

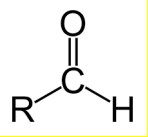
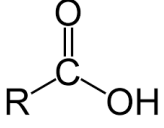
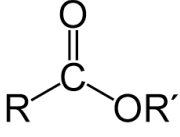
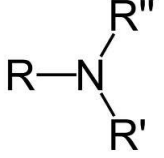
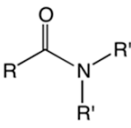
SCH4UO FINAL EXAM REVIEW ANSWERS

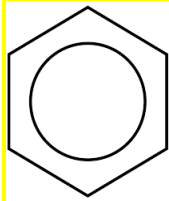
Unit 1: ORGANIC CHEMISTRY

1. Give the general formulas for:

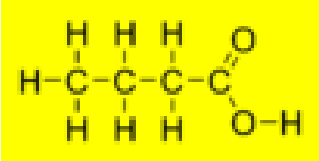
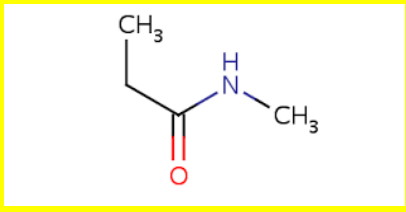
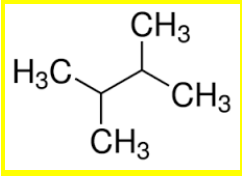
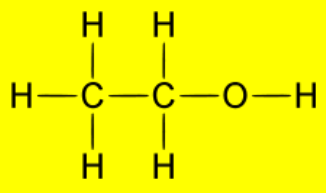
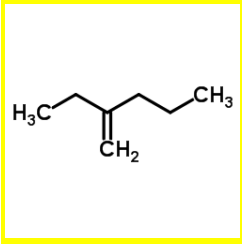
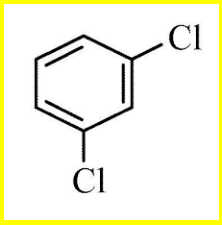
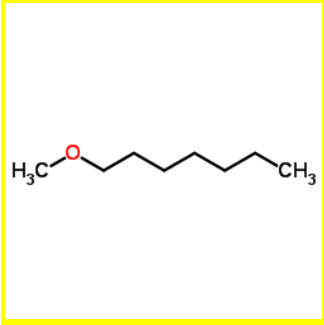
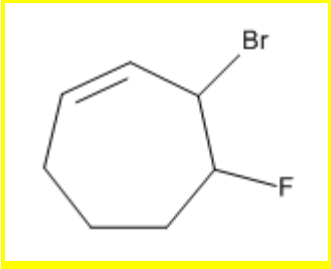
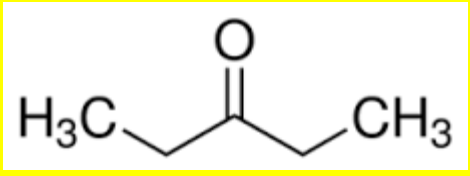
- a. Alkanes C_nH_{2n+2} b. Alkenes C_nH_{2n} c. Alkynes C_nH_{2n-2} d. Cycloalkanes C_nH_{2n}

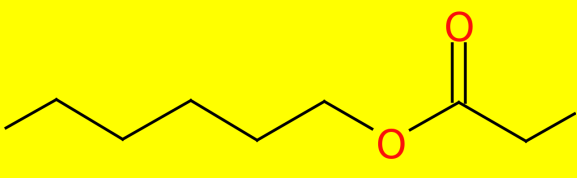
2. Complete the following chart:

Organic Compound	Functional Group	Diagram of General Formula	Naming Prefix
Alkyl Halides (Organic Halides)	- X (halogen)	R - X	fluorine - fluoro chlorine - chloro bromine - bromo iodine - iodo
Alcohols	hydroxyl	R - OH	- ol
Ethers	oxygen	R - O - R'	-oxy-
Aldehydes	Carbonyl - terminal		-al
Ketones	Carbonyl - within the chain		-one
Carboxylic Acids	carboxyl		-oic acid
Esters	ester		-oate
Amines	amino		-amino
Amides	amide		-amide

