

Key

Name: \_\_\_\_\_

- 3) 1) Organic compounds that are essentially nonpolar and exhibit weak intermolecular forces have
- 1) high boiling points
  - 2) high conductivity in solution
  - 3) low melting points
  - 4) low vapor pressure

- 2) 2) Which of the following statements explains why the element carbon forms so many compounds?
- 1) Carbon readily forms ionic bonds with other carbon atoms.
  - 2) Carbon readily forms covalent bonds with other carbon atoms.
  - 3) Carbon atoms combine readily with oxygen.
  - 4) Carbon atoms have very high electronegativity.

- 1) 3) As the number of carbon atoms in a hydrocarbon molecule increases, the number of possible isomers generally
- 1) increases
  - 2) decreases
  - 3) remains the same

- 1) 4) Which compound is an isomer of  $\text{CH}_3\text{COOCH}_3$ ?
- $\text{C}_3\text{H}_6\text{O}_2$
- $\text{O}$   
 $\text{||}$   
 $\text{---C---C---O---C---}$  ester
- 1)  $\text{CH}_3\text{CH}_2\text{COOH}$
  - 2)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
  - 3)  $\text{CH}_3\text{COCH}_3$  1 oxygen
  - 4)  $\text{CH}_3\text{OCH}_3$  1 oxygen

- 3) 5) Which formula represents a saturated hydrocarbon? → alkane  $\text{C}_n\text{H}_{2n+2}$
- 1)  $\text{C}_2\text{H}_2$
  - 2)  $\text{C}_2\text{H}_4$
  - 3)  $\text{C}_3\text{H}_8$
  - 4)  $\text{C}_3\text{H}_6$

- 1) 6) What type of compound is represented by the structural formula shown below?

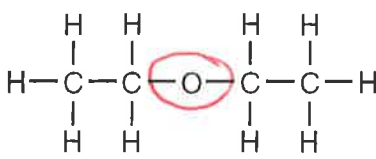


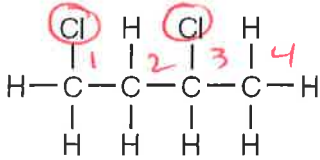
Table R  
diethyl ether

- 1) an ether
- 2) an aldehyde
- 3) an ester
- 4) a ketone

- 4) 7) What is the total number of hydrogen atoms in a molecule of butene?
- $\text{---C=C---C---C---}$   $\text{C}_4\text{H}_8$
- 1) 4
  - 2) 6
  - 3) 10
  - 4) 8

- 2) 8) Which formula represents a hydrocarbon with a triple covalent bond?  $\text{C}_n\text{H}_{2n-2}$
- 1)  $\text{C}_2\text{H}_3\text{Cl}$
  - 2)  $\text{C}_2\text{H}_2$   $\text{H-C}\equiv\text{C-H}$
  - 3)  $\text{CH}_3\text{Cl}$
  - 4)  $\text{C}_2\text{H}_4$

- 4) 9) What is the correct IUPAC name for a compound with the following structural formula?



1,3-dichlorobutane

- 1) 2,4-dichlorobutane
- 2) 1,3-dichloropentane
- 3) 2,4-dichloropentane
- 4) 1,3-dichlorobutane

3 10) Which structural formula represents an aldehyde?

