

CHEM-1110**ORGANIC CHEMISTRY**

1. Write structures for the following alkyl groups:
 - a) methyl b) ethyl c) propyl d) isopropyl or 1-methylethyl
 - e) butyl f) s-butyl or 1-methylpropyl
 - g) isobutyl or 2-methylpropyl h) t-butyl or 1,1-dimethylethyl

2. Give structures and names for
 - a) all hexanes of molecular formula C_6H_{14} .
 - b) all monochloro derivatives of 2-methylpentane
 - c) all dichloro and trichloro derivatives of butane
 - d) an alkane that has 2 tertiary(3°) and one quaternary(4°) carbon atoms
 - e) an alkane of molecular formula C_6H_{14} that has no secondary(2°) H atoms
 - f) an alkane whose MM=72 that would yield only one monochloro derivative on reaction with Cl_2
 - g) a $C_2H_4Br_2$ that gives only one $C_2H_3Br_3$ on bromination

3. Draw a structure for the following compounds:
 - a) 2-methyl-6-(2-methylbutyl)dodecane (dodecane has 12 C atoms)
 - b) 2-chloro-4-methylpentane
 - c) 3-(3,4-dimethylcyclohexyl)heptane
 - d) trans-1,3-dibromocyclohexane
 - e) cis-1-chloro-2-methylcyclopentane
 - f) 2-bromo-3-chloro-3-ethyl-2-methylpentane
 - g) 6-ethyl-5-isopropyl-2,3-dimethyloctane
 - h) trans-1,2-dichloro-1-pentene

- I) cis-1,2-dibromoethene
 - j) 3,4-dimethyl-1-pentyne
 - k) 4-nitro-1-butyne
 - l) 1,4-cyclohexadiene
 - m) 5-s-butyl-2,7-dimethylnonane
 - n) 3,4-dibromo-3,4-dimethylhexane
 - o) 1,5-dimethylcyclopentene
 - p) 1-phenyl-2-butyne
 - q) cis-2-methyl-3-nonene
 - r) 4-methyl-2-hexyne
 - s) 1-ethyl-2-methylcyclopentane
 - t) 1,3-dimethylbenzene
 - u) 2,4,6-trinitrophenol
 - v) 2-hydroxybenzoic acid
 - w) benzaldehyde
 - x) trans-4,4-dimethyl-6-isopropyl-2-octene
4. Give structures for the following
- a) 2-butanol
 - b) 2-phenyl-2-propanol
 - c) 2,4-dinitroethylbenzene
 - d) 5-methyl-1,5-hexanediol

- e) 2-pentanone
- f) 2-chlorobutanal
- g) propyl 3,3-dimethylbutanoate
- h) 4,5-diethyl-2-methylheptanal
- I) cis-3-methylcyclopentanol
- j) 3,3-dimethylcyclopentanone
- k) 7-iodoheptanoic acid
- l) isobutyl benzoate
- m) ethyl methyl amine
- n) t-butyl isobutyl ether
- o) ethyl butanoate
- p) 6-chloro-4-ethylheptanal
- q) 2,4-dibromotoluene
- r) cis-4-phenylcyclohexanol
- s) 4-bromo-3-methyl-6-phenylheptanal
- t) 3-nitrophenol
- u) 2,5-dimethyl-4-propyloctanoic acid
- v) 3,4-dichloroaniline
- w) cis-2-methylcyclobutanol
- x) butyl methanoate
- y) 1-methylcyclobutanol
- z) ethyl 2-bromopropanoate