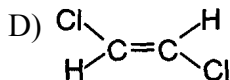
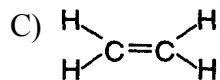
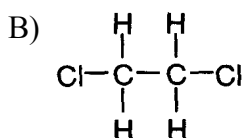
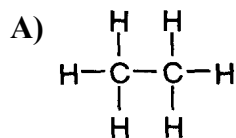


1. Which structural formula represents a saturated hydrocarbon?



2. Which molecule contains ten hydrogen atoms?

A) butane

B) butene

C) propane

D) propene

3. A double carbon-carbon bond is found in a molecule of

A) pentane

B) pentene

C) pentyne

D) pentanol

4. Which formula represents an unsaturated hydrocarbon?

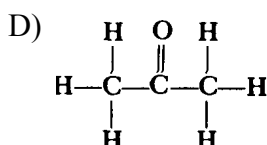
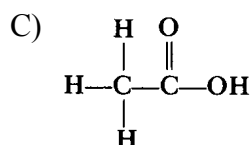
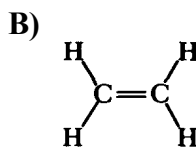
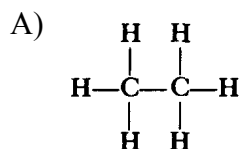
A) CH_2CHCl

B) $\text{CH}_3\text{CH}_2\text{Cl}$

C) $\text{CH}_3\text{CH}_2\text{CH}_3$

D) CH_3CHCH_2

5. Which formula represents an unsaturated hydrocarbon?



6. The multiple covalent bond in a molecule of 1-butene is a

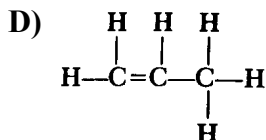
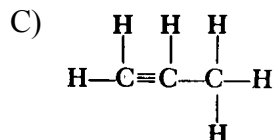
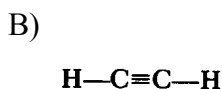
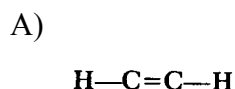
A) double covalent bond that has 6 shared electrons

B) double covalent bond that has 4 shared electrons

C) triple covalent bond that has 6 shared electrons

D) triple covalent bond that has 4 shared electrons

7. Which is the correct structural formula of propene?



8. What is the general formula for the members of the alkane series?

A) C_nH_{2n}

B) $\text{C}_n\text{H}_{2n+2}$

C) $\text{C}_n\text{H}_{2n-2}$

D) $\text{C}_n\text{H}_{2n-6}$

9. 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

10. Which formula represents a molecule of a saturated hydrocarbon?

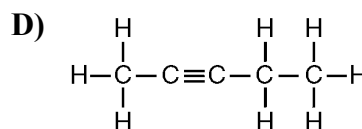
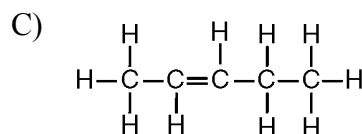
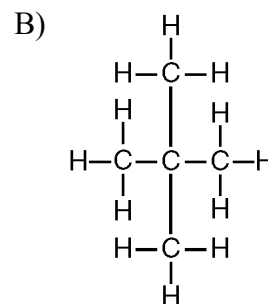
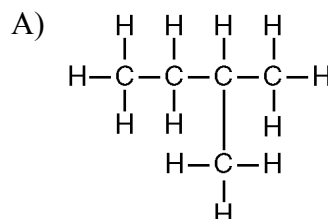
A) C_2H_2

B) C_4H_{10}

C) C_5H_8

D) C_6H_6

11. Which structural formula represents 2-pentyne?



12. Which formula represents propyne?

A) C_3H_4

B) C_3H_6

C) C_5H_8

D) C_5H_{10}

13. Which general formula represents the homologous series of hydrocarbons that includes the compound 1-heptyne?

A) $\text{C}_n\text{H}_{2n-6}$

B) $\text{C}_n\text{H}_{2n-2}$

C) C_nH_{2n}

D) $\text{C}_n\text{H}_{2n+2}$

14. Which is a characteristic of most organic compounds?

A) They have very strong intermolecular forces.

B) They are primarily ionic in character.

C) They generally have low melting and boiling points.

D) They are all highly soluble in water.

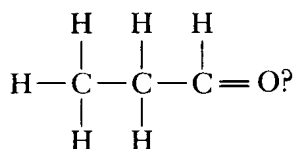
15. Ethanol and dimethyl ether have different chemical and physical properties because they have different

- A) functional groups
- B) molecular masses
- C) numbers of covalent bonds
- D) percent compositions by mass

16. In a given homologous series of hydrocarbons, the boiling point generally increases as the size of the molecules increases. The best explanation for this statement is that in larger organic molecules

- A) the number of covalent bonds per molecule is greater
- B) the molecules are more symmetrical
- C) more hydrogen bonding is possible
- D) there are greater intermolecular forces

