

Chemistry 11
Organic Chemistry Unit Review

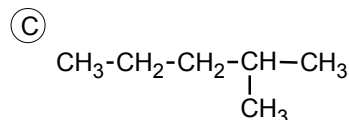
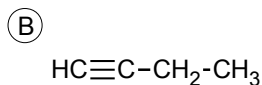
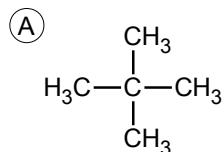
Name: *Key*
 Date:
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Answer the questions in the space provided.

1. Of the following molecules, choose 2 that best fit each description.

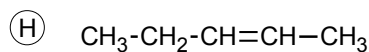
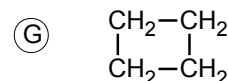
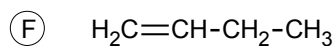
- a) Structural Isomers
- b) Unsaturated Hydrocarbons
- c) Have the general formula C_nH_{2n+2}
- d) When water is added, forms an alcohol
- e) Contain alkyl groups

a) A, E
 b) B, D, F, H
 c) A, C, E
 d) D, F, H
 e) A, C



(D) 2-butene

(E) pentane



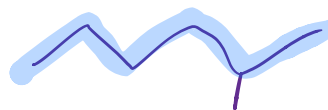
2. Explain what is wrong with each of the following. If a given name is incorrect, provide the correct name.

a) 2-ethylheptane

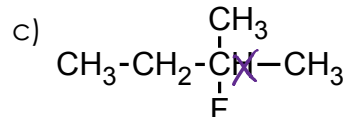


3-methyloctane

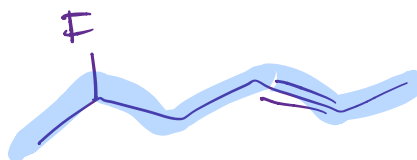
b) 5-methylhexane



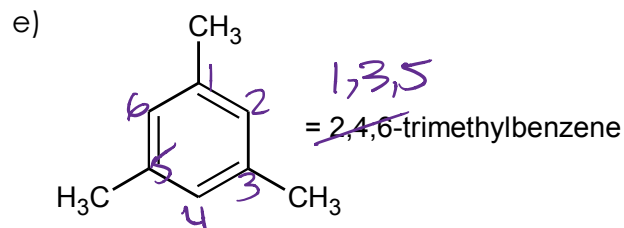
2-methylhexane



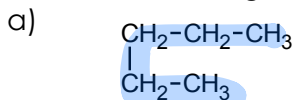
d) 2-fluoro-4-hexyne



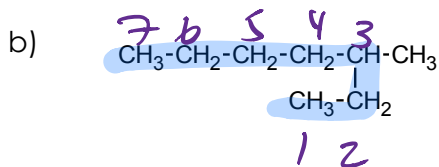
5-fluoro-2-hexyne



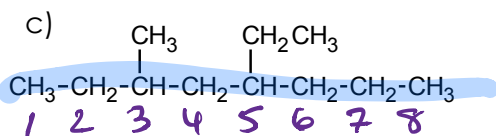
3. Name the following molecules.



