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17/eng05/028

Mechatronics Engineering

Q1a. Mass contains at least 1 nitrogen. Therefore,

105-14=91

No. Of carbons= 91/12= 7.5

~carbon atoms =7

Formula=C7NHm

M= 105-(12×7+1×14)=7

~first formula=C7NH7

IHD= 2(7.5)+2-7/2=5

Therefore, formula=C7NH7 and IHD=5

Adding Oxygen, O=16; 105-(16+14)=75

No. Of carbons =75/12=6.25.

Formula=C6NOHm

M=105-(12×6+14×6)=3

2nd formula= C6NOH3

IHD=2 (6.25)+2-3/2=5.75

Therefore, formula=C6NOH3 and IHD=5.75

b. Importance

It is used for medicine

To diagnose disease

For food production

Serves as a cleaning agent

Used as sterilizing agents

It is present in valuables

Pathophysiology of diseases.

c. HOMOCYCLIC compounds have atoms of the same elements while HETEROCYCLIC compounds have different elements as ring members including carbon atoms.

Q2a. Retardation Factor: distance moved by band A/distance moved by solvent front.

1. 2.4cm/12.2cm= 0.197
2. 5.6cm/12.2cm= 0.459
3. 8.9cm/12.2cm= 0.730

b. Compound A is aldehyde and Compound B is alkene

c. 2,4,-DNPH test is used for aldehyde and ketones

d. Alkanes- methane and butane

 Alkenes- pentene and ethene

 Alkynes- butyne and pentyne

 Alcohol- ethanol and methanol

 Aldehyde- propanal and ethanal

Alkanoate- butanoic acid and propanoic acid

Esters- methyl propanoate and methyl butanoate