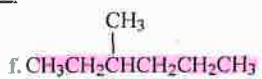




3. Listed below are the condensed structural formulas or names of the nine isomers of heptane,  $C_7H_{16}$ . Write the formula and name for each.

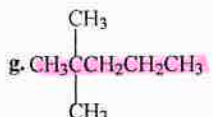
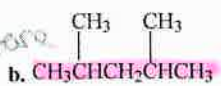
all  $C_7H_{16}$

heptane



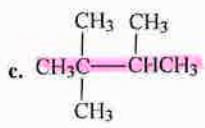
3-methylhexane

2,4-dimethylpentane

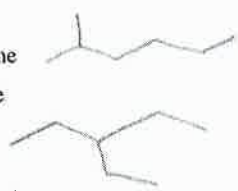


2,2-dimethylpentane

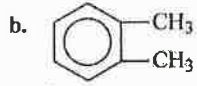
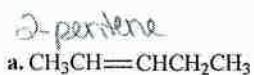
2,2,3-trimethylbutane



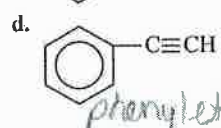
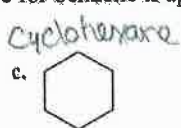
h. 2-methylhexane  
i. 3-ethylpentane



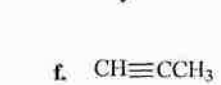
4. Name (use common and systematic for benzene if appropriate) the compounds represented by the following formulas.



1,2-dimethylbenzene



phenylethyne



propyne

5. Draw the structural formulas for the following:

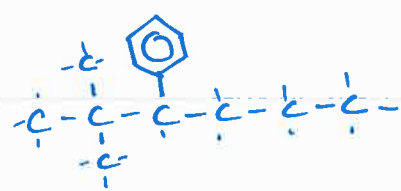
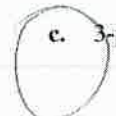
a. 3-heptyne



b. cyclopentene



c. 3-phenyl-2,2-dimethylhexane



d. 1,3-butadiene



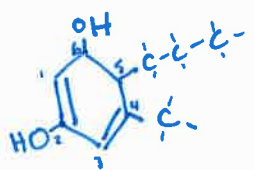
e. 1-ethyl-2-methylbenzene



f. 2,4-dimethyl-2-pentene



g.



correct name:

2,6-dihydroxy-4-methyl-5-propyl-1,3-cyclohexadiene

6. Listed below are the condensed structural formulas or the names for the eight isomers of C<sub>5</sub>H<sub>11</sub>Cl. Write either formula and the name for each.

1-chloropentane  
 a. CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>Cl

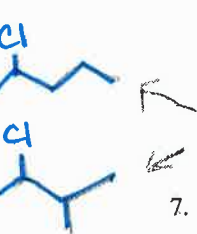
3-chloropentane  
 e. CH<sub>3</sub>CH<sub>2</sub>CH(Cl)CH<sub>2</sub>CH<sub>3</sub>

1-chloro-3-methylbutane  
 b. CH<sub>3</sub>CH(CH<sub>3</sub>)CH<sub>2</sub>CH<sub>2</sub>Cl

2-chloro-3-methylbutane  
 f. CH<sub>3</sub>CH(CH<sub>3</sub>)CH(Cl)CH<sub>3</sub>

c. 2-chloropentane  
 d. 2-chloro-2-methylbutane

g. 1-chloro-2-methylbutane  
 h. 1-chloro-2,2-dimethylpropane



7. Name the following compounds.

a.  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3\text{CH}_2\text{CCH}_2\text{CH}_2\text{Br} \\ | \\ \text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$  1-bromo-3-methyl-3-ethylpentane

h.  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3\text{CHCH}=\text{CHCH}_3 \end{array}$  4-methyl-2-pentene

b.  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2=\text{CHCHCH}=\text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$  3-methyl-1,4-pentadiene

i.  $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{CH}_3\text{C}=\text{CCH}_2\text{CH}_3 \end{array}$  2,3-dimethylpentene

c.  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2=\text{CHCCH}_3 \\ | \\ \text{CH}_3 \end{array}$  3,3-dimethyl-1-butene

j.  $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{CH}_2=\text{CCH}_2\text{C}=\text{CH}_2 \end{array}$  2,4-dimethyl-1,4-pentadiene

d. C<sub>6</sub>H<sub>5</sub>Cl chlorobenzene

k.  $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{CH}_2=\text{C}-\text{C}-\text{CH}=\text{CHCH}_3 \\ | \\ \text{CH}_3 \end{array}$  2,3,3-trimethyl-1,4-hexadiene

e. CH<sub>3</sub>CH=CHCH<sub>2</sub>CH<sub>3</sub>

l. propyl ethanoate

f.  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3\text{C}=\text{CHCH}_3 \end{array}$

