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**17/MHS01/119**

**Medicine and Surgery**

**Medical and Health Sciences**

**7th April, 2018**

QUESTION 1

1. Molecular Ion= m/z

Formula mass=105

C=12.0107 g/mol

H=1.00794 g/mol

O=15.999 g/mol

N=14.0067 g/mol

1. C2H3NO4

 = (2\*12.0107) + (3\*1.00794) + 14.0067 +(4\*15.999)

 =105.05 g/mol

1. C5H3N3

 = (5\*12.0107) + (3\*1.00794) + (3\*14.0067)

 =105.1 g/mol

1. C3H7NO3

= (3\*12.0107) + (7\*1.00794) + 14.0067 + (3\*15.999)

 =105.093 g/mol

1. C7H5O

 = (7\*12.0107) + (5\*1.00794) + 15.999

 =105.166 g/mol

1. IMPORTANCE OF ORGANIC CHEMISTRY
2. As sterilizing agents.
3. As analytical substances.
4. Used in medicine for the production of drugs.
5. It makes up certain valuables like diamonds, graphite’s, etc.
6. They can make up food substances like the carbon in sugars.
7. DIFFERENCES BETWEEN HOMOCYCLIC AND HETEROCYCLIC COMPOUNDS

|  |  |  |
| --- | --- | --- |
|  | HOMOCYCLIC COMPOUNDS | HETEROCYCLIC COMPOUNDS |
| 1. | Ring contains the atoms of the same element | Ring contains atoms of different elements including oxygen, nitrogen, sulphur, etc |
| 2. | They contain the same elements | They contain two or more different elements including carbon atoms |

QUESTION 2

1. Retardation factor = Distance travelled by substance

 Distance travelled by solvent

Given Solvent Front= 12.2cm

Band A= 2.4cm

Band B= 5.6cm

Band C= 8.9cm

Retardation Factor for Band A = 2.4 =0.196

 12.2

Retardation Factor for Band B = 5.6 =0.459

 12.2

Retardation Factor for Band C = 8.9 =0.73

 12.2

1. Tollen’s test gives a positive test for aldehydes, thus A is an aldehyde.

Bromination/ bromine water test gives a positive test for unsaturated compounds. Thus, B is an unsaturated compound, either alkene or alkyne

1. 2,4-DINITROPHENYLHYDRAZINE TEST is employed to qualitatively test or detect for the carbon functionality of a ketone or aldehyde group.
2. FUNCTIONAL GROUPS
3. Alkanol/ ROH - Butanol, Ethanol
4. Ethers/ ROR’ - Methoxyethane, Ethoxyethane
5. Alkyl halides/ RX - Methyl chloride, Ethyl fluoride
6. Alkanoic/ Carboxylic Acids/RCOOH - Propanoic Acid, Butanoic Acid
7. Alkanals/ Aldehydes/ RCHO - Propanal, Pentanal
8. Alkanoates/Esters/RCOOR’ – Butyl butanoate, Ethyl propanoate
9. Alkanones/Ketones/RCOOR - 2-Hexanone, 2-Pentanone