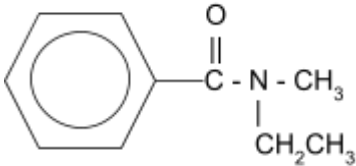
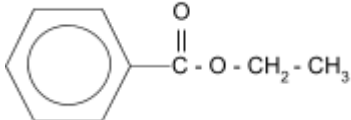
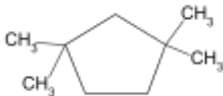
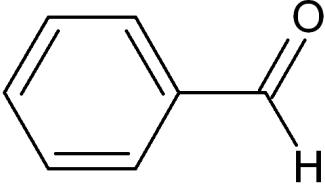
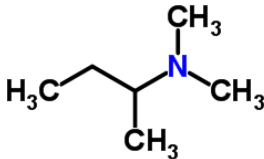
Aromatic	benzene		phenyl
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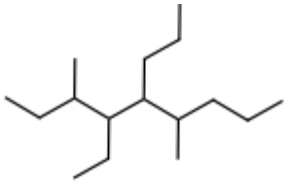
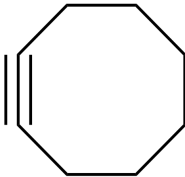
3. Draw structural diagrams for:

a. butanoic acid 	g. methyl propanamide 
b. 2,3 – dimethylbutane 	h. ethanol 
c. 2 – ethyl – 1 – pentene 	i. 1,3-dichlorobenzene 
d. methoxyheptane or heptyl methyl ether 	j. 3-bromo-4-fluorocycloheptene 
e. 3 – pentanone 	k. 1-amino-3-bromopentane or 3-bromo-pentanamine

	$\text{H}_3\text{C}-\text{CH}_2-\underset{\text{Br}}{\text{CH}}-\text{CH}_2-\underset{\text{NH}_2}{\text{CH}_2}$
f. hexylpropanoate	

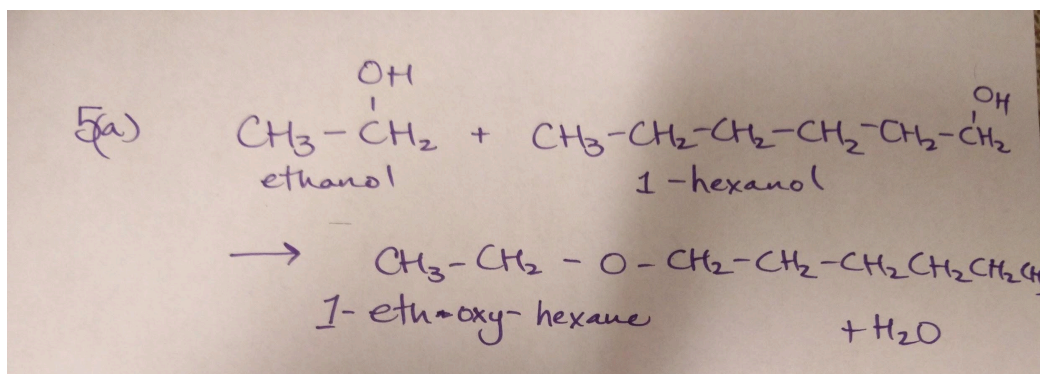
4. Give the name for each of the following:

a.	$\begin{array}{c} \text{Cl} \quad \quad \text{Cl} \\ \quad \quad \\ \text{CH}_2\text{CH}_2\text{CHCH}_3 \end{array}$ 1,3-dichlorobutane	b.	 N-ethyl-N-methyl benzanamide
c.	 ethyl benzoate	d.	 1,1,3,3-tetramethylcyclopentane
e.	$\begin{array}{c} \text{HO}-\text{CH}_2-\text{CH}-\text{CH}_2-\text{OH} \\ \\ \text{OH} \end{array}$ 1,2,3-trihydroxypropane or 1,2,3-propanetriol (glycerol)	f.	$\begin{array}{c} \text{CH}_3 \\ \\ \text{H}_3\text{C}-\text{CH}_2-\text{C}-\text{OCH}_3 \\ \\ \text{CH}_3 \end{array}$ 2-methoxy-2-methylbutane 2-methyl-butyl-2-methyl ether
g.	 benzaldehyde	h.	 N,N-dimethyl-2-aminobutane or N,N-dimethyl-1-methylaminopropane

