Name_____
Topic 7 - Organic Chemistry

_____1. The reaction of an alcohol with an organic acid produces a compound classified as

1) a base 2) an ester
3) a salt 4) a soap

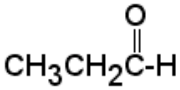
_____2. Compared with the rate of an inorganic reaction, the rate of an organic reaction is usually

1) slower, because the particles are ionic
2) faster, because the particles are ionic
3) faster, because the particles are molecular
4) slower, because the particles are molecular

_____3. What type of bond occurs in a saturated hydrocarbon molecule?

1) single covalent bond
2) double covalent bond
3) ionic bond
4) triple covalent bond

_____4. What type of compound is represented by the structural formula shown below?

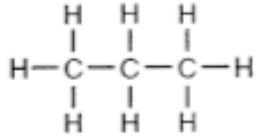


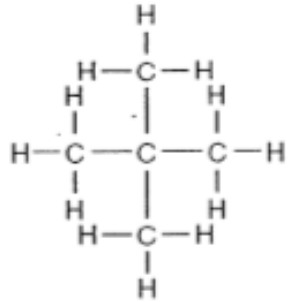
1) an ether 2) an acid
3) an ester 4) an aldehyde

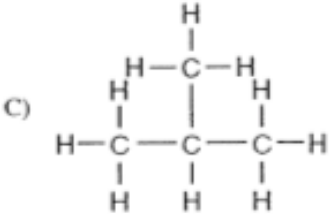
_____5. The chaining together of small molecules to form a large molecule occurs during the process of

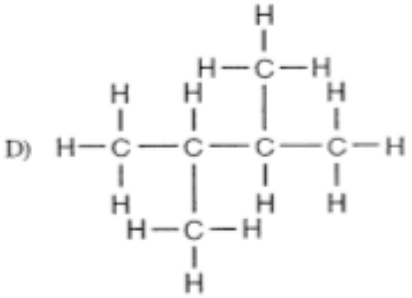
1) polymerization 2) substitution
3) saponification 3) fermentation

_____6. What structural formula represents 2,2-dimethylpropane?

A)


B)


C)


D)


_____7. Given the equation:
$C_6H_{12}O_6$ --> $2C_2H_5OH + 2CO_2$
The chemical process illustrated by this equation

1) saponification 2) fermentation
3) esterification 4)polymerization

_____8. What is the formula for methanoic acid?

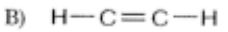
1) $HC_2H_3O_2$ 2) CH_3OH
3) C_2H_5OH 4) HCOOH

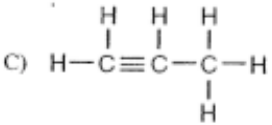
_____9. Which hydrocarbon is a member of the series with the general formula C_nH_{2n-2}?

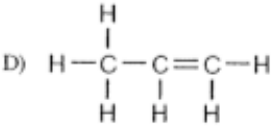
1) butane 2) benzene
3) ethene 4) ethyne

_____10. What is the structural formula for propene?

A)


B)


C)


D)


_____12. What class of organic compounds can be represented by R-OH?

1) acids 2) alcohols
3) ethers 4) esters

_____13. Given the equation:

$X \xrightarrow{\text{yeast}} 2C_2H_5OH + 2CO_2$

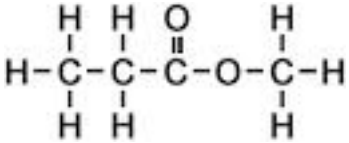
The substance represented by X is

1) carbon dioxide 2) glycerol
3) ethanol 3) glucose

_____14. The products of the complete combustion of a hydrocarbon are water and

1) an alcohol 2) carbon
3) carbon dioxide 4) an aldehyde

_____15. What type of compound is represented by the following structural formula?



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

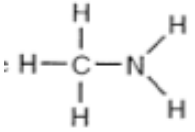
_____16. Organic chemistry is the chemistry of compounds containing the element

1) nitrogen 2) carbon
3) hydrogen 4) oxygen

_____17. In which type of reaction can an unsaturated hydrocarbon become saturated?

1) substitution with hydrogen
2) addidtion with hydrogen
3) reduction with oxygen
4) oxidation with oxygen