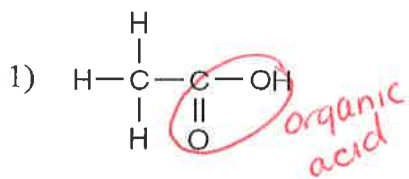
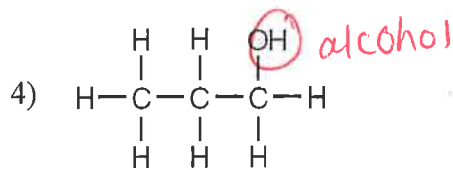
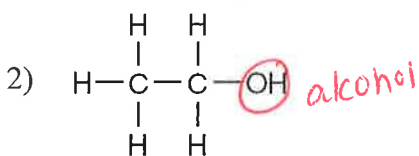
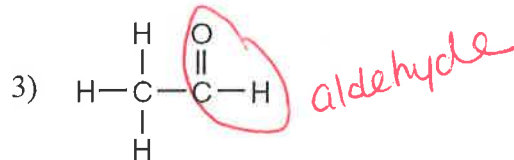
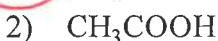
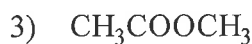
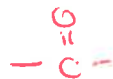
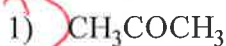


Table R



1 11) Which organic compound is a ketone? Table R



2 12) The structure  $\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}-\text{N} \\ | \quad / \quad \backslash \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$  is an example of what type of substance? Table R

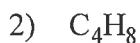
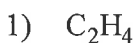
1) an ester

3) a ketone

2) an amine

4) an aldehyde

3 13) Which compound will undergo a substitution reaction with bromine?  $\rightarrow$  need an alkane



3 14) The reaction  $\text{CH}_4 + \text{Br}_2 \longrightarrow \text{CH}_3\text{Br} + \text{HBr}$  is an example of

1) hydrogenation

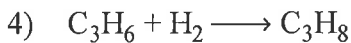
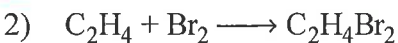
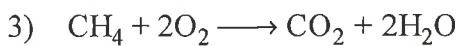
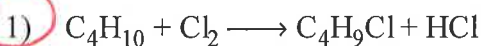
3) substitution

2) polymerization

4) addition

1 15) Which equation represents a substitution reaction?

need an alkane as a reactant



2 16) In which type of reaction can an unsaturated hydrocarbon become saturated?

1) substitution with hydrogen

3) oxidation with oxygen

2) addition with hydrogen

4) reduction with oxygen

4 17) The products of a fermentation reaction are carbon dioxide and

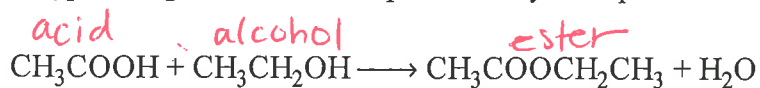
1) a ketone

3) an ester

2) an aldehyde

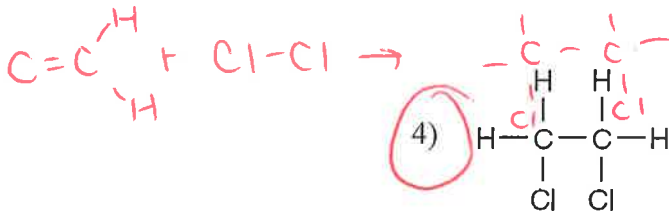
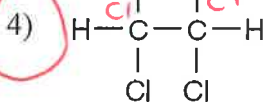
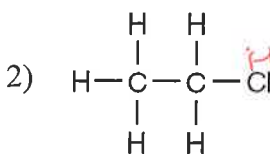
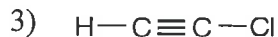
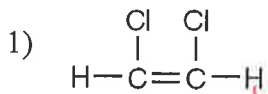
4) an alcohol

2 18) What type of organic reaction is represented by the equation below?



- 1) saponification  
2) esterification  
3) substitution  
4) fermentation

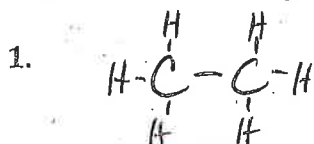
4 19) Which structural formula represents the product formed from the reaction of  $\text{Cl}_2$  and  $\text{C}_2\text{H}_4$ ?



