## VANCOUVER COMMUNITY C O L L E G E

## **Naming Organic Compounds Practice**

## **EXERCISES**

A. Identify the class of the following compounds. For any alkanes, alkenes, alkynes, aromatic compounds, carboxylic acids or alcohols, provide the IUPAC name of the molecule. For the four special monosubstituted benzenes, use the common name.

2) 
$$H_2C-CH_3$$
  
 $H_3C-CH-CH_2CH_2CH_3$ 

9) 
$$H_2C \cdot CH_3$$
  
 $H_3C \cdot C \equiv C - CH - CHCH_3$   
 $H_3C$ 

10) 
$$O$$
  $H_3CCH_2CH_2CH_2CH$ 

6) 
$$CH_3$$
 $H_2C=CH-CH-CH_2$ 
 $CH_3$ 

7) 
$$O$$
  $|I|$   $H_3C-CH-C-O-CH_3$   $CH_3$ 

В.	Draw the structural formulas for the following compounds:		wing compounds:
	1)	1-pentene	7) 4-methylhexanoic acid
	2)	2-methyl-3-heptyne	8) 2,3-dichloro-4-ethyl-2-hexene
	3)	3-ethyl-4,5-dimethylpentane	9) 2,4-dinitrotoluene
	4)	2-ethyl-1-pentanol	10) 3-ethyl-2,3-dimethyl-2-pentanol
	5)	<i>m</i> -bromophenol	11) 5-chloro-4-methyl-3-heptanone
	6)	3,3,6,6-tetraethyl-4-octyne	12) 3-phenyl-1-propyne
C. Draw all possible open-chain structures for the following molecular formulas and name them: 1) $C_5H_{12}$			
	2)	C5H10	
	3)	C <sub>3</sub> H <sub>8</sub> O	

## **SOLUTIONS**

- A. (1) aromatic compound: iodobenzene (2) alkane: 3-methylhexane (3) ketone (4) alkane/alkyl halide: 3-chloro-4-ethyl-2,4-dimethyloctane (5) aromatic compound: o-diethylbenzene or ortho-diethylbenzene (6) alkene: 3-methylpentene (7) ester (8) aromatic compound: p-bromotoluene or para-bromotoluene (9) alkyne: 4-ethyl-5-methyl-2-hexyne (10) aldehyde (11) carboxylic acid: hexanoic acid (12) alcohol: 2,4-dimethyl-3-pentanol (13) alkene: 2,4,4-trimethyl-2-hexene (14) ether
- B. (1) H<sub>2</sub>C=CH-CH<sub>2</sub>-CH<sub>3</sub> (2) H<sub>3</sub>C-CH-C≡C-CH<sub>2</sub>-CH<sub>3</sub> (3) CH<sub>3</sub>
  CH<sub>3</sub>
  H<sub>3</sub>C-CH<sub>2</sub>-CH-CH<sub>2</sub>-CH<sub>3</sub>
  CH<sub>2</sub>-CH<sub>3</sub>
  (4) HO-CH<sub>2</sub>-CH-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub> (5) OH (6) H<sub>3</sub>C-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>3</sub>
  CH<sub>2</sub>-CH<sub>3</sub>
  CH<sub>2</sub>-CH<sub>3</sub>
  (7) O=C-CH<sub>2</sub>-CH<sub>2</sub>-CH-CH<sub>2</sub>-CH<sub>3</sub> (8) Cℓ
  CH<sub>3</sub>
  CH<sub>2</sub>-CH<sub>3</sub>
  (9) CH<sub>3</sub>
  NO<sub>2</sub>
  (10) H<sub>3</sub>C CH<sub>3</sub>
  H<sub>3</sub>C-CH<sub>2</sub>-CH<sub>3</sub>
  (11) O
  H<sub>3</sub>C-CH<sub>2</sub>-CH-CH<sub>2</sub>-CH<sub>3</sub>
  H<sub>3</sub>C-CH<sub>2</sub>-CH-CH<sub>2</sub>-CH<sub>3</sub>
  (12)
- C. (1) pentane 2-methylbutane 2,2-dimethylpropane  $H_3C-CH_2-CH_2-CH_3$   $CH_3$   $CH_3$   $CH_3$   $CH_3$ 
  - (2) 1-pentene 2-pentene 2-methyl-1-butene H<sub>2</sub>C=CH-CH<sub>2</sub>-CH<sub>3</sub> H<sub>3</sub>C-CH=CH-CH<sub>2</sub>-CH<sub>3</sub> H<sub>2</sub>C=C-CH<sub>2</sub>-CH<sub>3</sub> CH<sub>3</sub>
    - 3-methyl-1-butene H₂C=CH-CH-CH₃ CH₃

      2-methyl-2-butene H₃C-C=CH-CH₃ CH₃

      CH₃
  - (3) 1-propanol 2-propanol methoxyethane (methyl ethyl ether) H<sub>3</sub>C-CH<sub>2</sub>-CH<sub>3</sub> OH