

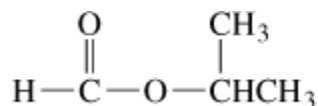
Key Terms: Fill in the blank in the following 10 statements with one of the key terms in the table. Each key term may only be used once. Print legibly. Each question is worth 1 point.

Triglyceride	Stereoisomers	Epimers	Alkaloids
Chiral carbon atom	Hydrogenolysis	Urea	Glycosides
Active transport	Quaternary ammonium salt	Hydrophobic	Enantiomer
Heterocyclic compounds	Steroid	Diastereomers	Saponification
Anomers	Reducing sugars	Waxes	Fluid mosaic model

- _____ – another term for alkaline hydrolysis of carboxylic acid esters
- _____ – typically functional groups that are non-polar; means “water-fearing”
- _____ – basic compounds that are derived from plants and show physiological activity
- _____ – ring structures where all the atoms in the ring are not all alike
- _____ – have the same structural formula but differ in their spatial arrangement
- _____ – stereoisomers that are not mirror images
- _____ – will reduce Cu (II) to Cu (I) ions or silver ions to silver metal
- _____ – any two monosaccharides that differ in configuration around a single carbon atom
- _____ – across a cell membrane is aided by a protein and requires energy
- Cholesterol is the most common _____. It serves as an important membrane component and a precursor for several hormones

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. The following molecule is called:



- a) methyl isopropyl ester
- c) methyl ethyl ethanoate

- b) methyl isopropyl ether
- d) isopropyl formate

12. Which of the following paired terms do not belong together?

- a) Vinegar/acetic acid
- c) lemons/citric acid

- b) muscles/lactic acid
- d) goats/lauric acid

13. All of the following are classified as alkaloids *except*:

- a) nicotine
- c) morphine

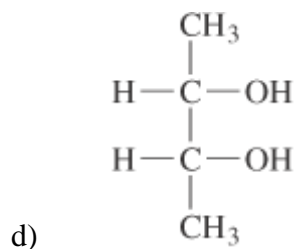
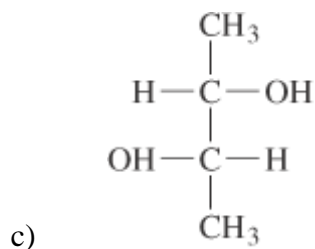
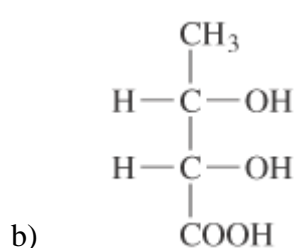
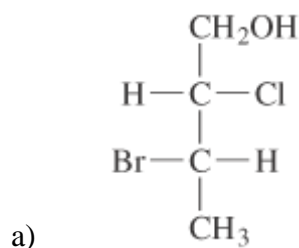
- b) cocaine
- d) urea

14. Acid hydrolysis of an amide produces the salt of a carboxylic acid.

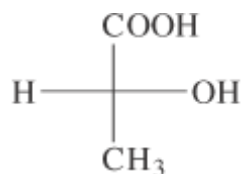
- a) True

- b) False

15. Which of the following projection formulas show a meso structure?



16. Which of the following is *not* true about the formula below?



- a) The OH group is projected away from the observer.
- b) The chiral carbon is in the plane of the paper.
- c) The model represents an optically active substance
- d) The model is called a projection formula.

17. D-ribose and L-ribose are examples of:

- a) structural isomers
- b) enantiomers
- c) diastereomers
- d) epimers

18. Which of the following will give a negative result in the Benedict's test?

- a) beta-D-glucopyranose
- b) sucrose
- c) maltose
- d) alpha-D-glucopyranose

19. What is the defining characteristic of a lipid?

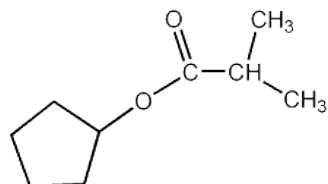
- a) All lipids are soluble in non-polar organic solvents.
- b) All lipids have structures based on a system of four fused carbon rings.
- c) All lipids have sulfur atoms in their structure.
- d) All lipids are esters.

20. Fats and oils are compounds containing the _____ (i) _____ functional group prepared by the condensation of fatty acid molecules with _____ (ii) _____.

- | | i | ii |
|----|-----------|---------------|
| a) | amide | amino acids |
| b) | ester | glycerol |
| c) | anhydride | each other |
| d) | ester | carbohydrates |

Short Answers: Answer each of the following questions in the space provided. Show your work for full credit. Please print legibly or take the risk of losing points. Each of the questions is worth 5 points.

21. Draw and name the products resulting from the acid hydrolysis of the following molecule:



22. Draw and label the cis and trans isomers for the following fatty acid.

