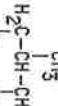
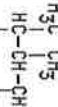
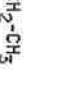
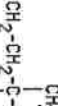
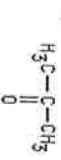


Organic Chemistry: Nomenclature Assignment

Name the following ...



cyclohexane

cyclohexene

2-propanol

ethyl methanoate

1,3-pentadiene

propanone

1,2-ethanediol

2-methylbutane

1-propanol

2-methyl-2-propanol

phenyl methanol

2-propanol

propanoic acid

bromoethane

1-bromopropane

2-pentene

methyl propanoate

chloroethane

1-bromocyclobutane

2-bromopropane

1,2-dichloropropane

chloroethene

1,2-dichloropropane

2-bromopropane

2-methylpropanoic acid

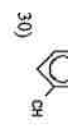
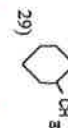
1,2-dichloropropane

1,2-dichloropropane

1,2-dichloropropane

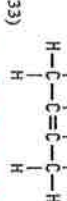
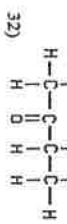
benzoic acid

1,3-dimethylbenzene



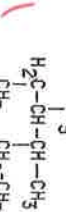
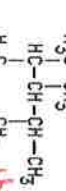
phenyl methanoic acid

methyl benzene



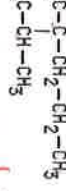
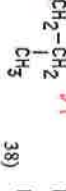
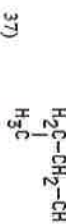
2-butanone

1-bromo-2-butene

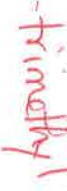


3,3-dimethylhexane

3,4-dimethylhexane

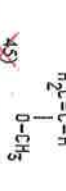
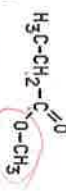


4-methylheptane



2-pentyne

4-hydroxybutanal




1,2-dichloropropane

1,2-dichloropropane

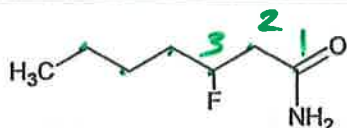
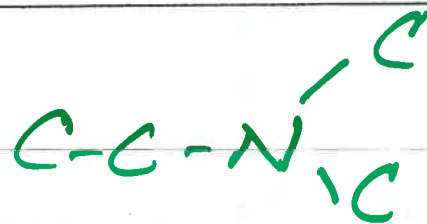
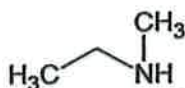
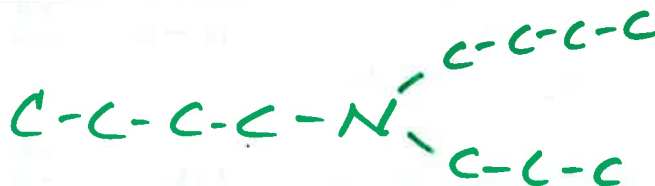
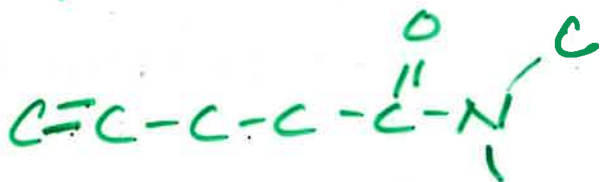
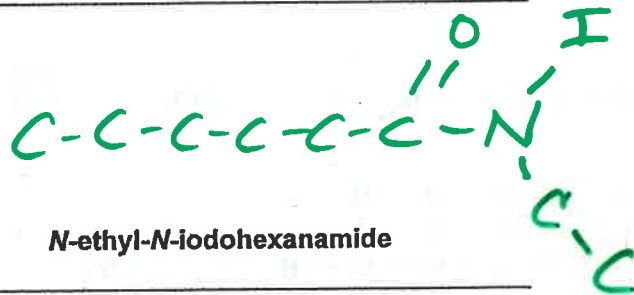
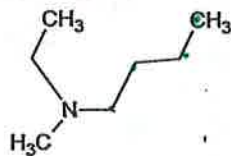
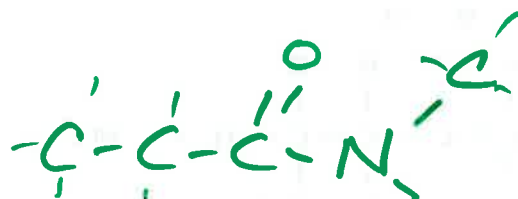
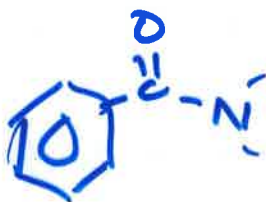
1,2-dichloropropane

