

1) Alkane - Hexane, Heptane

2) Alkene - pent-1-ene, but-2-ene

3) Alkyne - propyne, ~~butyne~~ but-1-yne

4) Alcohol - Butanol, methanol

5) Aldehyde - methanal, propanal

6) Carboxylic group - ^{an}Alkanoic acid, Butanoic acid

7) Ketone - Alkanone, propanone.

Importance of Organic Compounds

- b) i) They deplete ozone levels and cause smog.
ii) Crude fuel is refined in gasoline, propane, diesel, kerosene and natural gas so cars and heating systems can work.
iii) Carbohydrates provide life forms with the energy needed to maintain cellular function.
iv) They are composed of hydrogen, oxygen and carbon atoms and are found in all life forms.
v) They serve as the basis of all carbon-based life on Earth.

c) Homo Cyclic

1) They have atoms of the same elements as ring members.

2) Ring contains only atoms of the same element.

3) They have 100% of carbon atoms in their ring.

Heterocyclic

1) They have atoms of different elements as ring elements.

2) Ring can contain atoms of different elements.

They have mainly carbon atoms and in addition, hetero atoms such as nitrogen, oxygen and sulphur are found in the ring.

$$2) a) R_f = \frac{2 \cdot 4 + 5 \cdot 6 + 8 \cdot 9}{12 \cdot 2} = \frac{16 \cdot 9}{12 \cdot 2} = \frac{1 \cdot 38}{249016} = 1 \cdot 38$$

- b) They belong to A belongs to ketone group ($C=O$)
B belongs to Alkene group ($C=C$)

c) 2,4-Dinitrophenyl hydrazine can be used to detect the carbonyl functionality of a ketone or aldehyde functional group.

Idu - Emeka Chidera
 17/Eng02 1034
 Computer Engineering

1(a) $M^+ = 105$

Divide 105 by

Step 1 If the mass of the molecular ion is odd then it contains at least one Nitrogen atom.

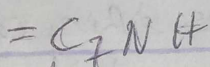
$N = 14 \text{ amu}$

~~105~~ $= 105 - 14$

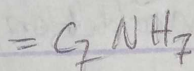
$= 91$

Step 2 Determine the max Carbon atoms

$= \frac{91}{12} = 7.5$



Step 3 = Add enough Hydrogen atoms to make up for the rest of the mass



$= \frac{2N+2-M}{2} = \frac{2(7-5)+2-7}{2} = 5$

~~$C_7NH_7 = (7 \times 12) + (1 \times 14) + (7 \times 1)$~~

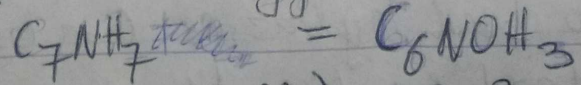
Calculate for no of "H" atoms $34 + 14$

$C = 7 \times 12 = 84$ to be added

$N = 1 \times 14 = 14$

$\Rightarrow 105 - (84 + 14) = 7$

Step 4 Add an oxygen atom (minus CH_4 when adding O)



$= \frac{2(6-5)+2-3}{2}$

$= 6$

