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### MATRIC NUMBER: 17/ENG02/045

### DEPARTMENT: COMPUTER ENGINEERING

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 **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.)

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| FUNCTIONAL GROUP-OH(Hydroxyl)-COOH(Carboxyl)-CHO(Aldehyde)-COO(Carboxylate)-ONO2 (Nitrate)-NH2(Amine)-CO(Carbonyl) | EXAMPLESC2H5OH; EthanolH3NO;HyrdoxylamineCH3COOH; Ethanoic acidHCOOH; Methanoic AcidC4H9CHO; PentanalCH3CH2C2CHO; ButanalCH3COOC2H5; Ethyl AcetateCH3CH(OH)COO−; Lactate IonCH3(CH2)4ONO2;1-nitrooxypentane GaNO9**;**Gallium(III)nitrateC2H5NH2; Ethyl amineCH3NH2; MethylamineC3H7F; FluoropropaneCH3COCH3; Propanone |