_____18. The structure shown below is an example of what type of substance



1) an aldehyde 2) an ester
3) a ketone 4) an amine

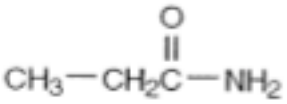
_____19. Which equation represents an esterification reaction

1) $C_3H_8 + Cl_2 \rightarrow C_3H_7Cl + HCl$
2) $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$
3) $HCOOH + CH_3OH \rightarrow HCOOCH_3 + HOH$
4) $C_5H_{10} + H_2 \rightarrow C_5H_{12}$

_____20. Which organic compound is saturated?

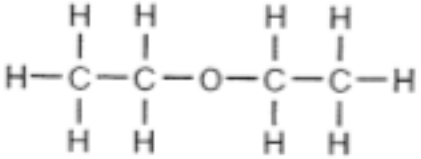
1) propene 2) ethyne
3) propane 4) ethene

_____21. To which organic family does the compound with the following formula belong?



1) ketones 2) aldehydes
3) amides 4) esters

_____22. Which type of compound is represented by the structural formula shown below?

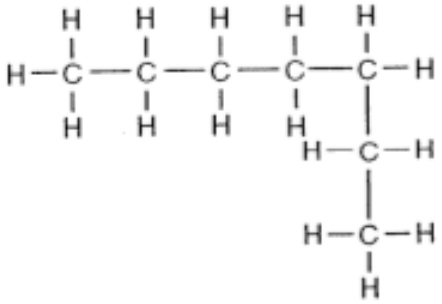


1) an ester 2) a ketone
3) an ether 4) an aldehyde

_____23. As the number of carbon atoms in a hydrocarbon molecule increases, the number of possible isomers generally

1) increase 2) decrease
3) remain the same

_____24. What is the correct IUPAC name for the structure shown below?



1) hexane 2) 1-ethyl pentane
3) heptane 4) 5-ethyl pentane

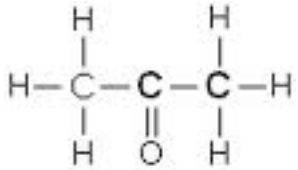
_____25. Which compound belongs to the alkene series?

1) C_2H_2 2) C_6H_6
3) C_2H_4 4) C_6H_{14}

_____26. The members of the alkane series of hydrocarbons are similar in that each member has the same

1) molecular formula
2) structural formula
3) empirical formula
4) general formula

_____27. What is the name of the compound with the formula

 ?

1) propanoic acid 2) propanol
3) propanal 4) propanone

_____28. A molecule of ethane and a molecule of ethene *both* have the same

1) molecular formula
2) number of hydrogen atoms
3) number of carbon atoms
4) empirical formula

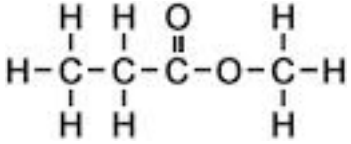
_____29. Which formula represents butane?

1) CH_3CH_3
2) $CH_3CH_2CH_2CH_2CH_3$
3) $CH_3CH_2CH_2CH_3$
4) $CH_3CH_2CH_3$

_____30. Which compound will undergo a substitution reaction with chlorine?

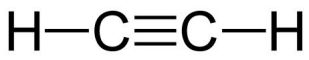
1) C_4H_8 2) CH_4
3) C_3H_6 4) C_2H_4

_____31. What is the correct name for the compound with the following structural formula?



1) methyl ethyl ether
2) propanoic acid
3) methyl propanoate
4) 2-propanone

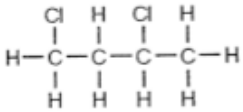
_____32. Given the structural formula for ethyne:



What is the total number of electrons shared between the carbon atoms?

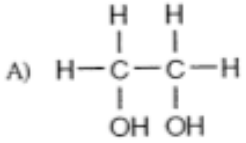
1) 6 2) 2
3) 3 4) 4

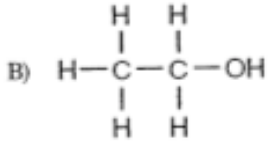
_____33. What is the correct IUPAC name for a compound with the following structural formula?

