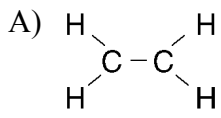
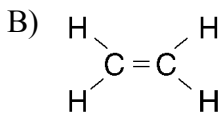
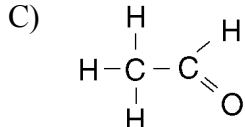
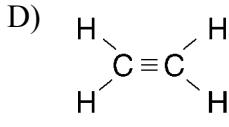
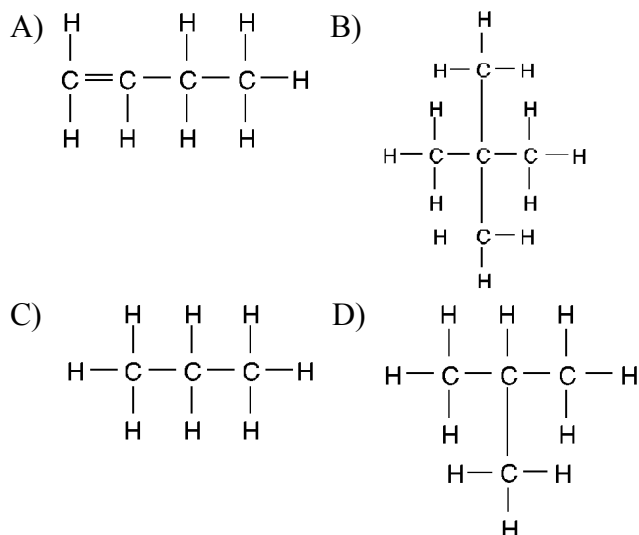
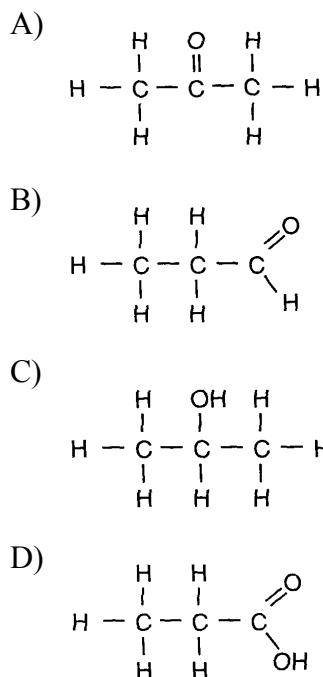


- \_\_\_\_\_ 1. Hydrocarbons are compounds that contain
- A) carbon, only
  - B) carbon and hydrogen, only
  - C) carbon, hydrogen, and oxygen, only
  - D) carbon, hydrogen, oxygen, and nitrogen, only
- \_\_\_\_\_ 2. Which compound is a saturated hydrocarbon?
- A)  $\text{CH}_2\text{CH}_2$
  - B)  $\text{CH}_3\text{CH}_3$
  - C)  $\text{CH}_3\text{CHO}$
  - D)  $\text{CH}_3\text{CH}_2\text{OH}$
- \_\_\_\_\_ 3. Which structural formula *correctly* represents a hydrocarbon molecule?
- A) 
  - B) 
  - C) 
  - D) 
- \_\_\_\_\_ 4. Which formula represents an unsaturated hydrocarbon?
- A)  $\text{C}_5\text{H}_{12}$
  - B)  $\text{C}_6\text{H}_{14}$
  - C)  $\text{C}_7\text{H}_{16}$
  - D)  $\text{C}_8\text{H}_{14}$
- \_\_\_\_\_ 5. What is the total number of electron pairs that are shared between the two carbon atoms in a molecule of ethyne?
- A) 1
  - B) 2
  - C) 3
  - D) 4
- \_\_\_\_\_ 6. Which element is present in all organic compounds?
- A) nitrogen
  - B) oxygen
  - C) carbon
  - D) sulfur
- \_\_\_\_\_ 7. Butanal and butanone have different chemical and physical properties primarily because of differences in their
- A) functional groups
  - B) molecular masses
  - C) molecular formulas
  - D) number of carbon atoms per molecule
- \_\_\_\_\_ 8. Organic compounds that are essentially non-polar and exhibit weak intermolecular forces have
- A) low vapor pressure
  - B) low melting points
  - C) high boiling points
  - D) high electrical conductivity in solution
- \_\_\_\_\_ 9. The two isomers of butane have different
- A) formula masses
  - B) empirical formulas
  - C) molecular formulas
  - D) structural formulas
- \_\_\_\_\_ 10. Which two compounds are isomers of each other?
- A)  $\text{CH}_3\text{CH}_2\text{COOH}$  and  $\text{CH}_3\text{COOCH}_2\text{CH}_3$
  - B)  $\text{CH}_3\text{CH}_2\text{CHO}$  and  $\text{CH}_3\text{COCH}_3$
  - C)  $\text{CH}_3\text{CHBrCH}_3$  and  $\text{CH}_2\text{BrCHBrCH}_3$
  - D)  $\text{CH}_3\text{CHOHCH}_3$  and  $\text{CH}_3\text{CHOHCH}_2\text{OH}$

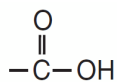
11. Which formula is an isomer of butane?



