

Name _____ (print) Name _____ (sign)

Please show work for partial credit on the Long Answers and in some of the Short Answer Questions. Multiple choice questions have no partial credit. Please write anything you want graded legibly. If I cannot read your work, I obviously cannot grade it. (2 pts print AND sign exam)

extra credit - exam redo Green

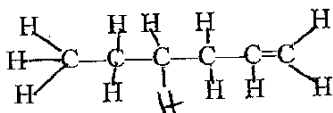
Part I MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (No Partial Credit for MC) (3 pts per question, 21 pts total)

- 1) Hydrocarbons containing all single bonds and a ring in their structural formulas are _____
A) alkane B) cycloalkane C) alkene D) alkyne
- 2) A hydrocarbon that contains one or more benzene rings must be classified as _____
A) aromatic B) alkene C) alkane D) alkyne
- 3) In organic molecules, a carbon atom will normally form how many bonds? _____
A) 3 B) 2 C) 1 D) 4
- 4) Hydrocarbons containing only single bonds are _____
A) alkene B) alkyne C) aromatic D) alkane
- 5) What organic compound is represented by a hexagon with a circle inside? _____
A) cyclooctane B) benzene C) ethane D) cyclohexane
- 6) Compounds that have the same molecular formula but different structural formulas are called structural, or constitutional _____
A) isomer B) congeners C) isotope D) derivative
- 7) Hydrocarbons containing carbon-carbon triple bonds are _____
A) alkane B) alkene C) alkyne D) aromatic

Part II: Short Answers (44 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Draw the structure of 1,3- dibromobenzene (Br substituent is bromo) (8 pts)

2. Name the following alkene (6 C alkane is hexane) (don't forget to number your molecule) (8 pts)

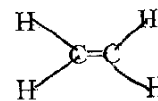
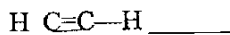
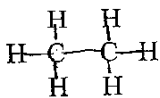


3. Show the product of the following reaction. (12 pts)



4. **Functional Groups:**

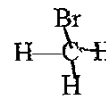
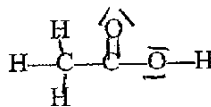
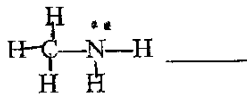
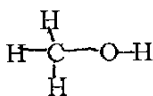
A. Fill in the blank to match the structure & name. (A) benzene (B) Alkane (C) alkene (D) alkyne
(8 pts, 2 pts each blank)



B. Fill in the blank with the letter of the functional group. (8 pts, 2 pts each)

(A) Alkyl halide $\text{R}-\text{X}$ (B) Alcohol $\text{R}-\text{O}-\text{H}$ (C) Amine $\text{R}-\text{NH}_2$

(D) carboxylic acid $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ (E) Amide $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NHR}'$ (F) ester $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{R}'$



Part III: Long Answers (33 pts) Show work on all questions for partial and full credit even on questions which do not specify. Remember "attempt" points.

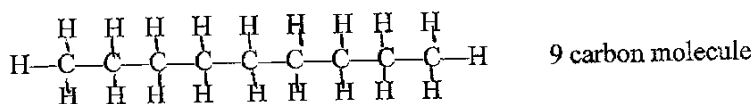
1.a. 1 mole of Li = _____ grams (6 pts)

b. 1 mole of K_3N = _____ grams show work (6 pts)

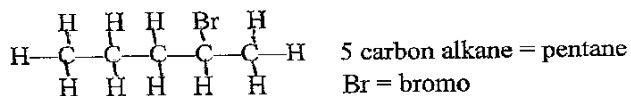
c. What is the molarity of a solution made by dissolving 7.2 moles of Na OH in water to make up 0.20 Liters of the sodium hydroxide solution? (Molarity = moles solute / liters of solution) (6 pts)

