Organic

1. Which of the following are not acceptable structures for C₄H₁₀?

1) \[
\begin{array}{c}
\text{CH}_3 \\
\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{CH}_3
\end{array}
\]

2) \[
\begin{array}{c}
\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{CH}_3
\end{array}
\]

3) \[
\begin{array}{c}
\text{CH}_3 \\
\text{CH}_3 \text{CH} \text{H}
\end{array}
\]

4) \[
\begin{array}{c}
\text{H} \\
\text{H} \text{C} \text{C} \text{C} \text{H}
\end{array}
\]

5) \[
\begin{array}{c}
\text{CH}_3 \text{CH} \text{H} \\
\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{CH}_3
\end{array}
\]

A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 3 and 5
E. 1, 3 and 5

2. Which of the following is(are) not correct structure(s) of octane C₈H₁₈?

1) \[
\begin{array}{c}
\text{H} \\
\text{H} \text{CC} \text{C} \text{C} \text{C} \text{C} \text{C} \text{C} \text{H}
\end{array}
\]

2) \[
\begin{array}{c}
\text{H} \\
\text{H} \text{C} \text{C} \text{C} \text{C} \text{C} \text{C} \text{C} \text{H}
\end{array}
\]

3) \[
\begin{array}{c}
\text{H} \\
\text{H} \text{H} \text{H} \text{H} \text{H}
\end{array}
\]

A. 1 only
B. 3 only
C. 1 and 2
D. 2 and 3
E. all of these are possible structures for octane
3. Which of the following Lewis structures are incorrect?

I

II

III

A. I only
B. II only
C. III only
D. I and II
E. I, II and III

4. Of the structures shown below, which is a structural isomer of n-pentane?

a) \[ \text{CH}_3\text{-CH}_2\text{-CH-CH}_3 \]

b) \[ \text{CH}_3\text{-CH}={}\text{CH-CH}_2\text{-CH}_3 \]

c) \[ \text{CH}_3\text{-CH=CH-CH}_2\text{-CH}_3 \]

d) \[ \text{CH}_2\text{-CH} \]

\[ \text{CH}_2\text{-CH} \]

\[ \text{CH}_2\text{-CH} \]

e) \[ \text{CH}_3\text{-CH}_2\text{-C-CH}_3 \]
5. Which of the compounds shown below can have a geometrical isomer?

1. \[ \text{CH}_3-\text{CH}_2-\text{C} \equiv \text{C}-\text{H} \]
2. \[ \text{CH}_3-\text{CH}_2-\text{C} \equiv \text{C}-\text{CH}_3 \]
3. \[ \text{CH}_3-\text{C} \equiv \text{C}-\text{CH}_3 \]

a) 1 only  
b) 2 only  
c) 3 only  
d) 1 and 2  
e) 2 and 3

6. Which of the following is/are isomers of the structure below?

\[ \text{Br} \quad \text{H}_3\text{C} \quad \text{C}_2\text{H}_5 \]
\[ \text{H} \quad \text{Cl} \quad \text{Cl} \]

1. \[ \text{Br} \quad \text{H}_3\text{C} \quad \text{C}_2\text{H}_5 \]
2. \[ \text{Br} \quad \text{Cl} \quad \text{C}_2\text{H}_5 \]
3. \[ \text{H}_3\text{C} \quad \text{Cl} \quad \text{C}_2\text{H}_5 \]

A. 1  
B. 2  
C. 3  
D. 1 and 2  
E. 1 and 3
7. Which one of these molecules is an alcohol?

A. \( \text{CH}_3\text{CCH}_2\text{CH}_3 \)  
B. \( \text{CH}_3\text{CH}_2\text{CCH}_3 \)

C. \( \text{HCCCH}_2\text{CH}_3 \)  
D. \( \text{OCCH}_2\text{CH}_3 \)

E. none of these are alcohols

8. Identify the functional groups present in the following structure.

1. ester
2. ether
3. amine
4. ketone
5. amide

A. 1 and 5  
B. 2 and 5  
C. 2 and 3  
D. 4 and 5  
E. 3 and 4

9. Threonine is a naturally occurring amino acid found in many proteins. What functional groups are present in threonine?

- \( \text{H} \text{OH} \text{H} \text{O} \)
- \( \text{H} \text{C} \text{C} \text{C} \text{C} \text{OH} \)
- \( \text{H} \text{H} \text{NH}_2 \)

a) alcohol, amine, ketone  
b) alcohol, amine, ester  
c) carboxylic acid, alcohol, amide  
d) alcohol, carboxylic acid, amine  
e) amide, amine, alcohol