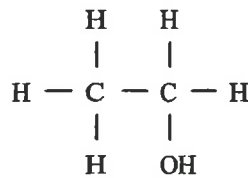
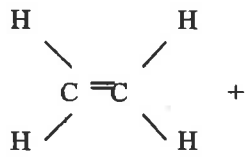
Summary Table for Some Organic Compounds

Group	Structure (R Represents H or Carbon Chain)	Nomenclature	General Formula	Physical Properties	Chemical Properties	Uses and Occurrence
alkanes	$\begin{array}{c} R-C- \\ \\ R-C-R \\ \\ R \end{array}$	—ane	C_nH_{2n+2}	<ol style="list-style-type: none"> 1. nonpolar; insoluble; low melting and boiling points 2. substitution; combustion 	fuels; petrochemical building blocks	
alkenes	$\begin{array}{c} R-C \\ \\ R-C-R \\ \\ R \end{array}$	—ene	C_nH_{2n}	<ol style="list-style-type: none"> 1. same as alkanes 2. addition, combustion 	starting materials for many polymers	
alkynes	$R-C \equiv C-R$	—yne	C_nH_{2n-2}	<ol style="list-style-type: none"> 1. same as alkanes 2. addition of one or two moles of adding reagent, combustion 	first member of the series used in oxyacetylene welding	
aromatics	 <p>H or R on each of the six positions</p>	—benzene or phenyl—	$C_6H_nR^{(6-n)}$ (variable)	<ol style="list-style-type: none"> 1. nonpolar; insoluble in water 2. substitution; combustion 	very diverse-solvents, foods, drugs, explosives, mothballs	
alkyl halides	$R-X_n$ (X = F, Cl, Br, I)	fluoro— chloro— bromo— iodo—	$C_nH_{2n+1}X$ $C_nH_{2n+1}X$ C_6H_5X	<ol style="list-style-type: none"> 1. variable boiling points; generally insoluble in water 2. intermediates in the preparation of many organic substances 	solvents, insecticides, antiseptics, anaesthetics, refrigerants, insect repellants	
alcohols	$R-OH$ $R(OH)_2$ $R(OH)_3$	—ol —diol —triol	$C_nH_{2n+1}OH$ $C_nH_{2n}(OH)_2$ $C_nH_{2n-1}(OH)_3$	<ol style="list-style-type: none"> 1. higher boiling; soluble because of hydrogen bonding 2. many reactions; e.g., esterification, combustion 	very diverse - antifreeze, alcoholic drinks, cosmetics, foods	
acids	$\begin{array}{c} R-C=O \\ \\ OH \end{array}$	—oic acid	$C_nH_{2n+1}COOH$	<ol style="list-style-type: none"> 1. high boiling; first four members soluble 2. all inorganic acid reactions; esterification 	commonly occur in foods, waxes	
esters	$\begin{array}{c} R-C=O \\ \\ O-R' \end{array}$	R' yl R oate	$C_nH_{2n} + COOC_mH_{2m} + 1$	<ol style="list-style-type: none"> 1. insoluble in water 2. can react with water to form a carboxylic acid and alcohol 	used as solvents and artificial flavors; commonly occur in animal fats and vegetable oils	

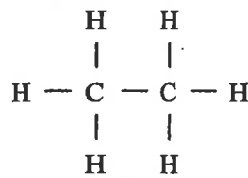
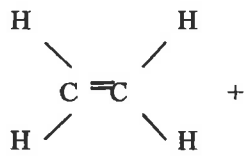
Organic Chemistry Nomenclature Project