5. Constitutional Isomer - (15 pts, 5 pts each)

a. Show one constitutional isomer of the following molecule (5 pts)



b. Show one constitutional isomer of the following molecule (5 pts)



c. name the original molecule above (in b) (not the constitutional isomer that you drew above, don't forget to number your molecule). (5 pts)

Name _____ (print) Name _____ (sign)

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extra credit - exam redo

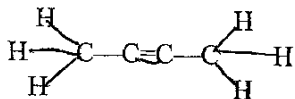
Part I MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (No Partial Credit for MC) (3 pts per question, 21 pts total)

- 1) Hydrocarbons containing carbon-carbon triple bonds are 1) _____
A) alkene B) alkyne C) aromatic D) alkane
- 2) Hydrocarbons containing all single bonds and a ring in their structural formulas are 2) _____
A) alkene B) alkyne C) alkane D) cycloalkane
- 3) In organic molecules, a carbon atom will normally form how many bonds? 3) _____
A) 1 B) 2 C) 3 D) 4
- 4) What organic compound is represented by a hexagon with a circle inside? 4) _____
A) ethane B) benzene C) cyclooctane D) cyclohexane
- 5) Compounds that have the same molecular formula but different structural formulas are called structural, or constitutional 5) _____
A) isotope B) congeners C) derivative D) isomer
- 6) Hydrocarbons containing only single bonds are 6) _____
A) alkene B) aromatic C) alkane D) alkyne
- 7) A hydrocarbon that contains one or more benzene rings must be classified as 7) _____
A) alkyne B) alkene C) alkane D) aromatic

Part II: Short Answers (44 pts) Show work on all questions for partial and full credit even on questions which do not specify.

1. Draw the structure of 1,4-dimethylbenzene (methyl substituent is CH₃—) (8 pts)

2. Name the following alkyne (4 C alkane is butane) (don't forget to number your molecule) (8 pts)



3. Show the product of the following reaction. (12 pts)



4. Functional Groups:

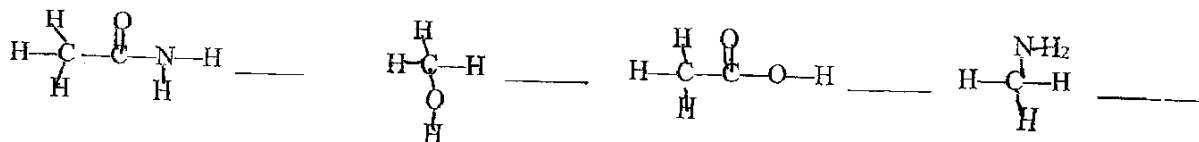
A. Fill in the blank to match the structure & name. (A) alkene (B) alkyne (C) benzene (D) Alkane (8 pts, 2 pts each blank)



B. Fill in the blank with the letter of the functional group. (8 pts, 2 pts each)

(A) Alkyl halide R—X (B) Alcohol R—O—H (C) Amine R—NH₂

(D) carboxylic acid R—C(=O)—O—H (E) Amide R—C(=O)—NHR' (F) ester R—C(=O)—O—R'



Part III: Long Answers (33 pts) Show work on all questions for partial and full credit even on questions which do not specify. Remember "attempt" points.

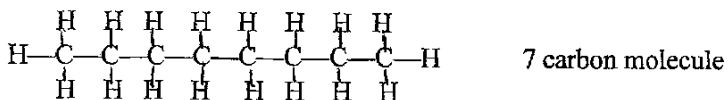
1.a. 1 mole of **Fe** = _____ grams (6 pts)

b. 1 mole of **Na₂Se** = _____ grams show work (6 pts)

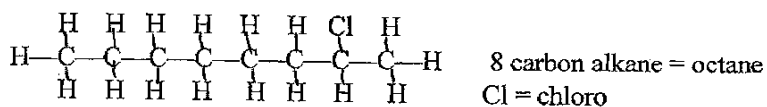
c. What is the molarity of a solution made by dissolving 0.8 moles of Na OH in water to make up 23.8 Liters of the sodium hydroxide solution? (Molarity = moles solute / liters of solution) (6 pts)