12. Which structural formula represents an isomer of 1-propanol?



13. Given a formula of a functional group:



An organic compound that has this functional group is classified as

- A) an acid                      B) an aldehyde  
C) an ester                      D) a ketone

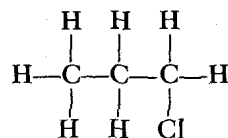
14. If a compound contains only one -OH functional group attached to the end carbon in the chain, it is classified as a

- A) primary alcohol  
B) secondary alcohol  
C) tertiary alcohol  
D) dihydroxy alcohol

15. Methanal is the IUPAC name for an

- A) aldehyde                      B) alcohol  
C) acid                              D) ether

16. What is the correct IUPAC name of the following compound?

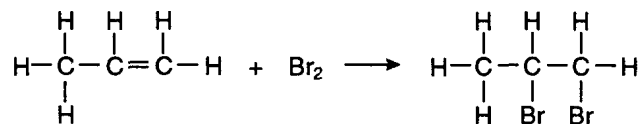


- A) ethane                          B) propane  
C) 3-chloropropane              D) 1-chloropropane

17. Which compound is an ester?

- A)  $\text{CH}_3\text{COOH}$                       B)  $\text{CH}_3\text{CHO}$   
C)  $\text{CH}_3\text{COOCH}_3$                   D)  $\text{CH}_3\text{COCH}_3$

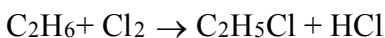
18. Base your answer to the following question on the organic reaction below.



This reaction is an example of

- A) fermentation                  B) addition  
C) substitution                      D) saponification

19. Given the equation:



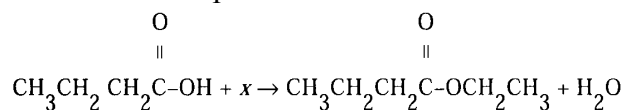
This reaction is best described as

- A) addition involving a saturated hydrocarbon
- B) addition involving an unsaturated hydrocarbon
- C) substitution involving a saturated hydrocarbon
- D) substitution involving an unsaturated hydrocarbon

20. Which hydrocarbon will undergo a substitution reaction with chlorine?

- A) methane
- B) ethyne
- C) propene
- D) butene

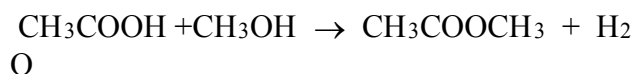
21. Given the incomplete reaction:



Which compound is represented by  $x$ ?

- A)  $\text{CH}_3\text{CH}_2\text{OH}$
- B)  $\text{CH}_3\text{C}-\text{H}$
- C)  $\text{CH}_3\overset{\text{O}}{\parallel}\text{OCH}_2\text{CH}_3$
- D)  $\text{CH}_3\overset{\text{O}}{\parallel}\text{CCH}_3$

22. In the reaction:



the organic product can best be identified as

- A) an alcohol
- B) a ketone
- C) an ester
- D) an acid

23. Which alcohol reacts with  $\text{C}_2\text{H}_5\text{COOH}$  to produce the ester  $\text{C}_2\text{H}_5\text{COOC}_2\text{H}_5$ ?

- A)  $\text{CH}_3\text{OH}$
- B)  $\text{C}_2\text{H}_5\text{OH}$
- C)  $\text{C}_3\text{H}_7\text{OH}$
- D)  $\text{C}_4\text{H}_9\text{OH}$

24. What are the products of a fermentation reaction?

- A) an alcohol and carbon monoxide
- B) an alcohol and carbon dioxide
- C) a salt and water
- D) a salt and an acid

25. Which reaction best represents the complete combustion of ethene?

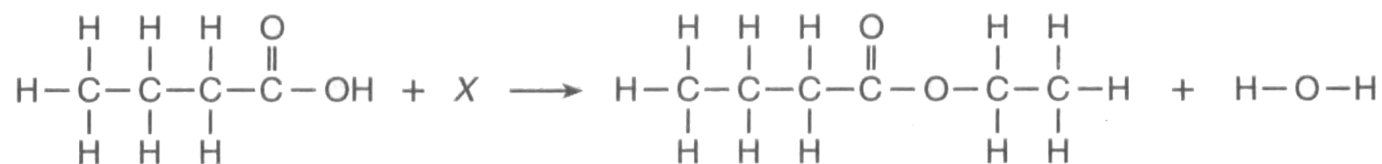
- A)  $\text{C}_2\text{H}_4 + \text{HCl} \rightarrow \text{C}_2\text{H}_5\text{Cl}$
- B)  $\text{C}_2\text{H}_4 + \text{Cl}_2 \rightarrow \text{C}_2\text{H}_4\text{Cl}_2$
- C)  $\text{C}_2\text{H}_4 + 3 \text{O}_2 \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
- D)  $\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_5\text{OH}$

26. Which is a product of the hydrolysis of an animal fat by a strong base?

- A) water
- B) gasoline
- C) soap
- D) toluene

27. Base your answer to the following question on the following information.

The equation below represents the reaction between butanoic acid and an unidentified reactant,  $X$ .



Draw a structural formula for the unidentified reactant,  $X$ , in the equation.

28. Given the equation:



To which class of organic compounds does product  $X$  belong?