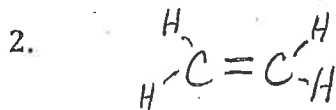
3 20) In the reaction  $\text{CH}_4 + 2\text{O}_2 \longrightarrow X + 2\text{H}_2\text{O}$ , what compound represents the missing product  $X$ ?

- 1) methanol  
2) ethanol  
3) carbon dioxide  
4) methanal

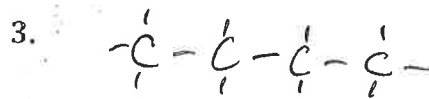
**Homologous Series:** Write the molecular and condensed structural formulas & NAME the following molecules.



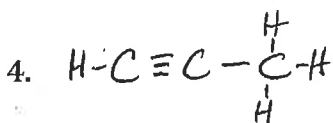
M- C<sub>2</sub>H<sub>6</sub>  
C- CH<sub>3</sub>CH<sub>3</sub>  
N- ethane



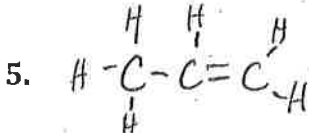
M- C<sub>2</sub>H<sub>4</sub>  
C- CH<sub>2</sub>CH<sub>2</sub>  
N- ethene



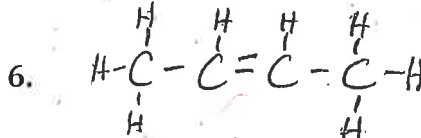
M- C<sub>4</sub>H<sub>10</sub>  
C- CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>  
N- butane



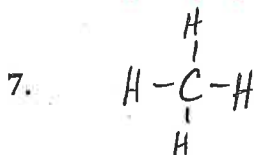
M- C<sub>3</sub>H<sub>4</sub>  
C- CHCCH<sub>3</sub>  
N- propyne



M- C<sub>3</sub>H<sub>6</sub>  
C- CH<sub>3</sub>CHCH<sub>2</sub>  
N- propene



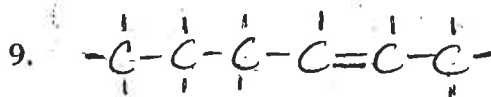
M- C<sub>4</sub>H<sub>8</sub>  
C- CH<sub>3</sub>CHCHCH<sub>3</sub>  
N- 2-butene



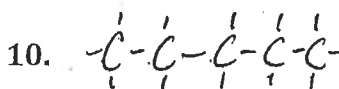
M- CH<sub>4</sub>  
C- CH<sub>4</sub>  
N- methane



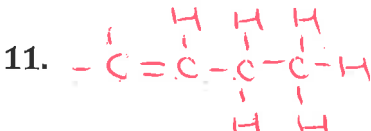
M- C<sub>2</sub>H<sub>2</sub>  
C- HCCH  
N- ethyne



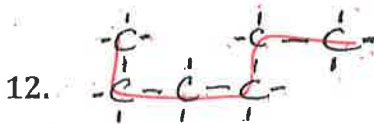
M- C<sub>6</sub>H<sub>12</sub>  
C- CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CHCHCH<sub>3</sub>  
N- 2-hexene



M- C<sub>5</sub>H<sub>12</sub>  
C- CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>  
N- pentane



M- C<sub>4</sub>H<sub>8</sub>  
C- CH<sub>2</sub>CHCH<sub>2</sub>CH<sub>3</sub>  
N- 1-butene



M- C<sub>6</sub>H<sub>14</sub>  
C- CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>  
N- hexane

### General Knowledge Questions I:

1. Organic compounds must contain the element. Carbon

2. What do the following endings mean?

"ane" single bonds  
b/w carbons

"diene" two double bonds

"ene" double bonds  
b/w carbons

"triene" three double bonds

"yne" triple bonds  
between

"diyne" two triple bonds

"ol" alcohol

"diol" two alcohol groups

3. What do these Prefixes mean?

prop 3

pent 5

hept 7

but 4