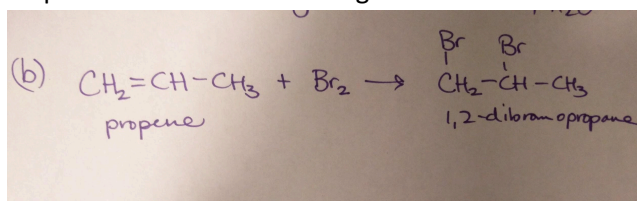
i.	 4-ethyl-3,6-dimethyl-5-propylnonane	j.	 cyclooctyne
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5. Give the name and structural diagrams for the reactants and products of each of the following reactions:

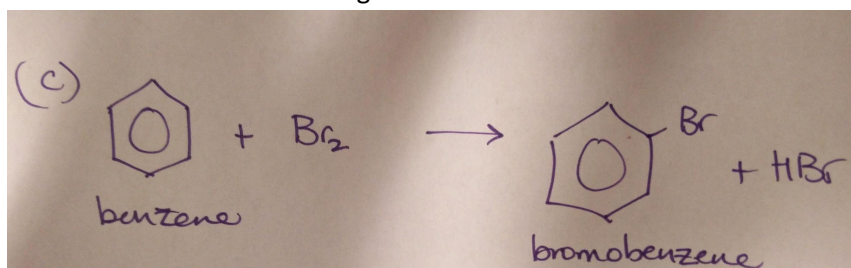
a. Ethanol reacts with 1-hexanol.



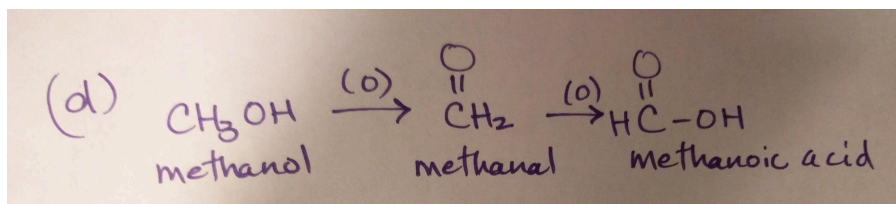
b. Propene reacts with bromine gas.



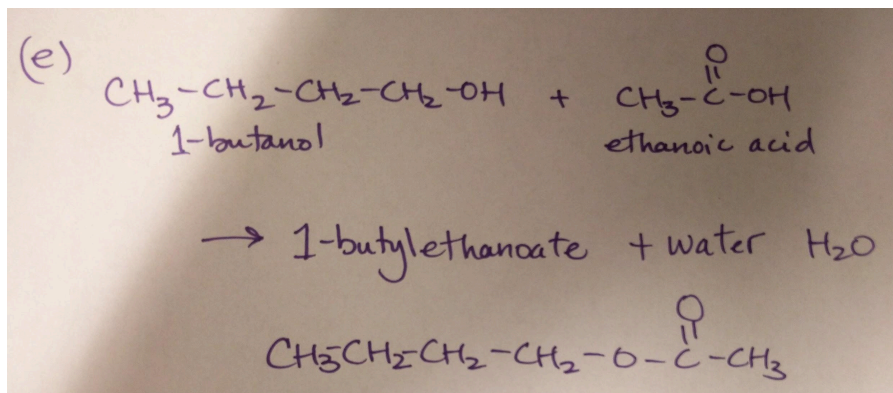
c. Benzene reacts with bromine gas.



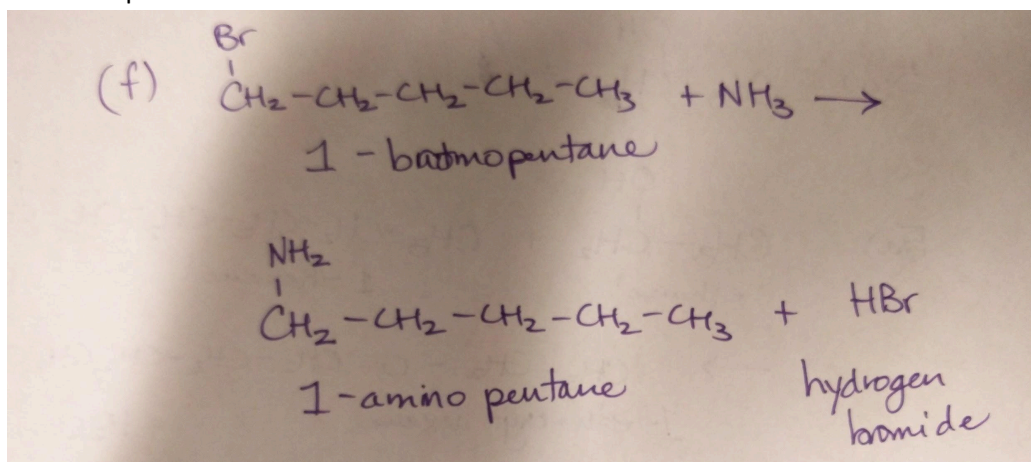
d. The mild oxidation of methanol to methanoic acid.



