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17/ENG02/028
CHM 102

1b) Importance of organic compound
i. Production of food e.g Carbohydrates sugar
ii. Production of clothes e.g Nylon
iii. Production of Medicine/drugs e.g penicillin
iv. Production of Insecticides
v. Production of dye
vi. Production of Explosives
vii. Production of Fuel
viii. Production of household and other common articles e.g soap

1c) Homocyclic Compound :- These are compounds which consists of atoms belonging to the same element prefix with the ring of a cyclic compound
Heterocyclic Compound :- These are compounds which consists of atoms of both carbon and any other element present

1a) Fragment at m/z = 105
If the mass of the molecular ion is odd it contains at least one nitrogen n = 14 atoms
105 - 14 = 91
Determine max nc's
91/12 = 7.5 C_7HN?
Add enough H's to make up the rest of the mass
7 x 12 = 84
1 x 14 = 14
105 - (84 + 14) = 7
7H's gives C_7NH_7
Add an O atom
$C_7NH_9 \rightarrow C_6H_3NO$
$\frac{(2(6.5)) + (2-3)}{2} = 5.5 \sim 6$

C_8H_9 - 2-Phenylethyl
C_7H_7N - Azocine
C_6H_3NO - Pyran 3-Carbonitrile

2a.) Retardation factor (Rf) = $\frac{\text{Distance moved by Band}}{\text{Distance moved by solvent front}}$

Distance 2.4cm $R_f = \frac{2.4}{12.2} = 0.197 \sim 0.20$

Distance 5.6cm $R_f = \frac{5.6}{12.2} = 0.459 \sim 0.50$

Distance 8.9cm $R_f = \frac{8.9}{12.2} = 0.729 \sim 0.73$

2b.) Compound A - Aldehydes, ketones and Terminal Alkynes
Compound B - Unsaturated compound i.e Alkene

2c.) 2,4 Dinitrophenylhydrazine test is employed for identification of aldehydes and ketones

2d.) Functional groups and examples :-

i.) Alkanoic Acid - CH_3COOH Ethanoic Acid
- C_3H_7COOH Butanoic Acid

ii.) Alkanol - CH_3OH Methanol
- C_2H_5OH Ethanol

iii.) Alkyl-Halide - CH_3Cl Chloromethane
- C_3H_7Br Bromopropane

iv.) Alkanal - CH_3COH Ethanal
- C_2H_5COH Propanal

v.) Esters - C_2H_5COOCH Methylpropanoate
- $C_3H_7COOC_2H_5$ Ethylbutanoate

vi.) Ketones/Alkanones - CH_3COCH_3 Propan-2-one
- CH_2OCH Ethane

vii.) ~~Ethers~~ Amides - CH_3CONH_2 Acetanide
- $C_2H_5CONH_2$ Propanamide