17. Which structural formula represents an isomer of

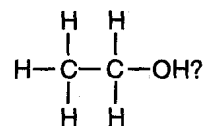


- A) $\begin{array}{c} \text{H} & \text{H} & & \text{H} \\ | & | & & | \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{C}-\text{H} \\ | & | & & | \\ \text{H} & \text{H} & & \text{H} \end{array}$
- B) $\begin{array}{c} \text{H} & \text{O} & \text{H} \\ | & || & | \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ | & & | \\ \text{H} & & \text{H} \end{array}$
- C) $\begin{array}{c} \text{H} & \text{H} & \text{H} \\ | & | & | \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{OH} \\ | & | & | \\ \text{H} & \text{H} & \text{H} \end{array}$
- D) $\begin{array}{c} \text{H} & \text{H} & \text{O} \\ | & | & || \\ \text{H}-\text{C}-\text{C}-\text{C} \\ | & | & \backslash \\ \text{H} & \text{H} & \text{OH} \end{array}$

18. Which two compounds are isomers of each other?

- A) CH_3OCH_3 and $\text{CH}_3\text{CH}_2\text{OH}$
- B) $\text{CH}_3\text{CH}_2\text{Cl}$ and $\text{C}_6\text{H}_5\text{Cl}$
- C) CH_3COCH_3 and CH_3OCH_3
- D) $\text{CH}_3(\text{CH})_2\text{CH}_3$ and $\text{CH}_3(\text{CH})_2\text{CH}_3$

19. Which is an isomer of



- A) $\begin{array}{c} \text{H} & & \text{H} \\ | & & | \\ \text{H}-\text{C}-\text{O}-\text{C}-\text{H} \\ | & & | \\ \text{H} & & \text{H} \end{array}$
- B) $\begin{array}{c} \text{H} & \text{H} \\ | & | \\ \text{HO}-\text{C}-\text{C}-\text{H} \\ | & | \\ \text{H} & \text{H} \end{array}$
- C) $\begin{array}{c} \text{H} & \text{O} \\ | & || \\ \text{H}-\text{C}-\text{C}-\text{H} \\ | & \\ \text{H} & \end{array}$
- D) $\begin{array}{c} \text{H} & \text{H} & \text{H} \\ | & | & | \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{C}-\text{H} \\ | & | & | \\ \text{H} & \text{H} & \text{H} \end{array}$

20. The formula of methanoic acid is

- A) HCHO
- B) HCOOH
- C) CH_3OH
- D) HCOOCH_3

21. In an aqueous solution, which compound will be most acidic?

- A) CH_3COOH
- B) $\text{CH}_3\text{CH}_2\text{OH}$
- C) $\text{C}_3\text{H}_5(\text{OH})_3$
- D) CH_3OH

22. The formula $\text{C}_5\text{H}_{11}\text{OH}$ represents an

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

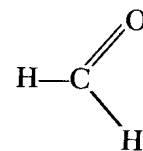
23. Which two compounds are monohydroxy alcohols?

- A) ethylene glycol and ethanol
- B) ethylene glycol and glycerol
- C) methanol and ethanol
- D) methanol and glycerol

24. The compound HCHO is an example of an

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

25.



Which is represented by the structural formula above?

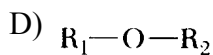
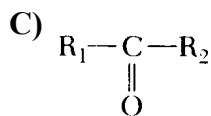
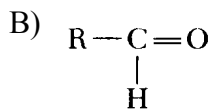
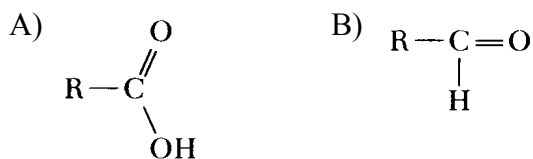
- A) an aldehyde
- B) an alcohol
- C) an alkane
- D) an acid

26. Which formula represents a ketone?

- A) HCOOH
- B) HCHO
- C) CH_3COCH_3
- D) $\text{CH}_3\text{CH}_2\text{OH}$

Reagents review Organic chemistry

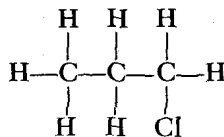
27. Which general formula represents a ketone?



28. Which class of compounds contains *at least one* element from Group 17 of the Periodic Table?

- A) aldehyde B) amine
C) ester D) **halide**

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



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

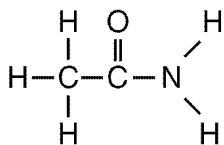
30. Which formula correctly represents an ester?

- A) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ B) CH_3COCH_3
C) **$\text{CH}_3\text{COOCH}_3$** D) $\text{CH}_3\text{CH}_2\text{COOH}$

31. The reaction between an organic acid and an alcohol produces

- A) an aldehyde B) a ketone
C) an ether D) **an ester**

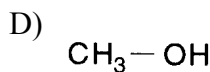
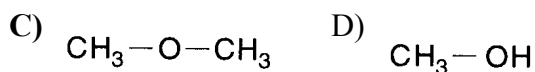
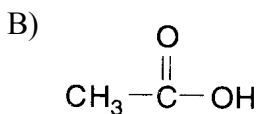
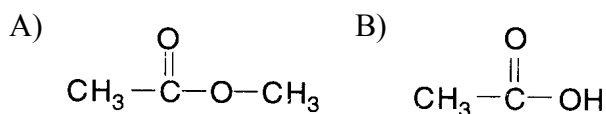
32. Given the structural formula:



This compound is classified as an

- A) **amide** B) amine
C) aldehyde D) alcohol

33. Which formula represents an ether?



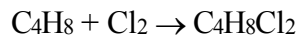
34. Which class of compounds has the general formula $\text{R}_1-\text{O}-\text{R}_2$?