m. 2-ethoxy butane

g. CH<sub>3</sub>CH<sub>2</sub>CH=CH<sub>2</sub>

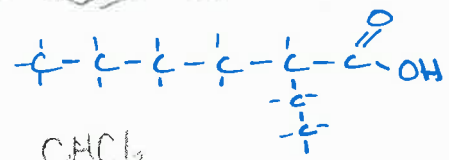
n. methyl-2-methylbutanoate

8. Draw structural formulas for the following.

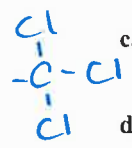
a. 3-heptene



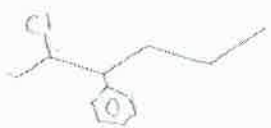
b.



c. trichloromethane



d. 2-chloro-3-phenylhexane



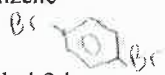
e. 1,3-cyclopentadiene



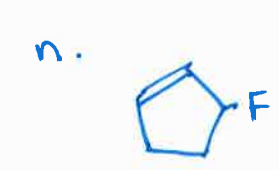
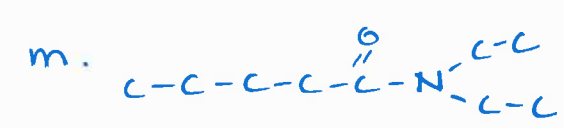
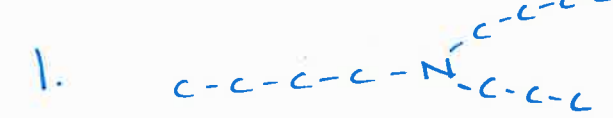
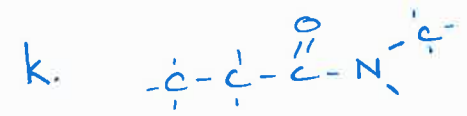
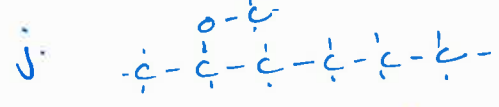
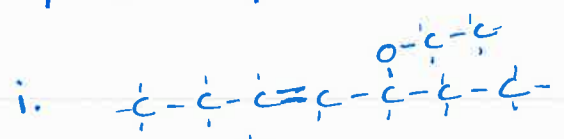
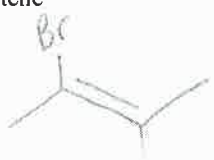
f. toluene (methylbenzene)



g. 1,4-dibromobenzene



h. 2-bromo-3-methyl-2-butene



9. Write structural formulas for the following compounds.

a. 2-chlorobutane



b. 2-butene



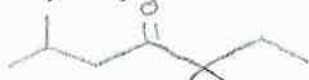
c. 2-ethyl-3-methyl-1-butanol



d. 3,3-dimethylbutanoic acid



e. 2,5,5-trimethyl-4-heptone



f. 1,8-nonadiyne



g. 1,3-diiodobenzene



h. ethoxybenzene



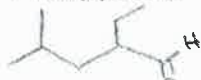
i. 1-butanol



j. 3-methyl-2-pentene



k. 2-ethyl-4-methylpentanal



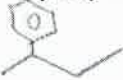
l. 3-ethyl-2,4-dimethyl-3-hexanol



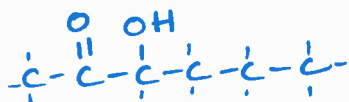
m. 5-chloro-3-ethyl-2-methylheptanoic acid



n. 2-phenylbutane



o.

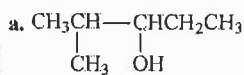


p. 4-bromobenzoic acid

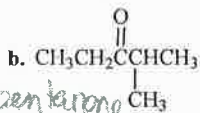


10. Name the following organic compounds.

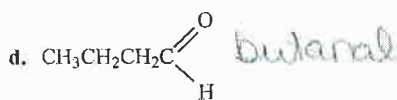
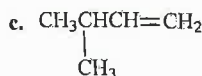
2-methyl-3-pentanol



3-methyl-4-pentanone



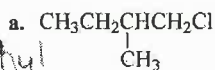
3-methyl-1-butene



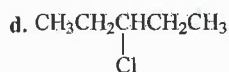
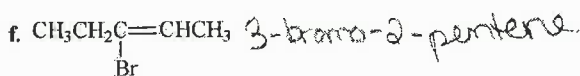
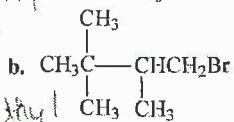
or 3-hydroxy-3-methyl-1,4-hexadiene

