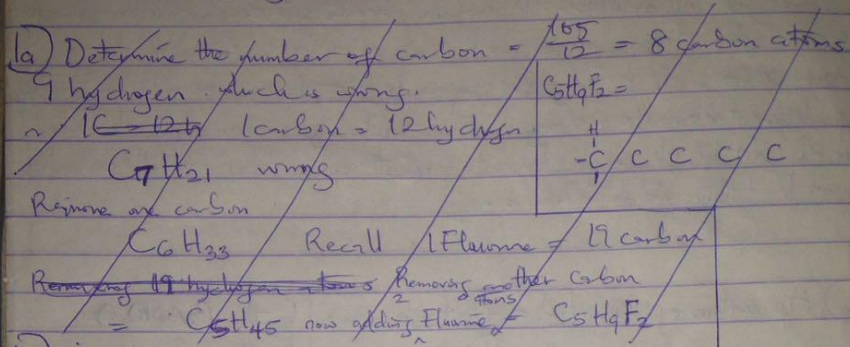


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Chemistry 102 Assignment



(b)

• They are used to clean of impurities like in drug extraction from plants, the fatty matter from the pulp is removed using petroleum ether.

• Most of the sterilizing agents and disinfectants like phenols, formaldehyde, etc. are carbon compounds. Due to their properties like solubility, pH they can kill microbes and even human body cells.

• Organic compounds like Diamonds, Graphite, Petroleum, etc. are found to be highly valuable, durable and hardest in the world. Diamond and graphite are both pure carbon compounds without any other elements inside. They are both highly used and expensive while Petroleum is the other most valued resources on the earth for fuels needs in the world.

• Medicine is the prime store of organic compounds. Though not all are made of organic compounds. Most of the drugs contain organic compounds which are used to cure diseases, to study the pathophysiology of the diseases and also to diagnose the diseases.

• Food materials are solely made of carbon compounds eg carbohydrates, proteins and fats. Even vitamins are organic in nature. Study of the requirement of body for various purposes like pregnancy, disease condition, body fitness, etc. experts advice use of vitamins. Among beverages alcohol is an organic substance.

(c) Homocyclic compounds are cyclic compounds having atoms of the same element as ring members. In organic chemistry, these compounds consist of only carbon atoms and are also known as CARBOCYCLIC compounds or CARBOCYCLES while heterocyclic compounds are cyclic compounds having atoms of different elements as ring members including carbon atoms. There should be at least two different elements present as members and also should be at least three atoms to form a ring.

$$\begin{aligned} \text{2a) Rf value of Band A} &= \frac{\text{Distance moved by the BAND A}}{\text{Distance moved by the solvent front}} \\ &= \frac{2.4 \text{ cm}}{12.2 \text{ cm}} = 0.20 \end{aligned}$$

$$\begin{aligned} \text{(ii) Rf value of Band B} &= \frac{\text{Distance moved by BAND B}}{\text{Distance moved by the solvent front}} \\ &= \frac{5.6}{12.2} = 0.46 \end{aligned}$$

$$\begin{aligned} \text{(iii) Rf value of Band C} &= \frac{\text{Distance moved by BAND C}}{\text{Distance moved by solvent front}} \\ &= \frac{8.9}{12.2} = 0.73 \end{aligned}$$

2b) The functional group of compound A is Aldehyde (Alkanal)

(ii) The functional group of compound B is Alkene.

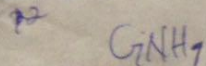
2c) 2,4-dinitrophenylhydrazine test is employed for alkanals and alkanones.

Homologous Series	Functional group	Example
1) Alkane	-C-H	H ₃ C-CH ₃ Ethane H ₃ C-CH ₂ -CH ₃ Propane
2) Alkene	>C=C<	H ₂ C=CH ₂ Ethene CH ₃ CH=CH ₂ Propene
3) Alkyne	-C≡C-	HC≡CH Ethyne CH ₃ C≡CH Propyne
4) Alkanols	-OH	CH ₃ OH Methanol C ₂ H ₅ OH Ethanol
5) Alkanoic acids	-COOH	CH ₃ COOH Ethanoic acid C ₄ H ₉ COOH Butanoic acid
6) Alkanones	>C=O	CH ₃ COCH ₃ Propanone C ₂ H ₅ COCH ₃ Butanone
7) Alkanals	-CHO	CH ₃ CHO Ethanal C ₄ H ₉ CHO Pentanal

19) $M^+ = 105$
 For odd molecular ions, therefore it contains at least one Nitrogen atom (N=14)
 $N = 14 \text{ amu}$
 $\therefore 105 - 14$
 $= 91$

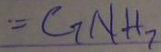
Determining the number of carbon atoms

$$\frac{91}{13} = 7.583\text{---}$$



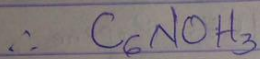
C_6H_9
 C_6H_6 C_6H_{13}

Add enough hydrogen atoms to make up for the rest of the mass.



$$= \frac{2 \times 7 + 2 - 7}{2} = \frac{2(7.5) + 2 - 7}{2} = 5$$

Adding oxygen O by removing ~~C_6H_6~~ (since $O = C_6H_4 = 16$ mass)



$$\therefore = \frac{2(6) + 2 - 3}{2} = 5.5$$

