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DEPARTMENT: MECHANICAL ENGINEERING

CHEMISTRY ASSIGNMENT

1 a. A possible formula for a molecular ion (m/z) of 105 is C6NOH3

1. Organic compounds are important because all living organisms (redundant) contain carbon. The three basic macromolecules of life are carbohydrates (CH20), Fats(lipids)(CHO) and Proteins(CHON). These two bonding patterns make carbon one of the most versatile elements for molecular construction.
2. Cyclic compounds in chemistry are molecules having atoms bonded to each other forming a ring structure. In order to form a ring, there should be at least three atoms bonded to each other. If the ring only consists of carbon atoms, then it is an organic cyclic molecule. If none of the atoms in the ring are carbon atoms, they are inorganic compounds. If the atoms present in the ring belong to the same element, they are called homocyclic compounds. But if there are both carbon and other atoms present in the ring, they are known as heterocyclic compounds.

2 a. Retardation factor is given by the ratio of the distance travelled to the center of a spot to the distance travelled by the solvent front.

1. 2.4cm / 12.2cm = 0.19cm
2. 5.6cm / 12.2cm = 0.46cm
3. 8.9cm / 12.2cm = 0.72cm

b. Organic compound A belongs to the alkanal or aldehyde organic family while Organic compound B belongs to the alkene or alkyne organic group.

c. The 2,4 dinitrophenylhydrazine test is used to test for carbonyl groups associated with aldehydes and ketones.

1. ALCOHOLS: ETHANOL, METHANOL.

2. ALKENES: ETHENE, PENTENE.

3. ALKANES: ETHANE, METHANE.

4. ALKYNES: ETHYNE, PROPYNE.

5. ALDEHYDE: FORMALDEHYDE, ACETALDEHYDE.

6. KETONES: ACETONE, BENZOPHENONE.

7. CARBOXYLIC ACIDS: ETHANOIC ACID, METHANOIC ACID.