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**COURSE CODE: CHM102**

1. **SUGGEST POSSIBLE FORMULAS FOR A MOLECULAR ION (M/Z) OF 105.**
2. Given **105**, since its **105** it is odd and it has a nitrogen To find hydrogen deficiency

Taken N=**14amu** **= (2N + 2-H)**

Therefore, **105-14=91** **2**

To find the mass number of carbon **= [2(7.6) +2-7]**

Therefore, **91÷12=7.6** **2**

Therefore**, 7** is the number of mole for carbon. **= 15.2-5**

For hydrogen **2**

**7×12=84**, therefore **91-84=7** **= 5.1**

Therefore**, 7** is the number of mole for hydrogen

The formula is **C7NH7**

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| Oxygen was introduced To find hydrogen deficiency Therefore, **105-14=91 = (2N + 2-H)**  Taking **O=16 2**  Therefore, **91-16=75 = [2(6.25) + 2-3]**  **75÷12=6.25 2**  Therefore**, 6×12=72 = 12.5-1**  Therefore **72** is the number of carbon atom **2**  **75-72=3 = 5.75**  Therefore **3** is the number of hydrogen atom  The formula is **C6NOH3** |

1. **IMPORTANCE OF ORGANIC COMPOUNDS**

* They serve as the basis of all carbon-based life on earth, an element that all living organisms contain
* **In nucleic Acid**

Nucleic acids are essential biopolymers for all life forms (DNA is included in this category). They are composed of many elements but mainly coal and hydrogen, although there are also oxygen atoms in their sugars. Nucleic acids are the most important of all biomolecules. They are found in abundance in all living things, where their functions is to create and encode, and then to store information in the nucleus of all living cells of all living organisms on Earth.

* **In Carbohydrate**

A carbohydrate is a biological molecule consisting of carbon, hydrogen and oxygen. In biochemistry, the term is synonymous with a group of elements that may include sugars, cellulose and starch. Carbohydrates play an important role in living organisms. Polysaccharides serve to store energy, saccharides play primordial roles in immune system, in fertilization, in blood clotting and in the prevention of pathogenesis.

* **As The Basis Of Food**

Organic molecules make up a large portion of the human diet and are found in all food consumed by an individual. It requires a large number of organic molecules needed to keep cells and tissues healthy.

* **In Lipids**

Lipids help in storing storing energy, signaling lipid and acting as a structural component of cell membrane

**C. DIFFERENTIATE BETWEEN HOMOCYCLIC AND HETEROCYCLIC COMPOUNDS**

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| **Homocyclic compounds** | | **Heterocyclic compounds** |
| 1.the ring of homocyclic compounds is made up carbon atoms only | | 1.the ring of heterocyclic compounds is made up of more than one kind of atoms |
| 2. Phenol, toluene, naphthalene, and anthracene. | 4.tetrahydrofuran, piperidine, pyridine, furan and pyrrole | |

**QUESTION2**

1. **IF THE DISTANCE OF THE SOLVENT FRONT IS 12.2CM. 2.4CM, 5.6CM AND 8.9CM ARE DISTANCES OF THE DIFFERENT BANDS RESPECTIVELY. CALCULATE THE RETARDATION FACTOR OF THE AVAILABLE BANDS.**

Solution.

Using the formula:

Retardation Factor= Distance moved by substances.

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| Distance moved by solvent front |

To find A=2.4cm, B= 5.6cm and C=8.9cm. Given that the solvent front IS 12.2cm

To find a=2.4cm

RF= A = 2.4cm = 0.20

12.2cm 12.2cm

To find b= 5.6cm

RF= B = 5.6cm =0.46

12.2 12.2cm

To find c= 8.9cm

RF= C = 8.9cm =0.73

12.2cm 12.2cm

**B. TWO ORGANIC COMPOUND WERE LABELLED A AND B. A GAVE A POSITIVE TEST RESULT (DARK GREY PRECIPITATE) TO TOLLENS TEST AND B DECOLORIZES BROMINES WATER. SUGGEST THE FAMILY TO WHICH THESE ORGANIC COMPOUNDS BELONG.**

Answer.

ORGANIC COMPOUND A=‘’Aldehydes’’

ORGANIC COMPOUND B= Bromine water is able to be decolorized by unsaturated compounds like ‘’alkenes’’ and ‘’alkynes’’.

**C. 2, 4-dinitrophenylhydrazine test is employed for** carbonyl functionality for a ketone or aldehyde functional group.

**D. LIST 7 FUNCTIONAL GROUPS OF ORGANIC COMPOUNDS GIVING TWO EXAMPLES OF EACH GROUP.**

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| **FUNCTIONAL GROUP** | **Examples** |
| -C-H (alkanes) | Methane, Propane |
| -C=C- (alkenes) | Propene, Ethene |
| -C≡C- (alkynes) | Propyne, Ethyne |
| -OH (alkanols) | Ethanol, Propanol |
| -COOH (alkanoic acids) | Propanoic acid, methanoic acid |
| CHO (alkanals) | Butanal, Methanal |
| -C=O (alkanones) | Acetone, benzophenone |