11. Name the following organic compounds.

1-chloro-2-methylbutane



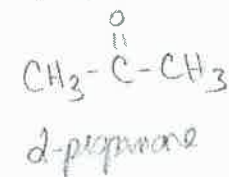
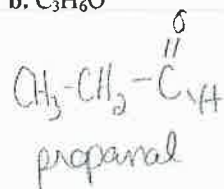
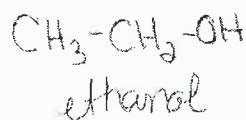
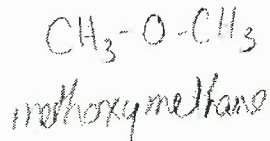
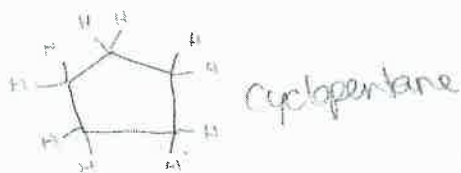
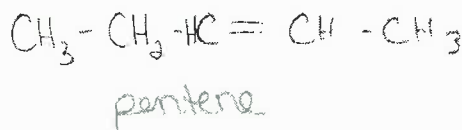
1-bromo-2,3,3-trimethylbutane



3-chloropentane

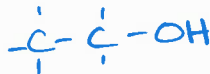


12. Each of the following formulas can be written as two compounds with different functional groups. Write the structural formulas, name the compounds, and identify the functional groups.

a.  $\text{C}_2\text{H}_6\text{O}$ c.  $\text{C}_5\text{H}_{10}$ 

13. Draw structural formulas for the following.

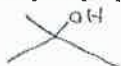
a. Ethanal



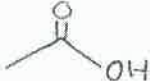
b. 2-butanone



c. 2-methyl-2-propanol



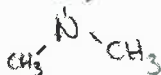
d. ethanoic acid



e. trimethanamine



f. propane



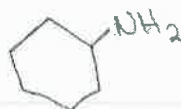
g. 2-pentyne



h. cyclobutane



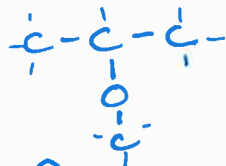
i. cyclohexanamine



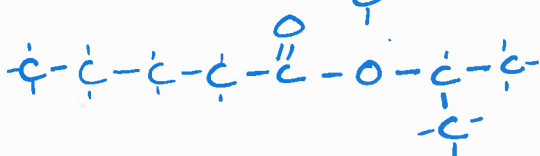
j. 2-aminopentane



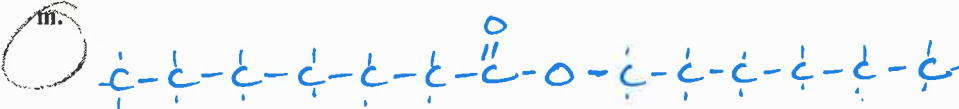
k.



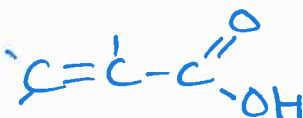
l.



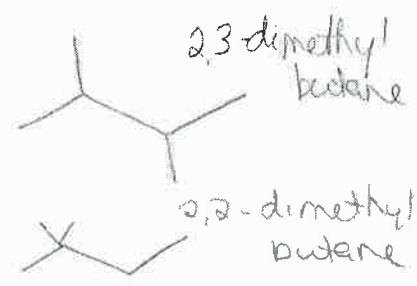
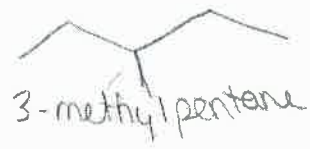
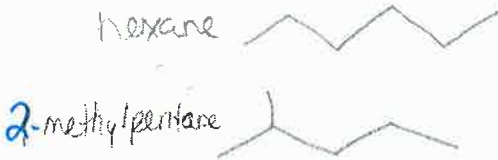
m.



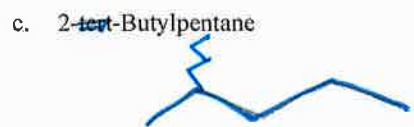
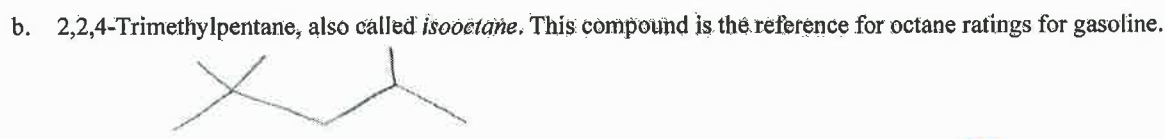
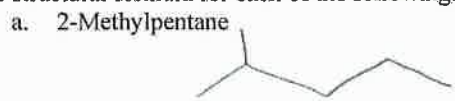
n. propenoic acid