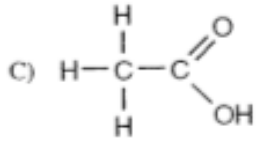


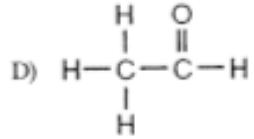
1) 2,4 dichlorobutane
2) 2,4-dichloropentane
3) 1,3-dichloronebutane
4) 1,3-dichloropentane

_____34. Which structural formula represents an acid?

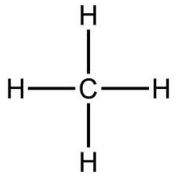
A) 

B) 

C) 

D) 

_____35. Given the molecule:



Replacing a hydrogen atom on this molecule with the functional group -OH will change the original properties of the molecule to those of an

1) ester 2) ether
3) acid 4) alcohol

_____36. What is the maximum number of covalent bonds that carbon can form?

1) 1 2) 2 3) 3 4) 4

_____37. Which formula represents an isomer of the compound propanoic acid, CH_3CH_2COOH?

1) $CH_3CH(OH)CH_2OH$
2) $CH_3CH_2CH_2OH$
3) $CH_3CH_2CH_2COOH$
4) CH_3COOCH_3

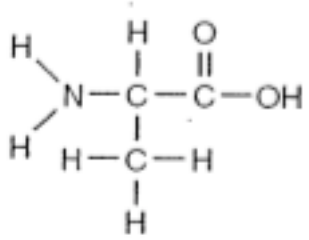
_____38. In the reaction

$CH_4 + 2O_2 \rightarrow X + 2H_2O$

what compound represents the missing product X?

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

_____39. What type of compound is represented by the structural formula below?



1) an alcohol 2) an amine
3) an amino acid 4) an aldehyde

_____40. Which hydrocarbon contains a triple bond?

1) ethyne 2) butane
3) benzene 4) ethene

_____41. Which formula represents an unsaturated hydrocarbon?

1) CCl_4 2) C_3H_7Cl
3) C_3H_6 4) C_3H_8

_____42. The reaction $nC_2H_4 \rightarrow (-C_2H_4-)_n$ is an example of

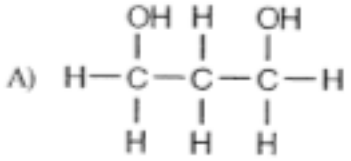
1) saponification 2) esterification
3) polymerization 4) substitution

_____43. A reaction between CH_3COOH and an alcohol produced the ester CH_3COOCH_3. The alcohol used in the reaction was

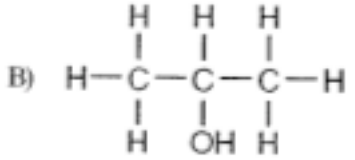
1) CH_3OH 2) C_2H_5OH
3) C_4H_9OH 4) C_3H_7OH

_____44. What is the structural formula for 1-propanol?

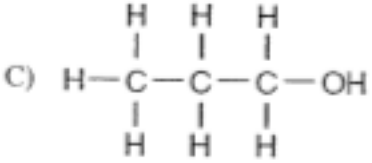
A)



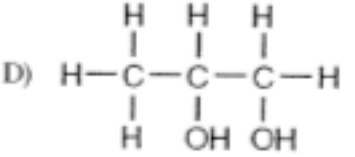
B)



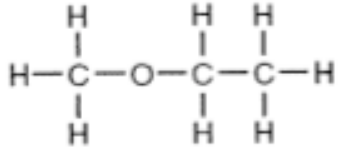
C)



D)

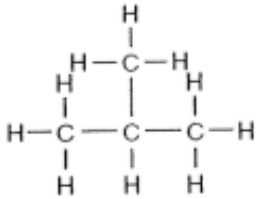


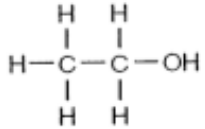
_____45. What is the name for the compound with the following structural formula?

