Chem 2 AP

**Unit 1 Worksheet – Organic Structure and Nomenclature**

1. a. Give the empirical, molecular and structural formulas for the straight – chain alkanes

 n = 5 and n = 7.

 b. Compare their relative boiling points and explain your reasoning.

2. Draw and name all of the possible isomers of hexane. Take care that each one you draw is actually an isomer.

3. Give IUPAC names for the following structures.

 a. CH3CH2CHCH2CHCH2CH3

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 CH3 CH3

 b. CH3CHCH2CHCH3

 │ │

 Cl Br

 c. CH3CH2CHCH2CHCH2CH3

 │ │

 CH3 CH2CH2CH3

4. a. 3,4 – dimethyl – 4 – ethylnonane

 b. 2 – bromo – 1 – chlorobutane

5. Name the following compounds:

 a. H3C CH3 b. H3C Cl

 C = C C = C

 Cl Cl Cl CH3

 c. CH3CH2CH2CH2CH2C = CH2 d. CH≡C(CH2)4CH3

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 CH3

6. Draw the structural formula for each of the following compounds:

1. 2, 4 – diodo – 3 – methyl – 1 – pentene b. 3,4 – dibromo – trans – 3 – hexene

7. Name the following compounds:

 Cl CH3

 │ │

 a.  Cl b. 

 │

 Br

9. Draw the structure for the following:

1. 2, 4 – diiodomethylbenzene b. 4 - chloronitrobenzene

10. Name the following

 a. O b.

 ‖ O

 CH2CH2CCH3 ‖

 │ CH3CH

 Cl

 c. CH3CH2CH2CH2OH d. O

 ‖

 CH3 O CH3CH2C – O – CH2CH2CH3

 │ ‖

 e. CH3 – C – C – OH

 │

 CH3

11. Write the structure for each of the following:

 a. 3 – chloropentanal b. 5 – chloro – 2 - hexanol

 c. 3 – methylpentanoic acid d. ethyl butanoate