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**Matric No.: 17/SCI14/011**

**College: Sciences**

**Department: Geology**

**Course Code: CHM102 (Assignment)**

**1a)** **Formula 1**

M = 105

2

105 (to find the number of carbon)

 2

Solution

If the mass of the molecular ion is an odd number, it contains Nitrogen

 Mass no. of N = 14

 105 – 14 = 91

To determine the no. of carbon atom, we divide by 12

 91

 12 = 7.5

It means the no. of carbon atom is 7

C7N + enough of atom to compete

 12 x 7 + 14 = 98

 105 – 98 = 7

So, the compound is C7NH7

IHS = 2(7) + 2 – 7

 2 = 5

**Formula 2**

 Add an atom of oxygen

C7NH7 = C6NOH3

105 – 16 = 89

 89 – 14 = 75

 Divide by 12

 75

 12 = 6.25

 C6NOH3 = 2(6) + 2 – 3

 2 =5

**1b)** Importance of organic compounds are;

1. They are compounds of hydrogen, oxygen and carbon and are found in all life form.
2. They deplete the ozone layer and cause smog.
3. They serve as the basic for all carbon-based on earth.
4. Carbohydrate provides life forms with the energy needed to maintain cellular function.
5. Crude fuel is refined in gasoline, propane, diesel, kerosene and natural gas as cars and heating systems can work.

**1c)**

|  |  |
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| **Homocyclic** | **Heterocyclic** |
| 1. They have atom of the same element as ring member.
 | They have atom of different element as ring member. |
| 1. Ring contains only atom of the same element.
 | Ring contains atom of different element. |
| 1. They have 100% of carbon atom in their ring.
 | They have mainly carbon atom and atoms such as N, O, S, found in the ring. |

**2a)** Rf = distance moved by substance

 distance moved by font

 Rf = 2.4 + 5.6 + 8.9

 12.2

 Rf = 16.9

 12.2

 Rf= 1.39

**2b)** A belongs to Aldehyde group.

 B belongs to either Alkene or Alkyne group.

**2c)** 2, 4 Dinitrophenylhydrazine test is employed for checking or detecting the carboxyl functionality of a ketone or aldehyde functional family.

**2d)**

1. Alkane; C4H10 (Butane) , C6H14 (Hexane)
2. Alkene; C3H6 (Propene) , C5H10 (Pentene)
3. Alkyne; C7H12 (Heptyne) , C8H14 (Octyne)
4. Aldehyde; CH3CH2CH2CH(CHO) (Pentanol) , CH3CH2(CHO) (Ethanol)
5. Alkanol; CH3CH2CH(OH)CH3 (Butanol) , CH3CH(OH)CH3 (Propanol)
6. Ether; CH3CH(O)CH2CH3 (Ethenobutane) , CH3CH(o)CH3 (Ethenopropane)
7. Amines; CH3CH2CH2CH(NH2)CH3 (Aminopentane) , CH3CH(NH2)CH3 (Aminopropane)