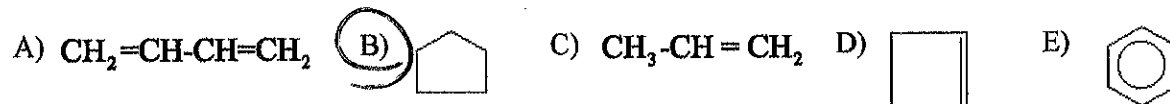


Answer Questions 1-20 on your scantron. Each question is worth 2 pt.

1. (4) Carbon atoms always have how many covalent bonds?  
A) one B) two C) three **D) four** E) five

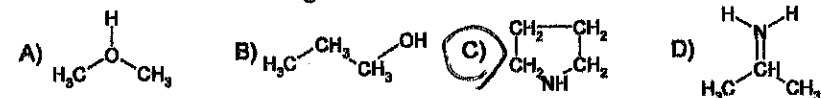
Chp 4.1

2. (4.1) Which of these compounds is a cycloalkane?



3. In question 2 (above) which structure is cyclopentane? **B**

4. Which of the following condensed structure is correct?



5. How many hydrogen atoms does this molecule have (the hydrogen atoms in organic compounds are frequently "understood" and not shown in the structure)?  $\text{C}=\text{C}-\text{C}=\text{C}$   
A) 4 **B) 6** C) 8 D) 10 E) 12

6. A compound that is composed of only carbon and hydrogen is known as a(n):  
**A) hydrocarbon** B) isomer C) homolog D) carbohydrate

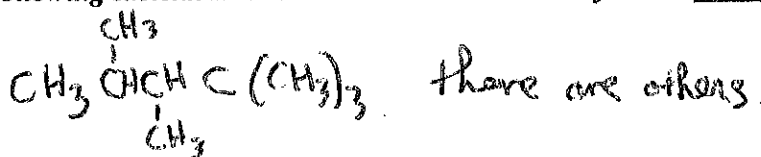
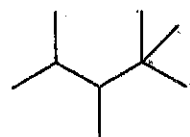
7. Which of the following names and formulas for cycloalkanes or linear alkanes is correctly matched?  
A) Pentane/ $\text{C}_5\text{H}_{10}$  B) Cyclopentane/ $\text{C}_5\text{H}_{12}$  **D) Hexane/ $\text{C}_6\text{H}_{14}$**  E) Cyclohexane/ $\text{C}_6\text{H}_{12}$

Chp 4.2

8. Which of the following structures is cyclopentane?



(6 pt) Draw the condensed structure for the following skeletal structure & write the molecular formula  $\text{C}_9\text{H}_{20}$



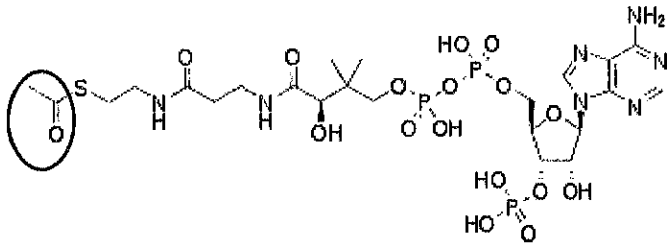
Chp 4.3

9. Which of these functional groups is a thiol?  
**A) R-S-H** B) R-O-H C) R-S-S-H D) R-S-S-R'

10. Which of these functional groups is a phenol?

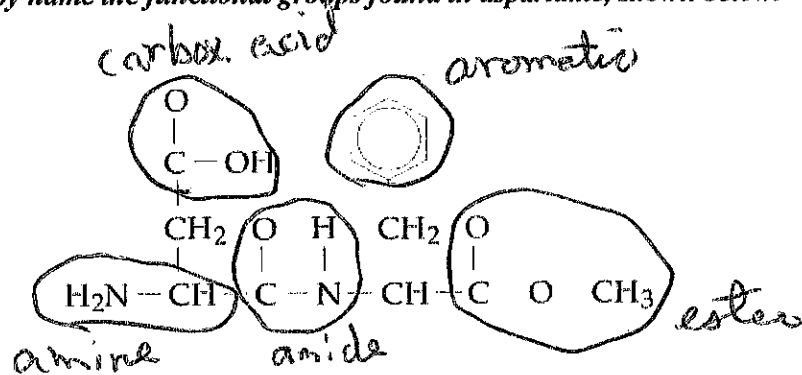


(2 pt) What is the name of the group circled in the structure below? acetyl



11. The C=O found in several functional groups is known as \_\_\_\_\_.  
 A) a ketone B) an amine C) a carbonyl d) a carboxylic acid

(10 pt) Mark and identify by name the functional groups found in aspartame, shown below.



(6 pt) Why are fatty acids known as biological hydrocarbons? State at least 3 similarities.

1. They are non-polar
2. They have a large number of C-C and C-H bonds
3. They are organic compounds
4. They only have covalent bonds
5. They are linear molecules
6. They are saturated and unsaturated

12. Which of the following fatty acids is designated by the notation [18:2; 9, 12]

- A. palmitic acid B. stearic acid C. oleic acid **D. ~~oleic~~-linoleic acid** E. EPA

(6 pt) Draw the fatty acid using the notation [18:3; 7,10,13]



13. A good description of the C=C in <sup>natural?</sup> unsaturated fatty acids is

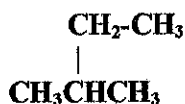
- A) All unsaturated fatty acids have them.  
 B) Polyunsaturated fatty acids have more than one.  
 C) It's always a trans C=C bond.  
**D) It's always a cis C=C bond.**  
 E) Sometimes it's a cis and sometimes it's a trans C=C bond.

