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Department: Nursing Science

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**Question 1**

The mass total is 105 indicating the presence of at least 1 nitrogen atom because 105 is an odd number. Therefore, the subtraction of 14 from 05 gives 91 as the mass of both the carbon and the hydrogen. That is,

=91/12=7, 7= carbon atoms, 7= nitrogen atoms, 1=hydrogen atom

Therefore, the possible molecular formula could be given as **C7H7N**

B. Importance of Organic compounds are as follows:

1. Used in the production of fuels e.g. wood, natural gas, petrol etc.
2. Used in the production of food e.g. proteins, enzymes, carbohydrates etc.
3. Used in the production of our clothes e.g. wool, cotton, nylon, rayon etc.
4. Used in the production of medicine e.g. Penicillin etc.
5. Used in the production of dyes e.g. indigo, alizarin etc.
6. Used in the production of common household items e.g. detergents, paper, cosmetics, rubber, paints, perfumes etc.

**Differences between homocyclic and heterocyclic compounds**

|  |  |
| --- | --- |
| **Homocyclic compounds** | **Heterocyclic compounds** |
| These are compounds which are composed of only one type of element as a member of its rings | These are compounds which are composed of at least 2 different elements as members of its rings |
| Contains only Carbon atoms. | Contains other atoms in addition to Carbon. |
| Homocyclic compounds can further be divided into acyclic and aromatic homocyclic compounds | Heterocyclic compounds can be further divided into acyclic and aromatic heterocyclic compounds. |
| Examples include Benzene | Examples include: Furan, Diazine, Nucleic acids, Aziridine. |

**Question 2**

Rf=*migration distance of band*

*Migration distance of solvent front*

-Migration distance of solvent front= 12.2cm

-Migration distance of band A=2.4cm, B=5.6cm, C=8.9cm

Rf of band A= =0.197

R*f*  of band B = = 0.459

R*f*  of brand C = = 0.730

B. It is seen that substance A gives a positive result by producing a dark grey precipitate to Tollens test, therefore this indicates it is an aldehyde. While substance B decolourized bromine water which indicates that it is an unsaturated compound (alkene or alkyne).

C. This test can be used to detect an aldehyde and a ketone.

7 Functional Groups

1. Alkanols
2. Alkanoic / Carboxylic acids
3. Acid Halides
4. Amides
5. Esters
6. Alkanes
7. Alkynes