2. Constitutional Isomer - (15 pts, 5 pts each)

a. Show one constitutional isomer of the following molecule (5 pts)



b. Show one constitutional isomer of the following molecule (5 pts)



c. name the original molecule above (in b) (not the constitutional isomer that you drew above, don't forget to number your molecule). (5 pts)

Name _____ (print) Name _____ (sign)

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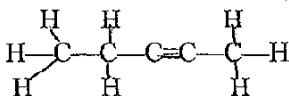
Part I MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (No Partial Credit for MC) (3 pts per question, 21 pts total)

- 1) What organic compound is represented by a hexagon with a circle inside? 1) _____
A) ethane B) cyclohexane C) benzene D) cyclooctane
- 2) Compounds that have the same molecular formula but different structural formulas are called structural, or constitutional 2) _____
A) isotope B) derivative C) congeners D) isomer
- 3) Hydrocarbons containing all single bonds and a ring in their structural formulas are 3) _____
A) alkene B) alkane C) alkyne D) cycloalkane
- 4) Hydrocarbons containing carbon-carbon triple bonds are 4) _____
A) aromatic B) alkyne C) alkene D) alkane
- 5) In organic molecules, a carbon atom will normally form how many bonds? 5) _____
A) 1 B) 4 C) 2 D) 3
- 6) Hydrocarbons containing only single bonds are 6) _____
A) alkane B) alkyne C) aromatic D) alkene
- 7) A hydrocarbon that contains one or more benzene rings must be classified as 7) _____
A) alkyne B) aromatic C) alkane D) alkene

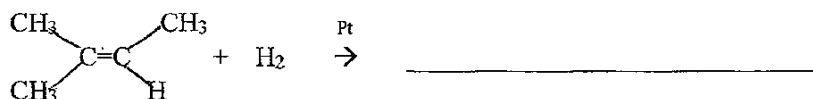
Part II: Short Answers (44 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Draw the structure of 1,2-dichlorobenzene (chloro substituent is Cl) (8 pts)

2. Name the following alkyne (5 C alkane is pentane) (don't forget to number your molecule) (8 pts)



3. Show the product of the following reaction. (12 pts)



4. Functional Groups:

A. Fill in the blank to match the structure & name. (A) Alkane (B) alkene (C) alkyne (D) benzene (8 pts, 2 pts each blank)



B. Fill in the blank with the letter of the functional group. (8 pts, 2 pts each)

(A) Alkyl halide R-X (B) Alcohol R-O-H (C) Amine R-NH₂

(D) carboxylic acid R-C(=O)-O-H (E) Amide R-C(=O)-NHR' (F) ester R-C(=O)-O-R'



Part III: Long Answers (33 pts) Show work on all questions for partial and full credit even on questions which do not specify. Remember "attempt" points.

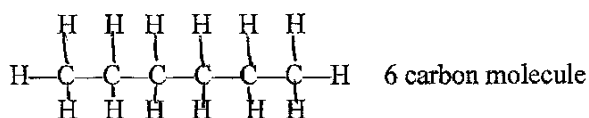
1 a. 1 mole of Sr = _____ grams (6 pts)

b. 1 mole of CaBr₂ = _____ grams show work (6 pts)

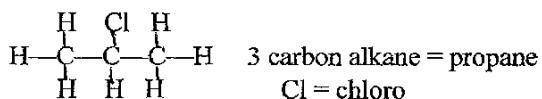
c. What is the molarity of a solution made by dissolving 4.2 moles of Na OH in water to make up 7.2 Liters of the sodium hydroxide solution? (Molarity = moles solute / liters of solution) (6 pts)

2. Constitutional Isomer - (15 pts, 5 pts each)

a. Show one constitutional isomer of the following molecule (5 pts)



b. Show one constitutional isomer of the following molecule (5 pts)



c. name the original molecule above (in b) (not the constitutional isomer that you drew above, don't forget to number your molecule). (5 pts)

