1. Ethane, with the molecular formula C₂H₆, has ____ covalent bonds.
   A. six
   B. seven
   C. eight
   D. nine

2. Choose the correct option based on the statements given:

   Statement 1: Carbon shares electrons to form covalent bond with other elements.

   Statement 2: C⁴⁺ and C⁴⁻ ions are highly unstable.

   A. Both statements are correct but statement 2 is not the correct explanation for statement 1.
   B. Both statements are correct and statement 2 is the correct explanation for statement 1.
   C. Statement 1 is wrong but statement 2 is correct.
   D. Statement 1 is correct but statement 2 is wrong.
Practice Challenge - Objective

3. Silicon is tetravalent. But why can’t it form long chain compounds like carbon?

   A. Silicon is a metalloid and cannot bond with other atoms.
   
   B. Silicon is larger in size than carbon, and cannot hold the shared electron pair(s) strongly.
   
   C. Silicon is smaller in size than carbon, and cannot hold the shared electron pair(s) strongly.
   
   D. Silicon compounds are unreactive.

4. Select the option that will complete the homologous series given below.

   \[ \text{C}_2\text{H}_4, \text{C}_3\text{H}_6, \underline{\quad}, \text{C}_5\text{H}_{10}, \text{C}_6\text{H}_{12} \]

   A. \( \text{C}_4\text{H}_6 \)
   
   B. \( \text{C}_4\text{H}_{10} \)
   
   C. \( \text{C}_4\text{H}_4 \)
   
   D. \( \text{C}_4\text{H}_8 \)
5. The general formula for alkynes is:

A. \( C_nH_{2n+2} \)
B. \( C_nH_n \)
C. \( C_nH_{2n-2} \)
D. \( C_nH_{2n} \)

6. Which amongst the following is not an allotrope of carbon?

A. Carbon dioxide
B. Fullerene
C. Diamond
D. Graphite
Practice Challenge - Objective

7. Diamond has a _______ structure while that of graphite is _______.
   
   A. hexagonal layered, octahedron
   B. tetrahedral, hexagonal layered
   C. tetrahedral, square pyramidal
   D. pentagonal, hexagonal layered

8. The maximum number of covalent bonds that can be formed between two carbon atoms is _______.
   
   A. two
   B. five
   C. three
   D. four
9. The ability of atoms of an element to combine among themselves to form long chains is called _________.

A. catenation
B. allotropy
C. tetravalency
D. isomerism

10. Which of the following pairs does not contain unsaturated hydrocarbons?

A. $C_4H_8, C_3H_4$
B. $C_{10}H_{22}, C_6H_{14}$
C. $C_2H_4, C_6H_{12}$
D. $C_4H_6, C_6H_{10}$