Amines and Amides

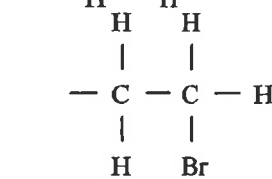
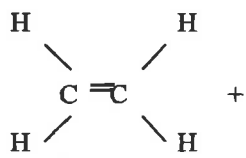
1) 3-fluorheptanamide2) N,N-dimethylethanamine3) N-methylethanamine4) N-butyl-N-propylbutanamine5) N-methyl-4-pentanamide6) N-ethyl-N-iodohexanamide7) N-ethyl-N-methylbutanamine8) N-methylpropanamide9) N-propylheptanamine10) N-methylethanamide11) Benzamide *bonus*

Types of Addition

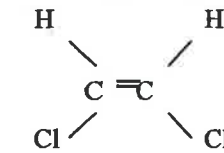
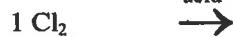
hydration



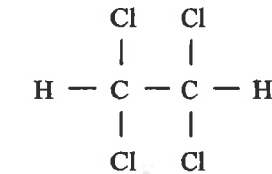
hydrogenation



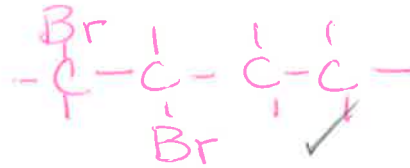
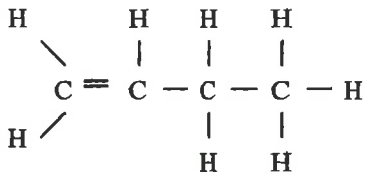
hydro-halogenation



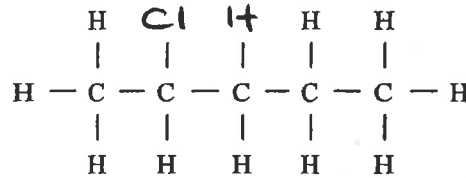
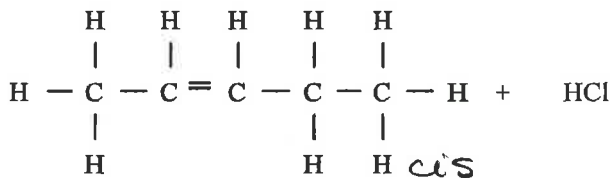
halogenation



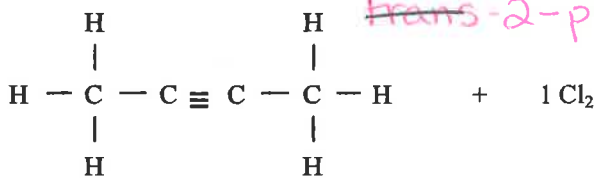
halogenation



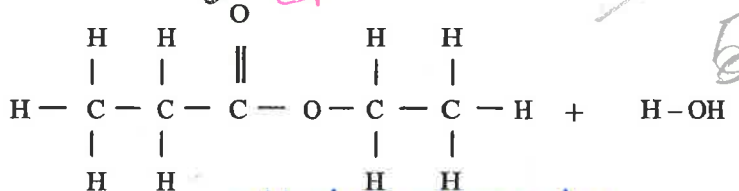
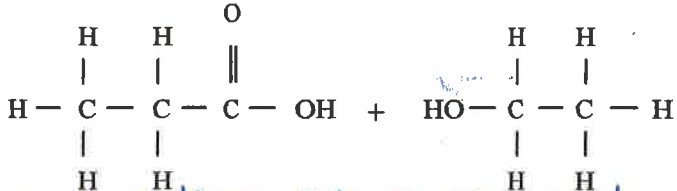
1,2-dibromo butane



2-chloro pentane or 3-chloro pentane



2,3-dibromo-2-butene

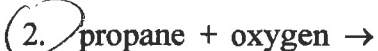
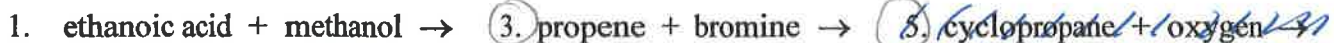


ethyl propanoate

Carboxylic acid + alcohol
(propanoic acid) (ethanol)

Give product(s) and reaction type:

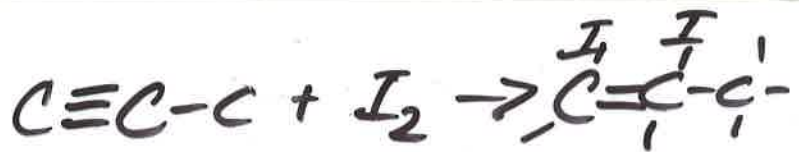
esterification/condensation



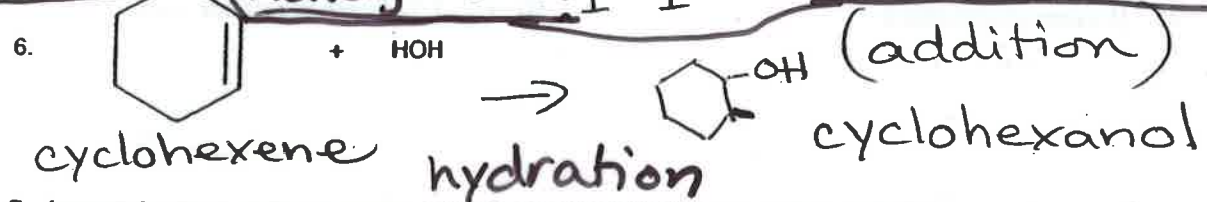
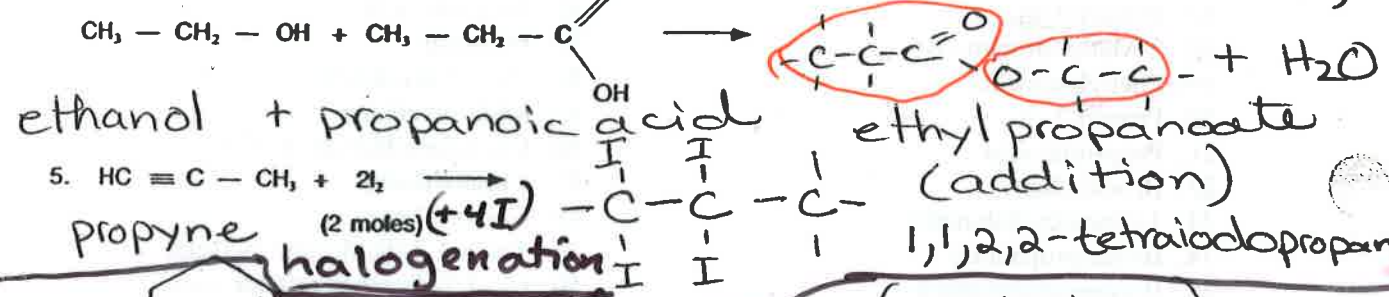
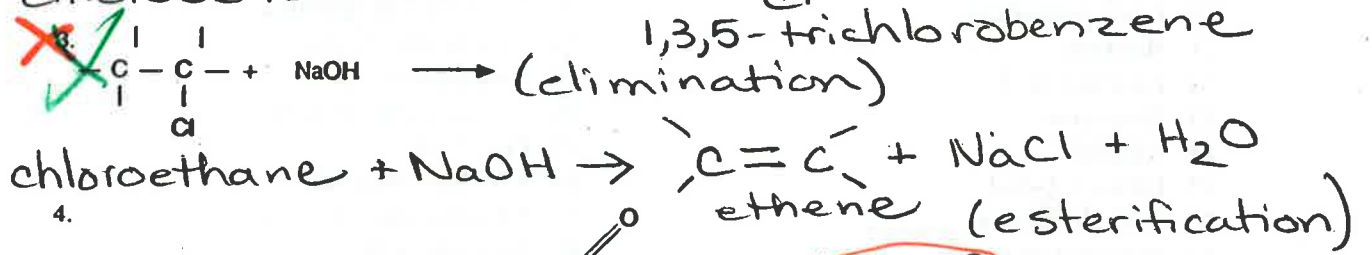
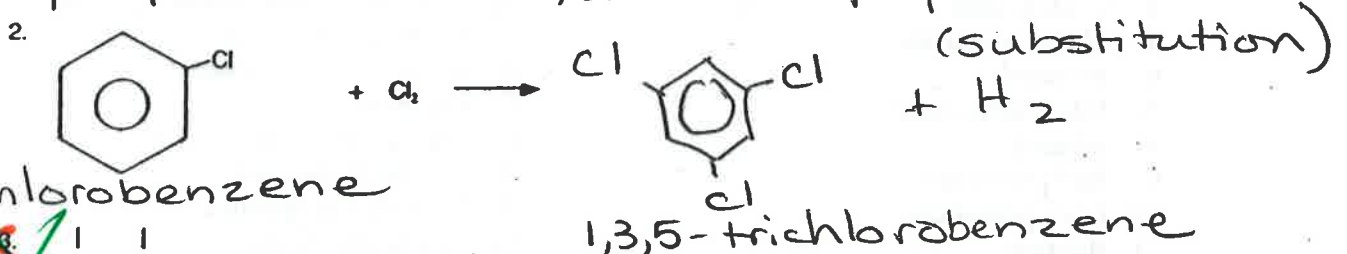
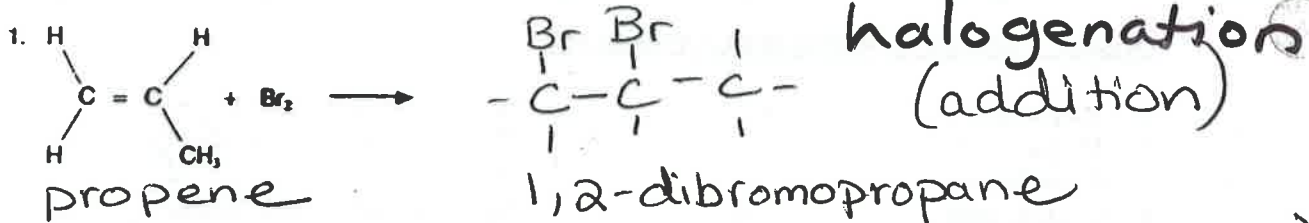
10