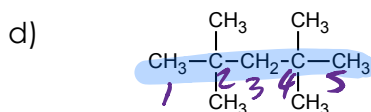
pentane



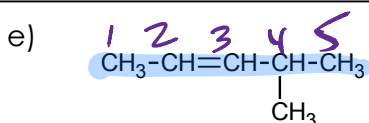
3-methylheptane



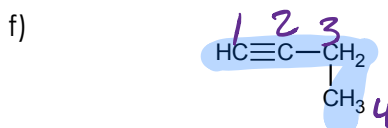
5-ethyl-3-methyloctane



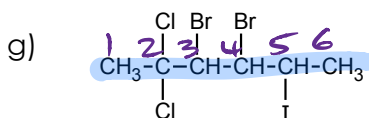
2,2,4,4-tetramethylpentane



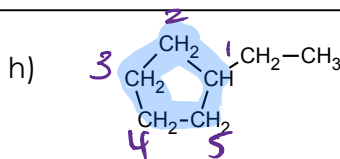
4-methyl-2-pentene



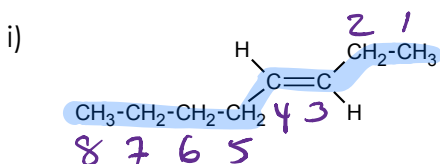
1-butyne



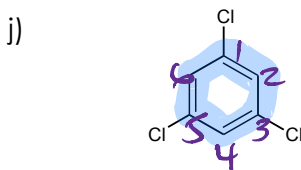
3,4-dibromo-2,2-dichloro-5-iodohexane



1-ethylcyclopentane



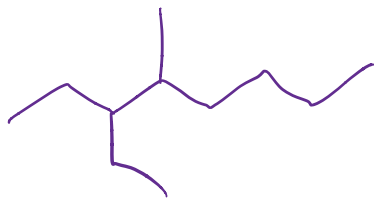
trans-3-octene



1,3,5-trichlorobenzene

4. Draw the structures of the following compounds.

a) 3-ethyl-4-methyloctane



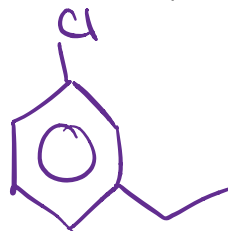
b) 3-heptyne



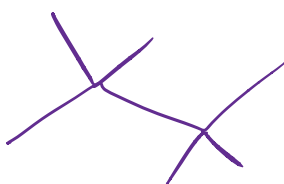
c) 3,3-diethylpentane



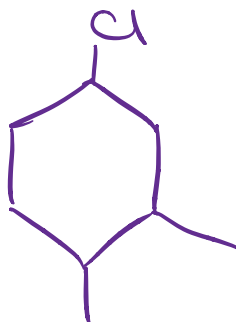
d) 3-chloro-1-ethylbenzene



e) tetramethylbutane



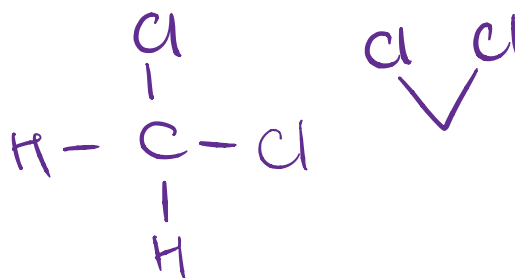
f) 1-chloro-3,4-dimethylcyclohexane



g) 3-iodo-1-propyne



h) dichloromethane



i) 3-heptene



j) cis-2-pentene



5. Draw and name all of the structural isomers of C_5H_{12} . There are 3!

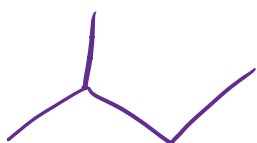
C_nH_{2n+2} (alkane)



pentane



2,2-dimethylpropane



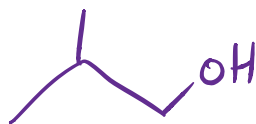
2-methylbutane

6. Draw and name as many structural isomers for C_4H_9OH . There are 4!

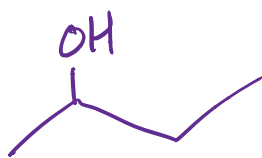
↳ alkane with OH



1-butanol



2-methyl-1-propanol

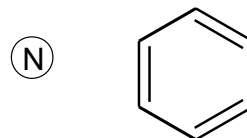
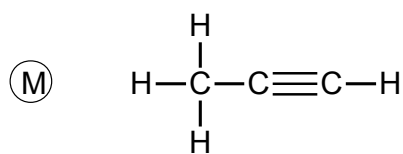
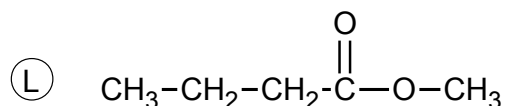
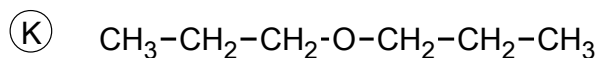
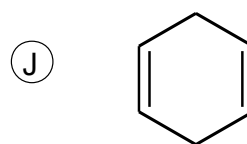
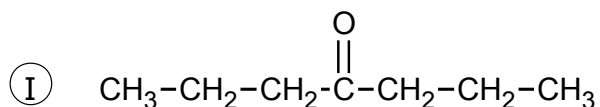
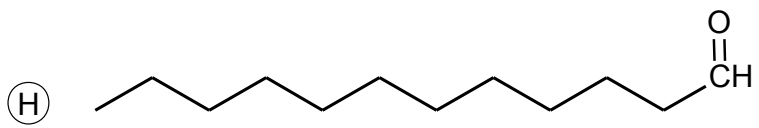
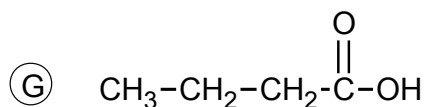
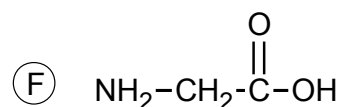
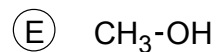
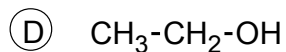
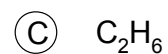
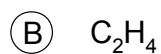
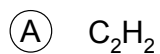


2-butanol



2-methyl-2-propanol

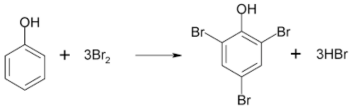
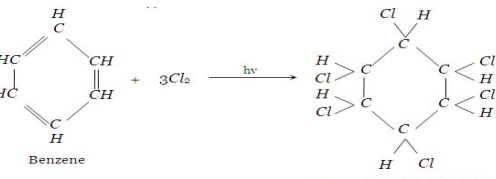
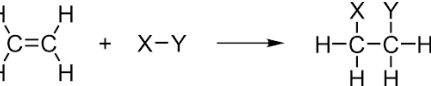
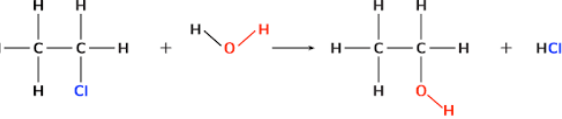

