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DEPARTMENT: NURSING

COLLEGE: MEDICINE AND HEALTH SCIENCE

MATRIC NO.

1. Suggest possible formulas for molecular formula ion (m/z) of 105.

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

91/12 = 7.5 C7NH?

Sep3- add enough H’s to make up the rest of the made

7×12=84

1×14=14

105-(84+14)=7

7H’S gives C7NH7

(2n+2-7)/2= 2(7.5)+2-7/2 =5.25

Step4- add an O atom

C7NH9→C6N0H3

(2(6.5) + 2−3)/2=5.5 ~6.

1. Importance Of Hydrocarbons

* Organic compounds form stable bonds to other carbon atoms- (catenation).
* They are important because all living organisms (redundant) contain carbon. The three basic molecules of life are carbohydrates, fats and proteins which contains carbon as well.
* Organic compounds are important because they create energy production in biological life, depletion of the atmosphere and releases energy from hydrocarbons.
* Organic compounds are compose of hydrogen, oxygen and carbon atoms and are found in all life forms. A type of organic compound called the nucleotide forms the amino acids and the DN A.
* Hydrocarbons are organic compounds that are made up entirely of hydrogen and carbon. Most of the hydrocarbons found on earth occur naturally in crude oil, where the decomposed organic matter provides an abundance of coal and hydrogen, which when joined, can be chained to form unlimited chains.
* Hydrocarbons being an organic compound can be used as a source of fuel. In their solid form, they can take the form of asphalt.

1. Differentiate between homocyclic and heterocyclic compounds

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| HOMOCYCLIC COMPOUNDS | HETEROCYCLIC COMPOUNDS |
| Ring contains atom of the same elements | Ring contains atom of different elements |
| Contains atoms of the same element bonded to each other forming a ring | Contains atom of at least two different elements bonded to each other forming a ring |
| Homocyclic compounds are cyclic compounds having atom of the same element as ring members | Heterocyclic compounds are cyclic compounds having atoms of different  Elements as ring members including carbon |
| Examples includes benzene, Toulene, cyclohexanol, cyclohexane etc. | Examples includes pyran, Azocine, Thiocane etc. |

QUESTIION 2

1. If the distance of the solvent front is 12.2cm. 2,4cm, 5.6cm and 8.9cm are the distance of the different bands respectivel. Calculate the retardation factor of the available bands.

Solution

Retardation factor = Distance of band/distance of solvent front.

R.f of the first band = 2.4/12.2= 0.19=~ 0.2.

R.f of the second band= 5.6/12.2= 0.45=~ 0.5.

R.f of the third band= 8.9/12.2= 0.729=~ 0.73.

2. Two organic compound were labeled A and B. A gave a positive result test (dark grey precipitate) to Tollens test and B decolorizes bromine water. Suggest the family to which these organic compounds belong.

Solution

A- belongs to the family of the aldehyde, aromatic aldehyde and alpha hydroxyl ketone functional groups

B- belongs to the alkene or alkyne family.

2,4 Dinitrophenylhydraxine test is employed for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Brandy’s test 2,4- Dinitrophenylhydrazine can be used to qualitatively detect the carbony functionality of a ketone or aldehyde functional group.

1. List seven (7) functional groups of organic compounds giving two examples each

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| --- | --- | --- |
| ORGANIC COMPOUNDS | FUNCTIONAL GROUPS | EXAMPLES |
| 1. Alkanes | RH | CH4- methane  C2H6- propane |
| 1. Alkenes | RC=CR’ | CH2=CH2- ethane  CH2=CH2- propene |
| 1. Alkynes | RC≡CR | HC≡ CH- acetylene  CH3 C ≡ CH HC≡ CH-pr  Opyne |
| 1. Alcohols | ROH | CH3OH- methanol  C2H5OH- ethanol |
| 1. Alkyl halides | RX | CHCL3- chloroform  CH2CL2- dichloromethane |
| 1. Aldehyde | RCHO | CH3CHO- ethanol  CH2O- methanol |
| 1. Carboxylic i   Acid | RCOOH | CH3COOH- ethanoic acid  HCOOH- formic acid |