20

Organic Chemistry Review

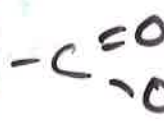



Write equations using structural formulas for each of the following reactions. Name all organic reactants and products.




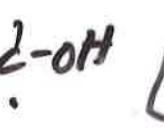
7. Account for the variation in boiling point among the following two-carbon molecules.


Compound	Boiling Point (°C)
ethane (C ₂ H ₆ only)	-88.6
monochloroethane (halogen)	12.2
ethanol (H bond) polar	78.5
ethanoic acid (2 H bonds) polar	117.9

①  → highest b.p. & highest solubility in H₂O

②  most polar

 =O quite polar

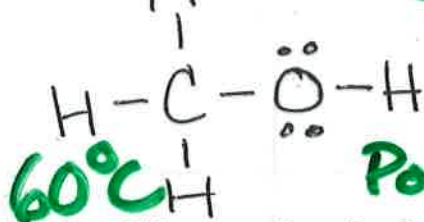
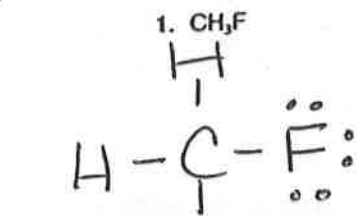
 halogens (slightly polar)

 C-H non-polar = lowest b.p. & lowest solubility in H₂O

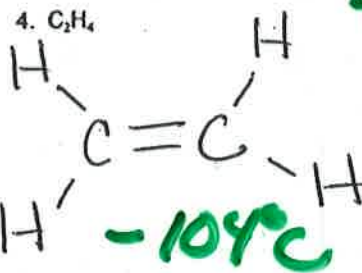
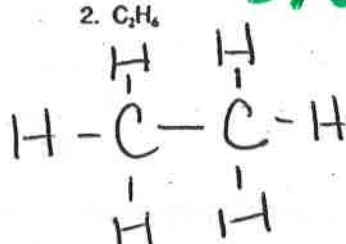
-longer chains ↑ b.p.

Bonding and Organic Chemistry Overview

Draw structural formulas for each of the following molecules.



2nd highest bp.
slightly polar
higher mass



-89°C 3rd
higher mass

4th

Highest
Polar/H bonding

-104°C

Write an equation using structural formulas for each of the following chemical reactions. Name all organic products.

