Name: Adekanye Itunu Oluwadara

Department: Medicine and Surgery

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Question 1

1. Molecular ion =105

According to the rule of 13;

105/13 = 8 R 1

n = 8, r = 1

Using CnHn +r = C8H9

Possible formulas = C7H7N, C4HN4, C6H9N2, C6H3NO, C7H7N

1.
2. Organic compounds have versatile bonding patterns and are part of all organisms.
3. The clothing industry uses organic compounds to produce materials like cotton, silk, nylon etc.
4. Organic compounds are used to produce explosives such as nitro glycerine, nitrocellulose etc.
5. Organic compounds makeup a large portion of the human diet and are found in all food consumed by individuals.
6. Organic compounds are used to produce household and other common materials such as detergents, cosmetics, plastics, leather etc.
7.

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| --- | --- |
| HOMOCYCLIC COMPOUNDS | HETEROCYCLIC COMPOUNDS |
| They have only 100% carbon atoms in their ring. | They have mainly carbon and in addition, heteroatoms found in their ring. |
| Their ring contains only one type of atom. | Their ring contains at least two different types of atoms, including carbon. |
| Their sub-divisions include: Alicyclic Homocyclic and Aromatic Homocyclic | Their sub divisions include: Alicyclic Heterocyclic and Aromatic Heterocyclic. |

Question 2

1. Retardation factor = distance moved by substance(cm)

 Distance moved by solvent front (cm)

Solution Distance moved by solvent= 12.2cm

A) 2.4(cm) B) 5.6(cm) C) 8.9(cm)

 12.2(cm) = 0.197 12.2(cm) = 0.459 12.2(cm) =0.730

B. Organic compound A is in the ketone family

 Organic compound B is in the alkene family

C. 2, 4-Dinitrophenylhydrazine test is employed for identification of aldehyde and ketone

D.

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| Functional group | Examples |
| -OH | Butane, 1,2,3-propan-tri-ol |
| - | Ethane, Butane |
| -COH | Ethanol, Butanol |
| -NH2 | Methylamine, phenyl amine |
| -CL, -F | 2-chloropentane, 3,3-trichloro butane |
| -COOH | Benzoic acid, ethanedioc acid |
| R | Butyl, Ethyl |