Name _____ (print) Name _____ (sign)

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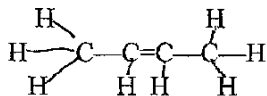
Part I MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (No Partial Credit for MC) (3 pts per question, 21 pts total)

- 1) A hydrocarbon that contains one or more benzene rings must be classified as _____
A) alkene B) alkyne C) aromatic D) alkane
- 2) Hydrocarbons containing all single bonds and a ring in their structural formulas are _____
A) alkene B) alkane C) cycloalkane D) alkyne
- 3) Compounds that have the same molecular formula but different structural formulas are called structural, or constitutional _____
A) isomer B) derivative C) congeners D) isotope
- 4) Hydrocarbons containing carbon-carbon triple bonds are _____
A) alkene B) aromatic C) alkyne D) alkane
- 5) What organic compound is represented by a hexagon with a circle inside? _____
A) cyclooctane B) ethane C) cyclohexane D) benzene
- 6) In organic molecules, a carbon atom will normally form how many bonds? _____
A) 2 B) 4 C) 1 D) 3
- 7) Hydrocarbons containing only single bonds are _____
A) alkene B) aromatic C) alkyne D) alkane

Part II: Short Answers (44 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Draw the structure of 1,4-diethylbenzene (ethyl substituent is CH_3CH_2-) (8 pts)

2. Name the following alkene (4 C alkane is butane) (don't forget to number your molecule) (8 pts)



3. Show the product of the following reaction. (12 pts)



4. Functional Groups:

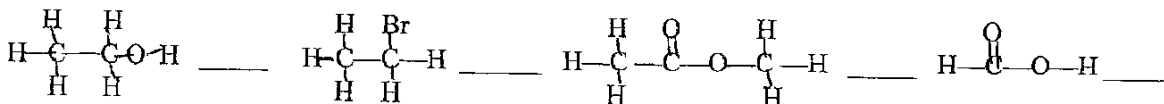
A. Fill in the blank to match the structure & name. (A) Alkane (B) alkene (C) alkyne (D) benzene (8 pts, 2 pts each blank)



B. Fill in the blank with the letter of the functional group. (8 pts, 2 pts each)

(A) Alkyl halide $\text{R}-\text{X}$ (B) Alcohol $\text{R}-\text{O}-\text{H}$ (C) Amine $\text{R}-\text{NH}_2$

(D) carboxylic acid $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ (E) Amide $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NHR}'$ (F) ester $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{R}'$



Part III: Long Answers (33 pts) Show work on all questions for partial and full credit even on questions which do not specify. Remember "attempt" points.

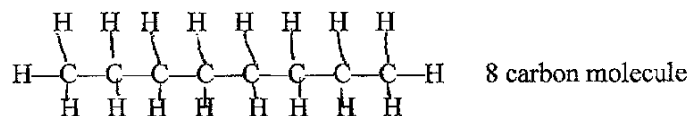
1. a. 1 mole of **Ba** = _____ grams (6 pts)

b. 1 mole of **AlCl₃** = _____ grams show work (6 pts)

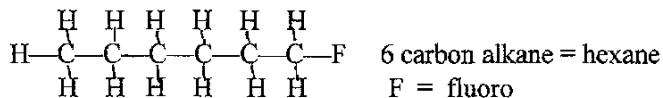
c. What is the molarity of a solution made by dissolving 1.9 moles of Na OH in water to make up 4.2 Liters of the sodium hydroxide solution? (Molarity = moles solute / liters of solution) (6 pts)

2. Constitutional Isomer - (15 pts, 5 pts each)

a. Show one constitutional isomer of the following molecule (5 pts)



b. Show one constitutional isomer of the following molecule (5 pts)



c. name the original molecule above (in b) (not the constitutional isomer that you drew above, don't forget to number your molecule). (5 pts)