

GENERAL CHEMISTRY II
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 DEPT.: MECHANICAL ENGINEERING  
 COURSE CODE: CHM102  
 TITLE: CHEMISTRY ASSIGNMENT  
 MATRIC NO: 17/ENGO6/075

QUESTION 1

A) Possible formula of molecular ion(M/Z) of 105

- I.  $C_7NH_7$
- II.  $C_6NOH_3$

B) Importance of organic compounds

- i. FOOD - Carbohydrate, Proteins, Fats, Vitamins, Enzymes etc.
- ii. CLOTHES - Cotton, Silk, Wool, Nylon, Rayon, Dacron, etc.
- iii. FUELS - Coal, Wood, Natural gas, Petrol, etc.
- iv. MEDICINES - Penicillin, Streptomycin, Chloromycetin, Sulphadiazine, Morphine, Aspirin, Iodoform, Cocaine, etc.
- v. EXPLOSIVES - Nitroglycerine, Nitrocellulose, T.N.B, T.N.T, etc.
- vi. DYES - Indigo, Malachite green, Alizarin, etc.
- vii. INSECTICIDES - D.D.T, Gammexane, Malathion, etc.
- viii. Household and other common articles - Soaps, Perfumes, Cosmetics, Leather, Rubber, Paints, Inks, Photographic films, Paper, Detergents, etc.

C) HOMOCYCLIC COMPOUNDS	HETEROCYCLIC COMPOUNDS
a) They are cyclic compounds having atoms of the same element as ring number	They are cyclic compounds having atoms of different elements as ring members including carbon atoms
b) Ring contains atoms of the same elements	Ring contains atoms of different elements
c) Contains atoms of the same element bonded to each other forming a ring	Contains atoms of at least two different elements bonded to each other forming a ring
d) Examples include benzene, cyclohexane, cyclohexanol, toluene, etc.	Examples include pyran, azocine, thiocane, etc.

## QUESTION 2

A) Bands distance = 2.4cm, 5.6cm, 8.9cm  
Solvent front distance = 12.2cm

Retardation factor ( $R_F$ ) =  $\frac{\text{distance moved by band}}{\text{Distance moved solvent front}}$

$$R_{F1} = \frac{2.4\text{cm}}{12.2\text{cm}}$$

$$R_{F1} = 0.2$$

$$R_{F2} = \frac{5.6\text{cm}}{12.2\text{cm}}$$

$$R_{F2} = 0.5$$

$$R_{F3} = \frac{8.9\text{cm}}{12.2\text{cm}}$$

$$R_{F3} = 0.7$$

B) Organic compound A = Aldehydes  
Organic compound B = Alkene

C) Aldehydes and Ketones

D)

- I. Alkane - methane, propane
- II. Alkene - butene, pentene
- III. Amine - methylamine, ethylamine
- IV. Aldehyde - ethanal, propanal
- V. Alkyne - butyne, ethyne
- VI. Alkanol - butanol, ethanol
- VII. Ester - methyl ethanoate, ethyl ethanoate
- VIII. Alkanoic - ethanoic acid, butanoic acid
- IX. Amide - ethanamide, butanamide
- X. Ether - methoxymethane, ethoxyethane