Please answer the following questions neatly and completely in the spaces provided. Each question is worth 10 points.

1. Show a bond-line structure for 4-ethyl-2,2-dimethyloctane.

2. What is the **IUPAC** name of the compound shown below? Circle the primary (1°) carbons.

   ![Compound Diagram]

3. Write bond-line formulas for the five isomeric C₆H₁₄ alkanes.
4. Pentane and 2,2-dimethylpropane are constitutional isomers with the same molecular formula \( \text{C}_5\text{H}_{12} \) but with very different physical properties. One of these compounds boils at 36 °C and the other at 9 °C. Show structural formulas for each of the compounds and explain the difference in their boiling points (specify which one boils at which temperature).

5. Which one of the following pairs of compounds are constitutional isomers? (multiple choice, circle one only)

(a) \[ \text{ } \text{ and } \text{ } \]

(b) \[ \text{ } \text{ and } \text{ } \]

(c) \[ \text{ } \text{ and } \text{ } \]

(d) \[ \text{ } \text{ and } \text{ } \]