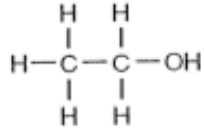


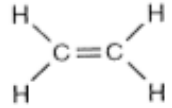
1) propanone 2) dimethyl ether
3) methyl ethyl ether 4) methyl ethanoate

_____46. Which of the following is the structural formula or an unsaturated compound?

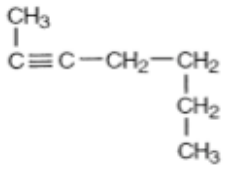
A) 

B) 

C) 

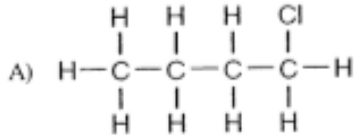
D) 

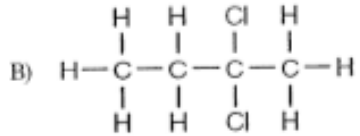
_____47. What is the IUPAC name for the hydrocarbon with the following structural formula?

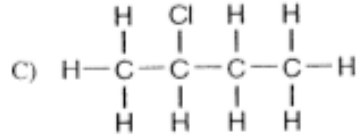


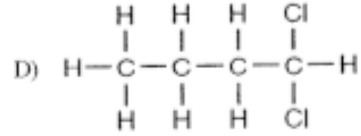
1) 1-methyl-4-ethyl 1-butyne
2) 1-methyl-1 hexyne
3) 2-heptyne
4) 5-ethyl-2-pentyne

_____48. What is the structural formula for 2-chlorobutane?

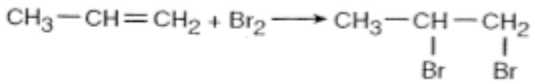
A) 

B) 

C) 

D) 

What type of reaction is represented by the equation below?



1) substitution 2) addition
3) polymerization 4) condensation

_____50. A student investigated four different substances in the solid phase. The table below is a record of the characteristics (marked with an X) exhibited by each substance.

Characteristic Tested	A	B	C	D
High Melting Point	X		X	
Low Melting Point		X		X
Soluble in Water	X			X
Insoluble in water		X	X	
Decomposed in high heat		X		
Stable under high heat	X		X	X
electrolyte	X			X
nonelectrolyte		X	X	

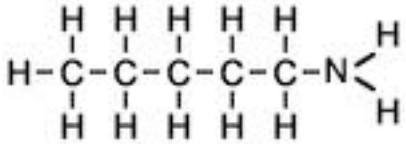
Which substance has characteristics *most* like those of an organic compound?

1) A 2) B 3) C 4) D

Constructed Reponse

1. In the box below, draw the structural formula for methyl ethyl ether

2. Given the following structural formula:



   a. Circle the functional group on the structural formula above.

   b. Based on the presence of this functional group, to what class of organic compounds does this compound belong?

   _____

   c. Write the correct IUPAC name for this compound.

   _____

3. Given the organic compound: methyl ethanoate
   a. In the box below, draw the structural formula for methyl ethanoate

   b. To which class of organic compounds does methyl ethanoate belong?

   _____

   c. What compounds reacts with methanol to produce methyl ethanoate

   _____

4. Given the organic compound: 1-hexyne
   a. Write the molecular formula for 1-hexyne.

   _____

   b. In the box below, draw the structural formula for 1-hexyne.

   c. To what homologous series of hydrocarbons does 1-hexyne belong?

   _____

   d. In the box below, draw the structural formula for an isomer of 1-hexyne

   e. Write the correct IUPAC name for the structural isomer of 1-hexyne drawn in part d.

   _____

5. In the box below, draw the structural formula for butanamide.

6. Given the organic compound: ethanal
   a. In the box below, draw the structural formula for ethanal.

   b. To which class of organic compounds does ethanal belong?

7. In the box below, draw the structural formula for ethanoic acid.

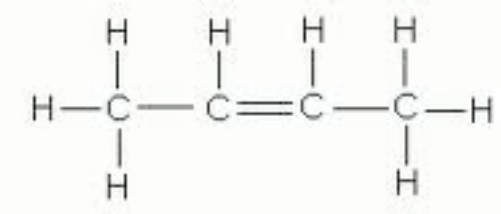
8. In the box below, draw the structural formula for 2-propanol.

   b. To which class of organic compunds does 2-propanol belong?

9. Given the organic compound: 3-pentanone
   a. In the box below, draw the structural formula for 3-pentanone.

   b. To which class of organic compounds does 3-pentanone belong?

10. Given the following structural formula:



   a. Write the IUPAC name for this compound.

   b. To what organic family does this compound belong?

   c. Does this molecule represent a saturated or an unsaturated compound? [*Give one reason to support your answer.*]