Organic Chemistry - Chapter 20 Prep Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. How many valence electrons does a carbon atom have?
   a. 3   b. 4   c. 5   d. 6

2. Carbon is usually found in ________ compounds?
   a. non-metallic   b. metallic   c. inorganic   d. organic

3. Hydrocarbons are named based upon ________.
   a. number of carbon atoms.   b. isotope of carbon.   c. bonds between hydrogen atoms.   d. mass of the compounds.

4. Which of the following is an alkane?
   a. propyne   b. propane   c. propene   d. propyl bromide

5. In the figure above, what is the structural formula for 2-methylbutane?
6. In the figure above, name the compound in diagram C.
   a. diethylpentane  b. 3-isoheptane  c. 3-methylpentane  d. 3-ethylpentane

7. In the figure above, name the compound in diagram A.
   a. 1,3-butadiene  b. ethene  c. ethyne  d. ethane

8. In the figure above, name the compound in diagram D.
   a. 2-bromopropyne  b. bromopropylmethane  c. isopropylethane  d. 2-bromopropene

9. In the figure above, name the compound in diagram A.
   a. 1,3-dimethylcyclohexane  b. ethyleclopentane  c. cycloheptane  d. propylecyclohexane
10. In the figure above, what is the structural formula for propyne?

11. Which hydrocarbons have triple covalent bonds?
   a. alkanes  b. alkynes  c. alkenes  d. aromatic hydrocarbons

12. Name the alkene in the figure above.
   a. ethene  b. propene  c. butyl propanoate  d. propyl butanol

13. Name the figure above.
   a. ethanamide  b. pentane  c. pentanamide  d. None of the above

14. Alkenes are hydrocarbons that contain what type of bonds?
   a. single covalent bonds only  b. at least one double bond  c. at least one triple bond  d. ionic bonds

15. What is the simplest alkene?
   a. butene  b. ethene  c. methene  d. pentene

16. What is the name of the alkane having eight carbons?
   a. propane  b. methane  c. octane  d. pentane

17. What is the general formula for a straight-chain alkane?
   a. \( C_nH_n \)  b. \( C_nH_{2n} \)  c. \( C_nH_{2n+2} \)  d. \( C_nH_{2n+2} \)

18. A saturated straight-chain hydrocarbon with two carbons is ____.
   a. ethene  b. decane  c. propane  d. ethane
19. What is the name of the following compound?

\[
\text{CH}_3\text{O}\text{C}\text{CH}_2\text{CH}_3
\]

a. butanoic acid  b. methyl propanoate  c. ethyl methyl ether  d. ethanoic acid

20. Which of the following compounds is tetrachloromethane?

a.  
\[
\text{Cl}\text{C}\text{Cl}\text{Cl}\text{H}
\]

b.  
\[
\text{Cl}\text{C}\text{Cl}\text{CH}_3
\]

c.  
\[
\text{Cl}\text{C}\text{Cl}\text{Cl}
\]

d.  
\[
\text{Cl}\text{C}\text{CH}_3\text{CH}_3
\]

21. The functional group in \[\text{CH}_3\text{O}\text{C}\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3\] is a(n) ___.

a. ester  b. ether  c. carbonyl  d. carboxyl

22. Name the compound \[\text{CH}_3\text{CH}_2\text{O}\text{CH}_2\text{CH}_2\text{CH}_3\].

a. diethyl propane  b. dipropyloxyether  c. ethoxypropane  d. pentoxy ether

23. Name the following compound?

\[
\text{CH}_3\text{C}\text{CH}_2\text{CH}_3
\]

a. butanol  b. butanoic acid  c. isobutanol  d. butanone

24. What type of compound is this?

\[
\text{CH}_3\text{C}\text{CH}_2\text{CH}_2\text{CH}_3
\]

a. ketone  b. alkane  c. alkene  d. carboxyl
25. Which carbon skeleton represents an ester?
   a.  
   b.  
   c.  
   d. none of the above

26. Organic acids have the general structure __________.
   a.  
   b.  
   c.  
   d. 

27. What is the name of the following compound?
   a. butane  b. 3-methyl butanal  c. butanol  d. butanone

28. Which of the following carbon skeletons represents an aldehyde?
   a.  
   b.  
   c.  
   d. 

29. The IUPAC name for a carboxylic acid with 3 carbon chain would be __________.
   a. propanoic acid  b. dimethylamine acid  c. butanoic acid  d. methanoic acid

30. Name the following molecule.
   a. m-nitrobenzene  b. p-nitrochlorobenzene  c. o-aminochlorobenzene  d. m-aminochlorobenzene
31. Name the following molecule.

![Molecule Image]

a. p-difluorohydroxylbenzene  
b. 1-hydroxyl-3,5-difluorobenzene  
c. 1,3-difluoro-5-hydroxybenzene  
d. m-hydroxylbenzene

32. Name the following molecule.

![Molecule Image]

a. m-diethylbenzene  
b. p-diethylbenzene  
c. 1,3-dimethylbenzene  
d. p-dichlorobenzene