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COLLEGE: MHS

DEPARTMENT: MEDICINE AND SURGERY

MATRIC NO: 17/MHS01/303

1.a) Fragment at m/z =105
Step1- if the mass of the molecular ion is odd it contains at least one nitrogen N= 14 atoms
105-14=91
Step2- determine max NC’S
$\frac{91}{12 } $= 7.5 $C\_{7}HN$?
Sep3- add enough H’s to make up the rest of the mad
7×12=84
1×14=14
105-(84+14) =7
7H’S gives $C\_{7}NH\_{7}$
(2n+2-7)/2= 2(7.5) +2-7/2 =5.25
Step4- add an O atom
$C\_{7}NH\_{9 }\rightarrow C\_{6}H\_{3}NO$ $C\_{7}H\_{7}N$- Azocine
 $C\_{6}H\_{3}NO- $Pyran-3-carbonitrile
$\frac{(2\left(6.5\right)) + (2-3) }{2}$­­­­­­­­­­­­­­­­­­­­­­­­ = 5.5 ~ 6

Other formula include;

$C\_{8}H\_{9}$ – 2-Phenylethyl

b). IMPORTANCE OF ORGANIC CHEMISTY

- They can be used a medicines to cure diseases.

- They are also used in the process of studying diseases.

- They are essential as they are present in food substances which consists of mainly carbon and oxygen.

- Organic substances are used as cleansing agent to clear impurities.

- They are used as sterilizing agents and disinfectants.

-Using different types of titration, chromatography techniques, and spectrophotometry, they are used as analytic agents to analyze drugs, pesticides and other chemical substances.

- They are used as valuables and means of income and exchange when they exist in diamond, graphite, petroleum etc.

- Some can be used in the process to prepare other molecules or compounds.

-Organic compounds are used as dies like indigo,

-They are also used in textile and clothing.

c).DIFFERENCES BETWEEN HOMOCYCLIC AND HETEROCYCLIC COMPOUNDS.

|  |  |  |
| --- | --- | --- |
|  | HOMOCYCLIC | HETEROCYCLIC |
| 1. | Homocyclic Compound ring contains only one types of atom. | Heterocyclic Compound ring contains at least two different types of atoms including carbon. |
| 2 | Homocyclic Compounds have 100% carbon atoms in their ring. | Heterocyclic Compounds have mainly carbon and, in addition, heteroatoms such as nitrogen, oxygen, and sulphur are found in their ring. |
| 3 | They are subdivided into; Alicyclic homocyclic and Aromatic homocyclic | Alicyclic heterocyclic and Aromatic heterocyclic |
|  | Phenol, Toluene, Naphthalene, and Anthracene | Tetrahydrofuran, Piperidine, Pyridine, Furan, and Pyrrole |

2.

b)A- aldehydes

 B- alkenes.

c) aldehydes and ketones

d)List 7 functional groups of organic compounds giving two examples of each group?

|  |  |  |
| --- | --- | --- |
| Functional Group | General Formula | Examples |
| Alkanoic Acid  | R-COOH  | $CH\_{3}COOH $– Ethanoic Acid$C\_{3}H\_{7}COOH-$ Butanoic Acid |
| Alkanol  | R-OH | $CH\_{3}OH- $Methanol$C\_{2}H\_{5}OH- $Ethanol |
| Alkyl-Halide | RX(**X** includes the halides such as Fluorine, Chlorine, and Bromine etc.) | $CH\_{3}Cl-$Chloromethane$C\_{3}H\_{7}Br- $Bromopropane |
| Alkanal | R-COH | $CH\_{3}COH- $Ethanal$C\_{2}H\_{5}COH- $Propanal |
| Esters | R$-COÒ\acute{R}$ | $C\_{2}H\_{5}COOCH\_{3 }– $Methylpropanoate$C\_{3}H\_{7}COOC\_{2}H\_{5 }–$ Ethylbutanoate |
| Ketones/Alkanones  | R$-C=O\acute{R}$ | $CH\_{3}COCH\_{3 }–$ Propan-2-one $CH\_{2}OCH-\_{ }$Ethanone |
| Amides  | $$R-CONH\_{2}$$ | $CH\_{3}CONH\_{2}$ – Acetamide$ C\_{2}H\_{5}CONH\_{2}- $Propanamide |