- e. 1-butanol reacts with ethanoic acid.



- f. 1-bromopentane reacts with ammonia. Haloalkane and ammonia make an amide



6. Name the type of reactions from question 5.

- a. Condensation reaction

2 alcohols make an ether, the water molecule produced is comprised of the hydroxyl group from one alcohol and the hydrogen from the second alcohol

- b. Addition reaction

The bromine gas is diatomic, meaning 2 atoms of bromine. A bromine atom will add to each side of the double bond to make a dihaloalkane

- c. Substitution reaction

One atom of bromine will replace(substitute) a hydrogen from the benzene.

- d. Mild oxidation

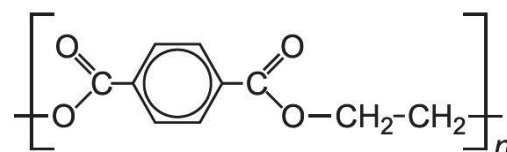
Mild oxidation of an alcohol first produces an aldehyde. With further mild oxidation, it produces a carboxylic acid

- e. Condensation reaction

An alcohol and carboxylic acid produce an ester. The water produced is comprised of the hydroxyl group from the acid and the hydrogen from the alcohol.

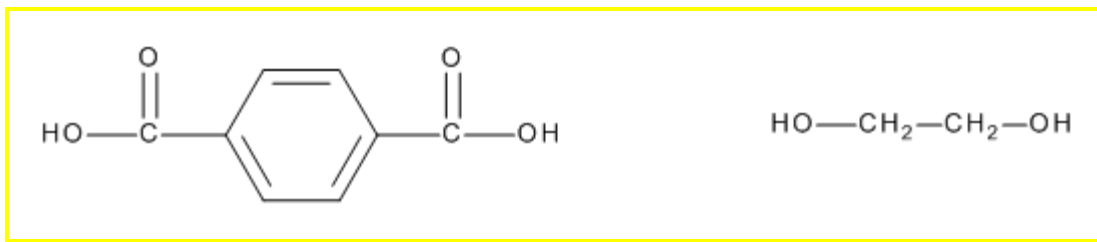
- f. Substitution

The haloalkane and the ammonia produce an amide. The hydrogen halide produced is comprised of the halogen from the haloalkane and a hydrogen from the ammonia



7. For the following polymer:

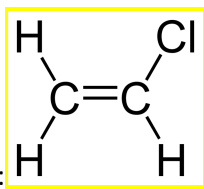
a. Draw two monomers.



b. State the type of polymerization and explain how you know.

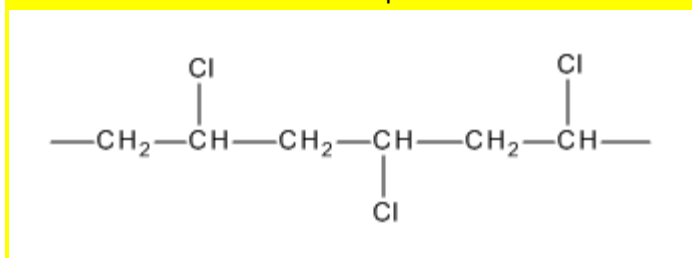
Condensation polymer since the polymer backbone contains atoms other than carbon. This condensation polymer would be classified as a polyester.

8. For the following monomer:



a. Draw a 3-unit subsection of polymer.

Make sure when you draw your polymer that the backbone is made of the carbons. This is because the double bond is what will be part of the reaction to create the polymer.



b. State the type of polymerization and explain how you know.

Addition polymer since the polymer backbone contains only carbon atoms.