HOMEWORK #2

CHEM 121, section 1, winter 2009. **Printed Name:**_____

Background and Chp. 13. Introduction to alkenes, alkynes and aromatic compounds

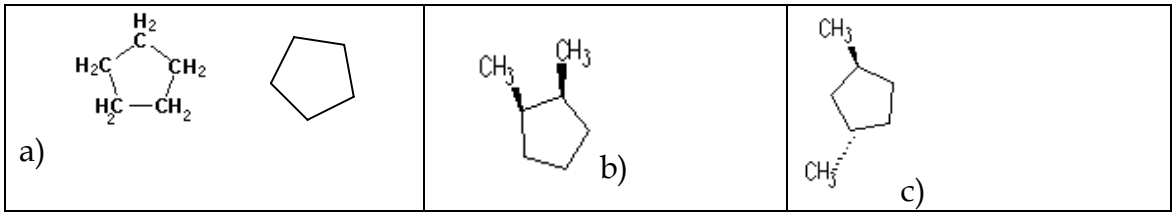
Homework Due DEC. 13, 2008, 12:15 PM! **Group Name:**_____

1) (1 pt) Write the name of names and units of unsaturation for the hydrocarbons (alkane, alkene, alkyne and arene) with followling general formula.

	C_nH_{2n+2}	C_nH_{2n}	C_nH_{2n-2}	C_nH_n
Name	a) _____	b) _____	c) _____	d) _____
Unit of unsat.	a) _____	b) _____	c) _____	d) _____

2) (2 pts) Draw all constitutional isomers of butane: C_4H_{10}.

3) (2 pts) Names of following cycloalknes:



4) (2 pts) Complete the following reactions of alkanes.

a) Combustion:

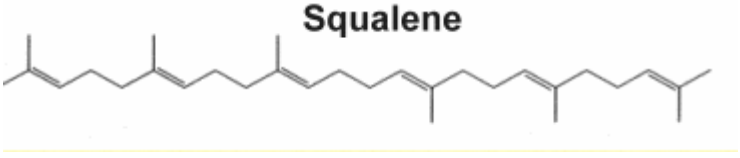
i) $C_5H_{12}(g) + 8\ O_2(g) \longrightarrow$

ii) ___ $C_4H_{10}(g)$ + ___ $O_2(g) \longrightarrow$ ___$CO_2(g)$ + ___$H_2O(g)$

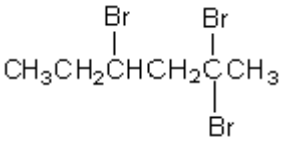
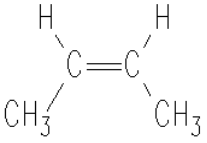
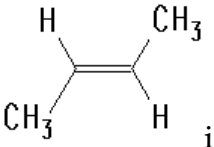
b) Halogenations: (substitution reaction to form alkyl halides)

$CH_4(g) + Br_2(l) \longrightarrow$

5) (1 pt) How many isoprene units a in the following natural product?



6) (3 pts.) Give common name or/and IUPAC names of following compounds

$CH_3CH_2CH_2CH_2CH_2CH_2CH_3$ a)	$CH_3CH(CH_3)CH_3$ b)	 c)
$CH_3CH{=}CH_2$ d)	 e)	$CH_3-CH(CH_3)-CH{=}CH-CH_3$ f)
$CH_3-C{\equiv}C-CH_2CH_3$ g)	 h)	 i)

7) (2 pts) Complete the reactions of following alkenes

a) $CH_2{=}CH-CH_3 + H_2 \xrightarrow{Ni}$

b) $CH_2{=}CH-CH_3 + HCl \longrightarrow$

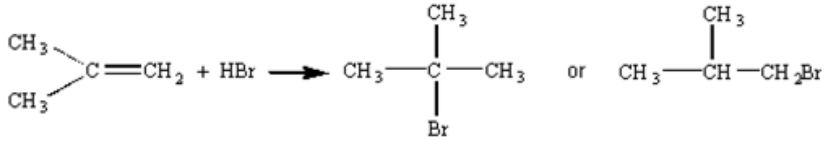
c) $CH_2{=}CH-CH_3 + H_2O \xrightarrow{H_2SO_4}$

d) $CH{\equiv}CH + 2H_2 \xrightarrow{Ni}$

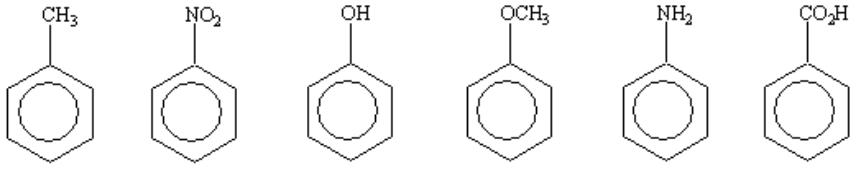
e) $CH_2{=}CH-CH{=}CH_2 + H_2 \xrightarrow{Ni}$

f) $CH_3CH{=}CHCH_3 + HBr \longrightarrow$

g) Pick the major prodcut of following

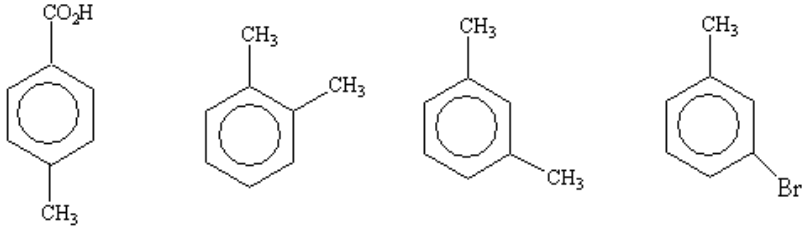


8) (2 pt) Match the following names of aromatic hydrocarbons (arenes) to following structures: Anisole, Aniline, Phenol, Benzoic acid, Toluene, Nitrobenzene.



a) b) c) d) e) f)

9) (2 pt) Give the names of following disubstituted aromatic hydrocarbons.



a) b) c) d)

10) (2 pts) Complete the following chemical reactions of aromatic hydrocarbons.