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**QUESTION1.**

1. **Step 1**: if the mass of the molecular ion is odd then at least it contains one N

N=14 amu 105-14=91

**Step2**: Determine the maximum number of carbon

91/12=7.5

C7NH

**Step3**: add enough H’s to make up the rest of the mass

C7NH

7\*12=84 7H’s gives C7NH7

1\*14=14 (2(7.5)+2-7)/2=5

105-(84+14)=7

**Step4**: add an O atom

**C7NH7=** C6NOH3

(2(6.5)+2-3)/2=6

1. Organic compounds are important because all living organisms (redundant) contain carbon. The three basic macromolecules of life are Carbohydrates (CH2O), Fats (lipids) (CHO) and Proteins (CHON).  **Organic compounds**Are important because they serve as the basis of all carbon-based life on Earth, an element that all living organisms contain. Organic compounds also create energy production in biological life, depletion of the atmosphere and release energy from hydrocarbons. Organic compounds are composed of hydrogen, oxygen and carbon atoms and are found in all life forms. Organic compounds are used to produce house and other materials.
2. Homocyclic compounds are molecules that contain ring structures that consist only of carbon atoms within the ring. An example is benzene. Benzene is a homocyclic compound of six carbon atoms bounded together in a hexagonal ring, with one hydrogen atom bounded to each of six carbons. While heterocyclic compounds are rings containing at least one non-carbon atom in the ring. An example is heterocyclic amines which are six member rings of five carbon and one nitrogen atom.

**QUESTION2.**

1. RF=distance moved by solvent/distance moved by solute

Distance moved by solvent=12.2

Distance moved by solute A=2.4

Distance moved by solute B=5.6

Distance moved by solute C=8.9

RFA=12.2/2.4=5.08

RFB=12.2/5.6=2.18

RFC=12.2/8.9=1.37

1. Compound A belongs to aldehydes functional group while compound B belongs to alkene functional group.
2. It is the chemical compound C6H3(NO2)2NHNH2. Dinitrophenylhydrazine is a red to orange solid. It is a substituted hydrazine, and is often used to qualitatively test for carbonyl groups associated with aldehydes and ketones.
3. 1. Alkyl halides(F,Br,I, Cl)-methyl chloride, ethyl fluoride

2. Aldehydes/ alkanals(-COH)-methanal, butanal

3. Alkanols/ alcohols (-CH)- ethanol, butanol

4. Esters (RCOX )- methyl butanoate, propyl ethanoate

5. Ketones (-C=O) - acetone, ketoses

6. Amines (RCONH2 )- amino methane, amino propane

7. Amides (RNH2)- methanamide, ethanamide