### NAME: NASIR-AMEEN NASIR

### MATRIC NUMBER: 17/ENG02/045

### DEPARTMENT: COMPUTER ENGINEERING

### 

**CHM 102 ASSIGNMENT**

**QUESTION 1**

a.) The possible formula for the molecular ion of 105 are:

M/Z= 105

105/12=8.75

The possible formula to expect are:

i) C7H7N

ii) C6H3NO

for odd numbered hydrogen, Nitrogen is present.

b.) Importance of Organic compounds

i) The food that we eat is essentially a mixture of organic compounds, hence, Organic compounds are used in food production

ii) They are used in the production of Clothes; Cotton, Wool, Silk, Nylon, Rayon etc

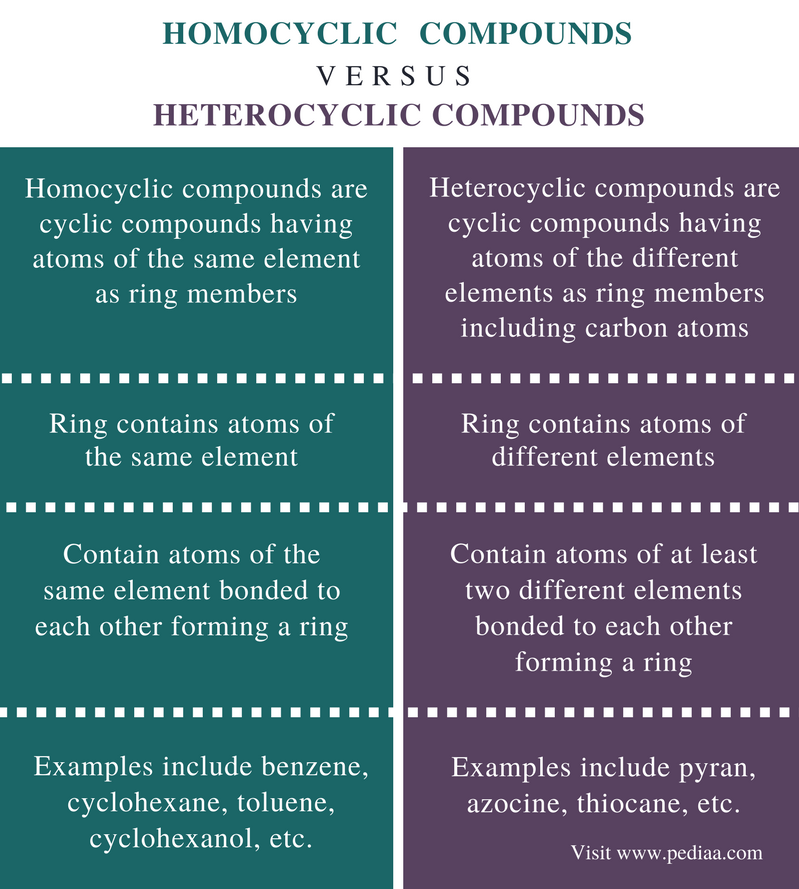
iii) Organic compounds are good sources of fuels; Coal, Wood, Natural gas, Petrol etc

iv) They are also used in the production of medicines; Penicillin, Aspirins, Iodoform, and so on

v) They are used in producing explosives; Nitroglycerin, Nitrocellulose, T.N.B, T.N.T etc

vi) They are used in making dyes.

vii) Organic compounds are used in making Cosmetics, Perfumes, Detergents, Paints and Varnishes.

c.) Difference between Homocyclic and Heterocyclic compounds

**QUESTION 2**

a.) Retardation factor, Rf = Distance moved by the bands / Distance moved by the solvent front

Distance moved by the solvent front = 12.2cm

Distance moved by the first band = 2.4cm

Therefore, Rf = 2.4cm /12.2cm = 0.2

Distance moved by solvent front = 12.2cm

Distance moved by second band = 5.6cm

Therefore, Rf = 5.6cm /12.2cm = 0.46

Distance moved by the solvent front = 12.2cm

Distance moved by the third band = 8.9cm

Therefore, Rf = 8.9cm /12.2cm = 0.73

b.) **A** belongs to **Aldehydes** since only aldehydes give positive test (dark grey precipitate) to Tollens test.

**B** belongs to **Alkene** since Alkenes decolorize bromine water

c.) 2,4-dinitrophenyl hydrazine is employed for **the identification and characterization of Aldehydes and Ketones**

d.)

|  |  |
| --- | --- |
| FUNCTIONAL GROUP  -OH(Hydroxyl)  -COOH(Carboxyl)  -CHO(Aldehyde)  -COO(Carboxylate)  -ONO2 (Nitrate)  -NH2(Amine)  -CO(Carbonyl) | EXAMPLES  C2H5OH; Ethanol  H3NO;Hyrdoxylamine  CH3COOH; Ethanoic acid  HCOOH; Methanoic Acid  C4H9CHO; Pentanal  CH3CH2C2CHO; Butanal  CH3COOC2H5; Ethyl Acetate  CH3CH(OH)COO−; Lactate Ion  CH3(CH2)4ONO2;1-nitrooxypentane  GaNO9**;**Gallium(III)nitrate  C2H5NH2; Ethyl amine  CH3NH2; Methylamine  C3H7F; Fluoropropane  CH3COCH3; Propanone |