 , the product is:



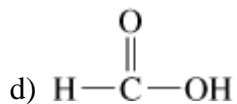
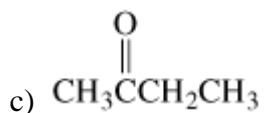
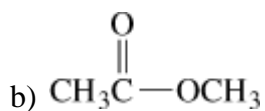
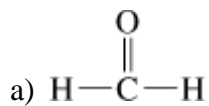
18. When the compound shown below is dehydrated to an alkene, the major product formed is:



Lec FormA



19. Which of the following compounds is an aldehyde?



20. The substance that precipitates in a positive Benedict test is:

a) Ag

b) CuO

c) Cu₂O

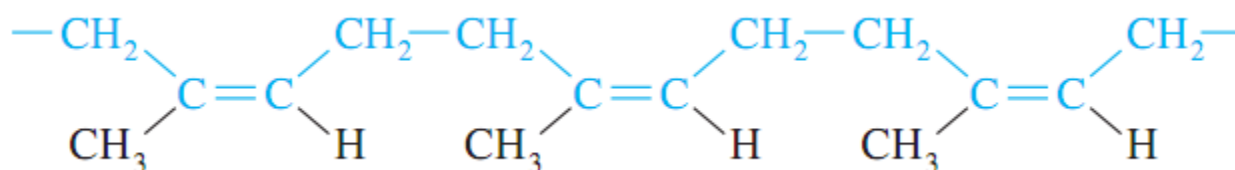
d) none of these

Short Answer: Answer each of the following questions in the space provided. Please print legibly or take the risk of losing points. Each of the questions is worth 5 points.

21. Write a balanced chemical equation for the complete combustion of 2-methylbutane.

22. Describe the important structural difference between Structure #1 and Structure #2 shown below.

Structure #1



Structure #2