- A) esters B) alcohols
C) **ethers** D) aldehydes

35. The product of a reaction between a hydrocarbon and chlorine was 1,2-dichloropropane. The hydrocarbon must have been

- A) C_5H_{10} B) C_2H_4 C) **C_3H_6** D) C_4H_8

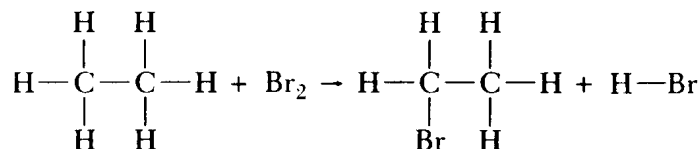
36. Given the reaction:



This reaction is an example of

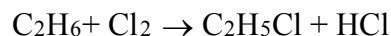
- A) substitution B) **addition**
C) polymerization D) fermentation

37. Which organic product is formed by the reaction below?



- A) **bromoethane** B) bromoethene
C) bromoethyne D) bromobenzene

38. 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

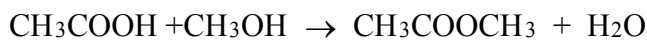
39. Which polymers occur naturally?

- A) starch and nylon
B) **starch and cellulose**
C) protein and nylon
D) protein and plastic

40. Cellulose, protein, and starch are classified as

- A) aldehydes B) esters
C) synthetic polymers D) **natural polymers**

41. In the reaction:



the organic product can best be identified as

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

42. A mixture of ethanoic (acetic) acid and ethanol (ethyl alcohol) is heated in the presence of concentrated sulfuric acid. The organic product formed is

- A) **CH₃COOC₂H₅** B) CH₃COC₂H₅OH
 C) CH₃COC₂H₅ D) C₂H₅CH₃COOH

43. 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

44. The fermentation of C₆H₁₂O₆ will produce CO₂ and

- A) C₃H₅(OH)₃ **B) C₂H₅OH**
 C) Ca(OH)₂ D) Cr(OH)₃

45. In the presence of excess oxygen, hydrocarbons burn completely to form water and

- A) CO **B) CO₂** C) C D) CO₃²⁻

46. Which products are obtained when CH₄(g) burns completely in an excess of oxygen?

- A) CO and H₂O B) CO and C
C) CO₂ and H₂O D) CO₂ and CO

47. The principal products of saponification, a reaction between a fat and a base, are soap and

- A) water **B) glycerol**
 C) carbon dioxide D) ethyl alcohol

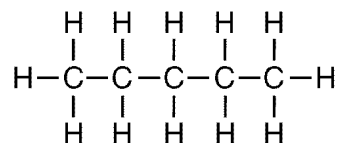
48. Which reaction results in the production of soap?

- A) esterification B) fermentation
 C) polymerization **D) saponification**

49. Primary alcohols can be dehydrated to produce

- A) ethers** B) organic acids
 C) esters D) aldehydes

50. Given the structural formula of pentane:



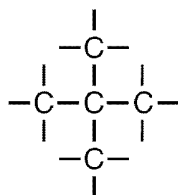
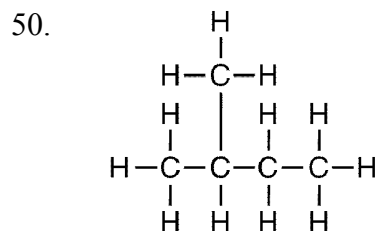
Draw a structural formula for an isomer of pentane.

Answer Key

Regents review Organic chemistry 2011-2012

1. **A**
2. **A**
3. **B**
4. **D**
5. **B**
6. **B**
7. **D**
8. **B**
9. **B**
10. **B**
11. **D**
12. **A**
13. **B**
14. **C**
15. **A**
16. **D**
17. **B**
18. **A**
19. **A**
20. **B**
21. **A**
22. **D**
23. **C**
24. **B**
25. **A**
26. **C**
27. **C**
28. **D**
29. **D**
30. **C**
31. **D**
32. **A**
33. **C**
34. **C**
35. **C**
36. **B**

37. **A**
38. **C**
39. **B**
40. **D**
41. **C**
42. **A**
43. **B**
44. **B**
45. **B**
46. **C**
47. **B**
48. **D**
49. **A**



51. The molecular formulas of the two hydrocarbons are the same, but the structural formulas are different.
52. alcohol *or* alcohols.
53. Acceptable responses include, but are not limited to: • propene

54. Acceptable responses include, but are not limited to: The C_3H_6 is unsaturated because each molecule has a double covalent bond between two of its carbon atoms. There is a carbon-carbon double bond in each molecule

55.