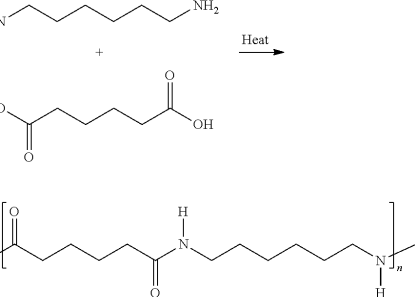
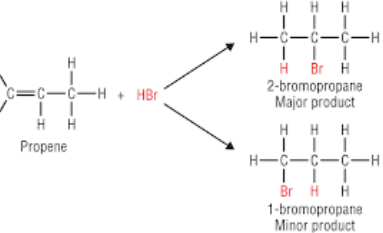

7. Match the following compounds to their appropriate descriptions.



- D, E, K*
- D, E Ethanol
 - G, F A carboxylic acid
 - C A saturated hydrocarbon
 - I A ketone
 - N An aromatic ring
 - M popyne
 - K An ether
 - L An ester

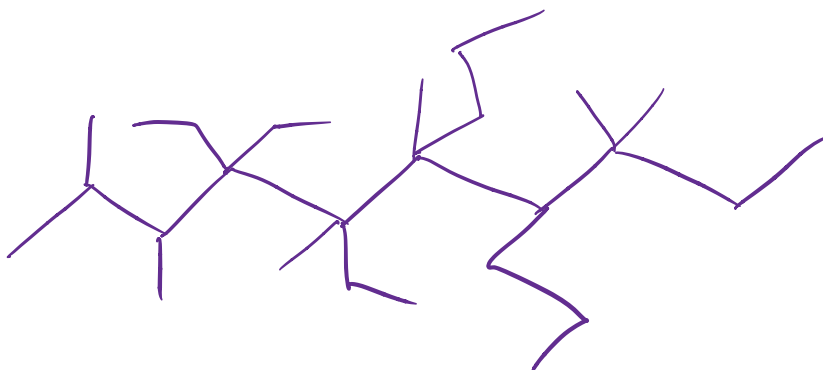
- H An aldehyde
- N Benzene
- C Alkane
- B, J Alkene
- A, M Alkyne
- E Methanol
- N C_6H_6
- J C_6H_8

8. Classify the following types of reactions as combustion, substitution, addition, elimination or polymerization:

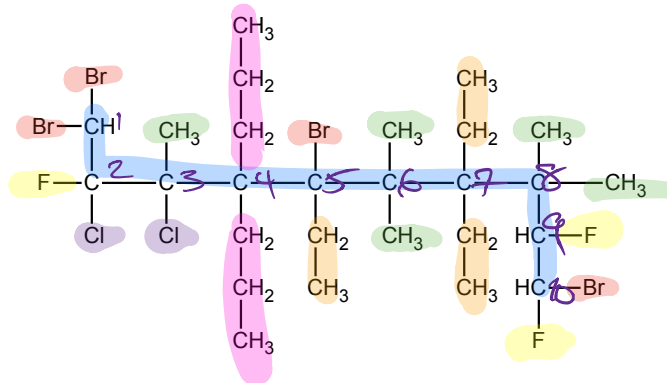
| | |
|---|-----------------------|
| <p>a)</p>  <p>Reaction: Phenol + 3Br₂ → 2,4,6-tribromophenol + 3HBr</p> | <p>Substitution</p> |
| <p>b)</p>  <p>Reaction: Benzene + 3Cl₂ $\xrightarrow{h\nu}$ Hexachlorocyclohexane</p> | <p>Addition</p> |
| <p>c)</p>  <p>Reaction: Ethene + X-Y → Saturated compound</p> | <p>Addition</p> |
| <p>d)</p>  <p>Reaction: Chloroethane + H₂O → Ethanol + HCl</p> | <p>Substitution</p> |
| <p>e)</p>  <p>Reaction: T-Pt(L)₂-X + Y → T-Pt(L)₂-Y + X</p> | <p>Substitution</p> |
| <p>f)</p>  <p>Reaction: 1,6-hexamethylenediamine + Hexanedioic acid $\xrightarrow{\text{Heat}}$ Polyamide</p> | <p>Polymerization</p> |
| <p>g)</p>  <p>Reaction: Propene + HBr → 2-bromopropane (Major product) + 1-bromopropane (Minor product)</p> | <p>Addition</p> |
| <p>h)</p>  <p>Reaction: 2-bromobutane + OH⁻ → 2-butene + Br⁻</p> | <p>Elimination</p> |

Extra Challenge!

1. Draw this molecule: 4,4,5-triethyl-2,3,5,6,8,8,-hexamethyl-6,7-dipropyldecane



2. Name the following compound:



1,1,5,10-tetrabromo-2,3-dichloro-5,7,7-triethyl-
2,9,10-trifluoro-3,6,6,8,8-pentamethyl-
4,4-dipropyldecane