14. Draw and name the five structural isomers of hexane (C<sub>6</sub>H<sub>14</sub>)



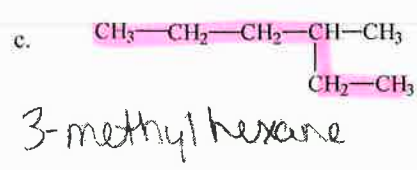
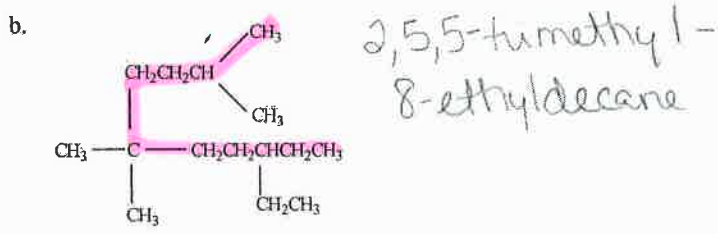
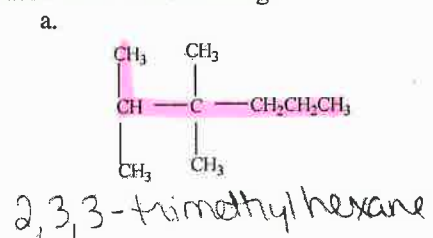
15. Draw the structural formula for each of the following.



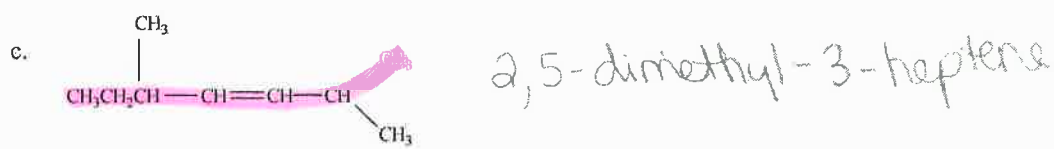
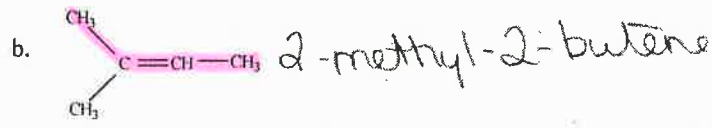
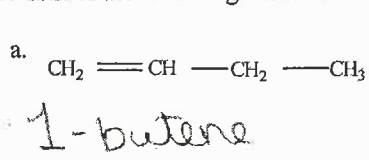
correct name:  
4-methyl octane } ←

d. The name given in part c is incorrect. Give the correct name for this hydrocarbon.

16. Name each of the following:



17. Name each of the following alkenes.



18. Give the structure for each of the following:

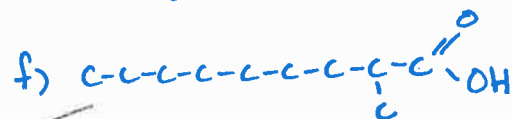
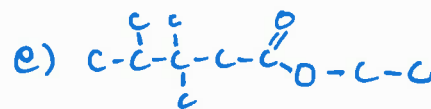
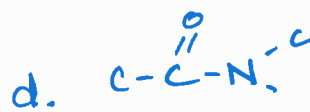
a. 3-hexene



b. 2,4-Heptadiene

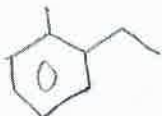


c. 2-Methyl-3-octene



19. Give the structure for each of the following aromatic hydrocarbons:

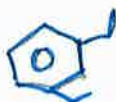
a.  $\sigma$



b.  $p$ -diethylbenzene



c.  $m$ -Diethylbenzene

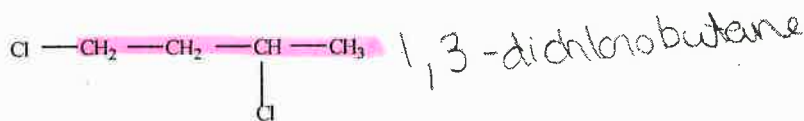


d. 1-Phenyl-2-butene

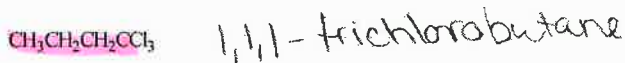


20. Name each of the following:

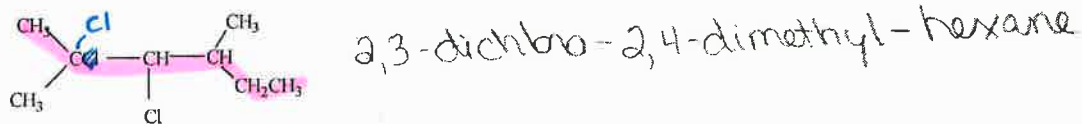
a.



b.



c.



d. N-ethylpropanamide

e. N-ethyl-N-methylpropanamine