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17/MHS01/294

CHEM102 ASSIGNMENT

QUESTION 1

1. If m/z 105 contains 1 nitrogen atom

105 - 14 = 91

Number of carbon atoms in m/z 105; 91/12 = 7 remainder 7

Possible formula 1 = C7H7N

Following nitrogen rule when nitrogen atoms for molecular ions is odd

If m/z 105 contains 3 nitrogen atoms; 105-3\*14 = 63

Number of carbon atoms: 63/12 = 5 remainder 3

Possible formula 2 = C5H3N3

B. The importance of organic compounds are:

 (i) Organic compounds are important in producing fuels examples are coal, wood, natural gas, petrol etc.

 (ii) Organic compounds are important in making medicines such as penicillin, streptomycin, Chloromycetin, sulphadiazine, morphine, aspirin, iodoform, cocaine etc.

 (iii) Organic compounds are important in making explosives such as nitoglycerine, nitrocellulose, T.N.B, T.N.T etc

 (iv) Organic compounds are important in producing dyes such as indigo, malachite green, alizarin etc.

 (v) Organic compounds are important in making insecticides. For example D.D.T, Gammexane, Malathon etc.

C. Homocyclic compounds are molecules that are or contain ring structures or consist only of carbon atoms within the ring. An example is benzene

While;

Heterocyclic compounds are the cyclic compounds in which the rings contain at least two different types of atom including the carbon atom. An example is tetrahydrofuran.

QUESTION 2

1. distance of solvent front = 12.2cm

Retardation factor = distance moved by band / distance moved by solvent front

1. retardation factor = 2.4cm/12.2cm

 = 0.197

1. retardation factor =5.6cm/12.2cm

 = 0.459

1. retardation factor = 8.9cm/12.2cm

 = 0.729

1. The family of organic compound A is Aldehydes or Ketones

The family of organic compound B is Alkane

C. 2, 4 Dinitrophenylhydrazine test is employed for Aldehydes and Ketones.

D. Seven functional groups and examples are:

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| Functional group | Examples |
| 1. Alkane
 | Methane(CH4), Ethane(C2H6) |
| 1. Alkene
 | Ethene(C2H4), Propene(C3H6) |
| 1. Alkanol, Alcohol
 | Ethanol(C2H5OH), Propanol(C3H7OH) |
| 1. Alkanoic acid
 | Pentanoic acid(C4H9COOH), Butanoic acid(C3H7COOH) |
| 1. Alkyne
 | Propyne(C3H4), Butyne( C4H6) |
| 1. Alkyl halides
 | Methyl bromide(CH3Br), Ethyl chloride(C2H5Cl) |
| 1. Amine
 | Methyl amine(CH3NH2), Propyl amine(C3H7NH2) |