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Medicine and Health Sciences

Medicine and Surgery

1a) The mass total is 105 which is an odd number. Therefore, at least 1 nitrogen atom is present. So subtracting 14 from 105 leaves 91 as the mass from carbon and hydrogen.91/127 remainder 77 carbon atoms 7 Hydrogen atoms 1 nitrogen atom.

Therefore, C7H7N is the possible molecular formula.

Assuming oxygen is present with the nitrogen n we now have the masses of the nitrogen and the oxygen and subtract from 105. That leaves us with 75.Divide by 12 75/12 and we have 6 remainder 3.

Therefore another possible formula will be C6H30N.

Assuming 2 Nitrogen atoms are present we now have to subtract 28 from 105 leaving us with 77. Divide by 12 and we have 6 remainder 5. So therefore another formula can be C6H5N2

1b) Importance of organic compounds:

Organic compounds are used in making sterilizing agents such as phenol and formaldehyde

Organic compounds are also used as cleansing agents in industries as well as laboratories

Organic compounds such as alkane members are used as fuels for automobiles, gas cookers, home heating and cooking fuels

Organic compounds are also used for pharmaceutical purposes, Aspirin a common and of of the oldest commercial drugs contains carboxylic acid.

Organic compounds are used in beverage industry, for example ethanol

Plastics are made through polymerization of organic compounds

Soaps and detergents are made from organic compounds

1c) Homocyclic compounds are cyclic compounds in which all the ring atoms are the same, the annular atoms are all carbon, take the compound benzene for instance. While heterocyclic compounds are cyclic compounds in which the rings include at least one atom of an element different from the rest, including a carbon atom, for example oxazoline.

There are also homocyclic and heterocyclic inorganic compounds.

2a) i) For the band of distance 2.4cm, Retardation factor = distance moved by substance(band) / distance moved by solvent = 2.4cm / 12.2cm = 0.1967

ii) For the band of distance 5.6cm, Retardation factor = distance moved by substance(band) / distance moved by solvent = 5.6cm / 12.2cm = 0.4590

iii) For the band of distance 8.9cm, Retardation factor = distance moved by substance(band) / distance moved by solvent = 8.9cm / 12.2cm = 0.7295

2b) Compound A belongs to the Aldehyde family. Compound B belongs to the alkene family

2c) 2,4-dinitrophenylhydrazine test is employed for ketones and aldehydes

2d) Alcohol(R-OH)- ethanol, butanol

ketone- butanone, propanone

aldehyde- ethanal, propanal

carboxylic acid(RCOOH)- ethanoic acid, butanoic acid

akylhalides(R-X)- chlorobenzene, bromobutane

Esters(RCOOR) - Ethylbutanoate and Propylpentanoate

Amines(R-NH2) – dimethylamine and propanamine