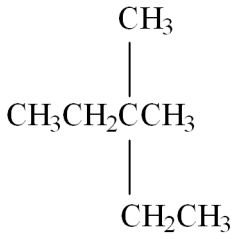
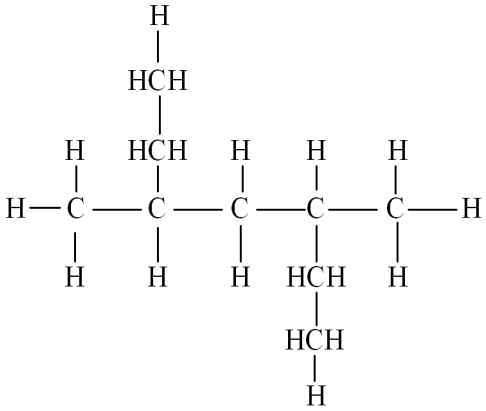
Name: _____ Date: _____

1. Name the following:



A) *n*-heptane
B) 2-methyl-2-ethylbutane
C) 3,3-dimethylpentane
D) 2,2-diethylpropane

2. Name the following:



A) 2,4-diethylpentane
B) 3,5-dimethylheptane
C) secondary ethylpentane
D) 2,3-dimethyl-2,3-diethylpropane
E) none of these

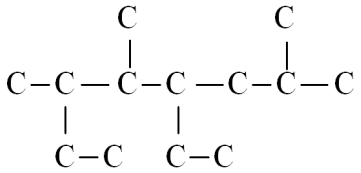
3. A student gave a molecule the following name:

   2-methyl-4-t-butylpentane

   However, the teacher pointed out that, although the molecule could be correctly drawn from this name, the name violates the IUPAC rules. What is the correct (IUPAC) name of the molecule?

   A) 2-t-butyl-4-methylpentane
   B) 2,2,3,5-tetramethylhexane
   C) 2,4,5,5-tetramethylhexane
   D) 1-sec-butyl-1,2,2-trimethylpentane
   E) none of these (a-d)

4. What is the compound whose carbon skeleton (minus any hydrogen atoms) appears below?



   A) 2,4-diethyl-3,6-dimethylheptane
   B) 2,5-dimethyl-4,6-diethylheptane
   C) 1,4-diethyl-3,6-dimethyl-tridecane
   D) 5-ethyl-3,6-trimethyloctane
   E) 4-ethyl-2,5,6-trimethyloctane

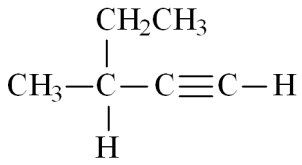
5. How many isomers are there of "dichloroethene"?

   A) 2
   B) 3
   C) 4
   D) 5
   E) 6

6. Chemical reactions involving alkanes in which hydrogen atoms are removed and the product is an unsaturated hydrocarbon are called

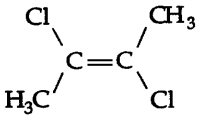
   A) combustion reactions.
   B) dehydrogenation reactions.
   C) substitution reactions.
   D) addition reactions.
   E) polymerization reactions.

7. Name the following:



A) 1-hexyne
B) 2-ethynyl butane
C) 2-ethyl-3-butyne
D) 3-methyl-1-pentyne
E) 3-methyl-4-pentyne

8. Name the following:



A) 2-chloro-3-chloro-*cis*-2-butene
B) 2,3-dichloro-*cis*-2-butene
C) 2,3-dichloro-*trans*-2-butene
D) 1-chloro-1-methyl-2-chloro-propene
E) 2,3-dichloro-1-methyl-propene

9. $CH_3C \equiv CCH_2CH_2Cl$ is named:

A) 1-chloro-3-pentyne
B) 5-chloro-2-pentene
C) 1-acetylenyl-3-chloropropane
D) 5-chloro-2-pentyne
E) 1-chloro-3-pentene

10. $H_2CCHCH_2N(CH_3)_2$ is

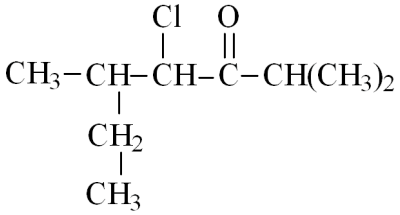
A) an alkyne and a secondary amine.
B) an alkene and a primary amine.
C) an alkene and a tertiary amine.
D) an alkyne and a tertiary amine.
E) none of these

11. How many different possible tetramethylbenzenes exist?
    A) 2
    B) 3
    C) 4
    D) 5
    E) 6

12. Identify all the functional groups present in the following organic compound. 1) ketone, 2) aldehyde, 3) acid, 4) alcohol, 5) ether, 6) ester, 7) amine

    A) 2,6
    B) 2,5
    C) 1,2
    D) 1,2,5
    E) 3,4

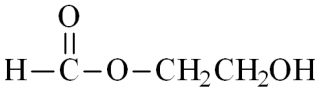
13. Name the following:

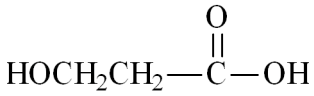


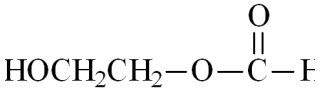
    A) 2-chloro-3-ethyl-1-isopropylbutanone
    B) isopropyl-chloro,methylbutyl ketone
    C) 2-butyl,chloro,isobutanoyl methane
    D) 4-chloro-2,5-dimethyl-3-heptanone
    E) 3-methyl-4-chloro-1-isopropylpentanone

14. Which of the following has a double C-O bond and a single C-O bond?
    A) ketone
    B) ester
    C) alcohol
    D) amine
    E) aldehyde

15. Referring to the structures below, which statement is true?

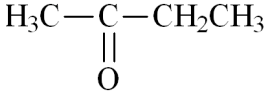
I. 

II. 

III 

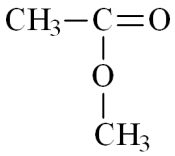
A) I and II have different molecular formulas.
B) I and III are structural isomers of each other.
C) II and III are stereoisomers of each other.
D) II and III are different conformations of the same compound.
E) I and III are the same compound.

16. Identify the type of organic compound shown:



A) aldehyde
B) ester
C) amine
D) alcohol
E) none of these

17. Identify the type of organic compound shown:

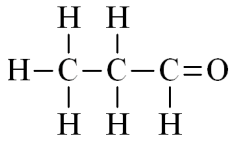


A) aldehyde
B) ester
C) amine
D) ketone
E) none of these

18. Identify the type of organic compound shown: $(CH_3)_3N$

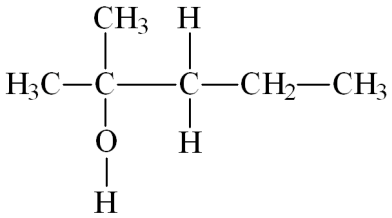
A) aldehyde
B) ester
C) amine
D) ketone
E) none of these

19. Identify the type of organic compound shown:



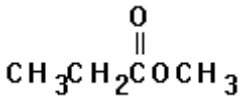
A) aldehyde
B) ester
C) amine
D) ketone
E) none of these

20. Classify the following molecule:

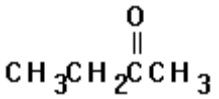


A) primary alcohol
B) secondary alcohol
C) tertiary alcohol
D) ether
E) phenol

21. Which molecule is an amine?

A) 

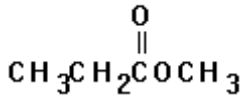
B) $CH_3CH_2OCH_3$

C) 

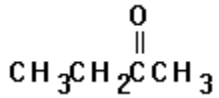
D) $CH_3CH_2NH_2$

E) none of these

22. Which molecule is an ester?

A) 

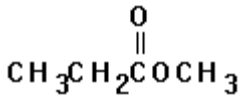
B) $CH_3CH_2OCH_3$

C) 

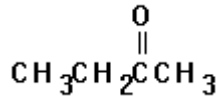
D) $CH_3CH_2NH_2$

E) none of these

23. Which molecule is a ketone?

A) 

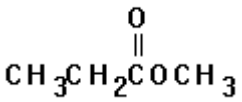
B) $CH_3CH_2OCH_3$

C) 

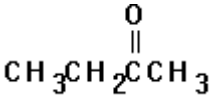
D) $CH_3CH_2NH_2$

E) none of these

24. Which molecule is an ether?

A) 

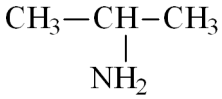
B) $CH_3CH_2OCH_3$

C) 

D) $CH_3CH_2NH_2$

E) none of these

25. Classify the following molecule:



A) primary amine

B) secondary amine

C) tertiary amine

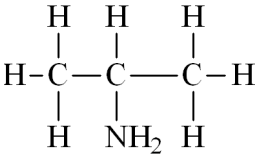
D) amino acid

E) peptide

26. Identify the secondary amine.

A) CH_3NH_2

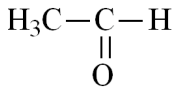
B) $(CH_3)_2NH$

C) 

D) NH_3

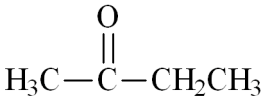
E) $(CH_3)_3N$

27. Classify the following molecule:



A) acid
B) aldehyde
C) amine
D) ketone
E) carbonyl

28. Classify the following molecule:

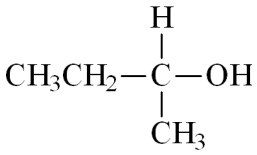


A) acid
B) aldehyde
C) amine
D) ketone
E) carbonyl

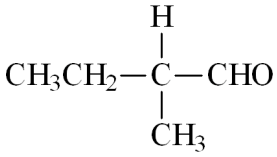
29. Which of the following functional groups does not contain a doubly bonded oxygen?
A) aldehyde
B) carboxyl
C) ketone
D) carboxylic acid
E) all contain a double bond

30. Which structure represents an optically active aldehyde?

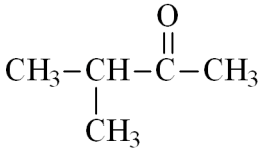
A)



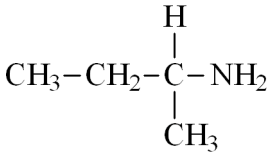
B)



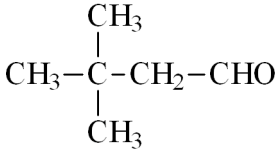
C)



D)



E)



31. What organic molecules have the general formula RCOOH?
    A) esters
    B) alcohols
    C) carboxylic acids
    D) ketones
    E) aldehydes

32. A carboxylic acid will react with an alcohol to form a(n) _____ and a water molecule.
    A) ester
    B) amine
    C) polymer
    D) ketone
    E) aldehyde

Answer Key - Chapter22_Sample_Prob

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