Select two answers for each fatty acid structure shown below.

14.		<input checked="" type="radio"/> A) Saturated <input type="radio"/> B) Monounsaturated <input type="radio"/> C) Polyunsaturated <input checked="" type="radio"/> D) Stearic acid
15.		<input type="radio"/> A) Polar <input type="radio"/> B) Oleic acid <input checked="" type="radio"/> C) [16:1;7] fatty acid <input type="radio"/> D) ω-7
16.		<input type="radio"/> A) From beef <input type="radio"/> B) From plants <input checked="" type="radio"/> C) From fish <input checked="" type="radio"/> D) ω-3

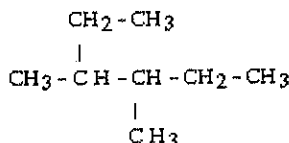
## Chp 4.4

17. What is the correct name for  A) pentane  B) 2-ethylpropane  C) 2-methylbutane  D) 3-methylbutane



18. What is the correct name for this alkane?

- A) 2-ethyl-3-methylpentane  
 B) 4-ethyl-3-methylpentane  
 C) 3,4-dimethylhexane  
 D) 2,3-diethylbutane  
 E) octane



19. Which of the following structures is correct for 1,2-dibromo-2-methyl butane?

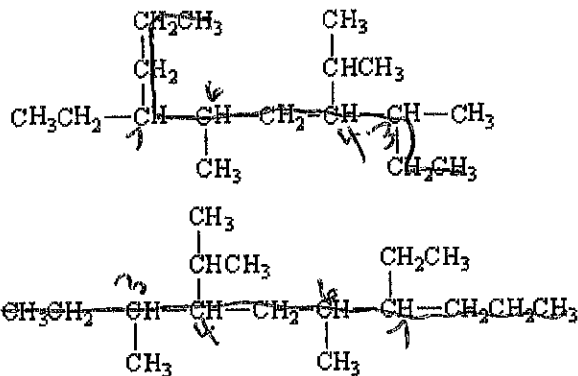
- A)  $\text{CH}_3\text{-CH(CH}_2\text{CH}_2\text{Br)-CH}_2\text{Br}$   B)  $\text{BrCH}_2\text{CH}_2\text{-CH(CH}_3\text{)-CH}_3$   C)  $\begin{array}{c} \text{CH}_2\text{CH}_3 \\ | \\ \text{BrCH}_2\text{-C-Br} \\ | \\ \text{CH}_3 \end{array}$   D)  $\begin{array}{c} \text{BrCH}_2\text{-CH-CHCH}_3 \\ | \quad | \\ \text{Br} \quad \text{CH}_3 \end{array}$

## Chp 4.5

20. Compounds that have the same molecular formula but different arrangements of atoms are called

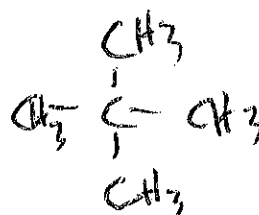
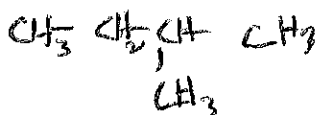
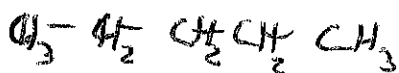
- A) isomers.  B) isotopes.  C) indicators.  D) isozymes.  E) isometrics.

21. What is the relationship between the following molecules?



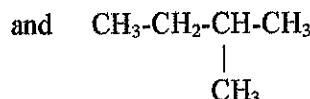
- A) They are identical.  
 B) They are structural isomers of each other.  
 C) They are different molecules which are not isomers.

(6 pt) Draw the structure for the 3 isomers of  $C_5H_{12}$  using either Lewis, condensed or skeletal structures.



22. Is the following pair of structures

- a) different conformations  
 b) constitutional isomers  
 c) different compounds



23. The following two structures are



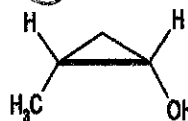
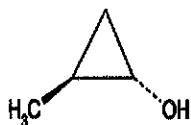
A) Structural isomers

B) Stereo isomers

C) The same

D) Not isomers

24. The following two structures are



A) Structural isomers  
isomers

B) cis/trans isomers

C) Enantiomers

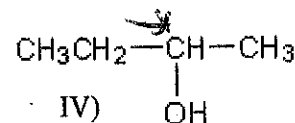
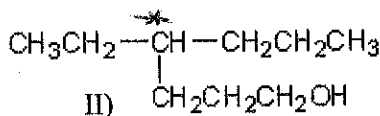
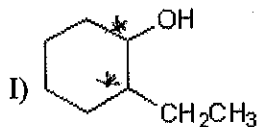
D) The same

E) Not

25. (4.5) Chirality occurs when stereoisomers have mirror images that are

- A) superimposable. B) the same.  C) not superimposable. D) not visible to one another. E) identical.

(8 pt) (4.5) Mark the stereocenters with a "\*" in each of the following.



26. In the previous Question which compound(s) can exist as cis/trans isomers?

- A) I only B) II only C) III only D) I and IV  E) I and III

27. Which of the following compounds is the enantiomer of:

