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**COLLEGE: MEDICINE AND HEALTH SCIENCES**

**DEPARTMENT: MEDICINE AND SURGERY**

**COURSE CODE: CHM 102**

**LEVEL: 100**

Question 1

1. Ethylbenzene(C8H9), Phenylmethanimine (C7H7N), Phenylmethanone (C7H5O), Pyran-3-Carbonitrile (C6H3NO)
2. Importance of organic compounds
3. In nucleic acid

Nucleic acids are essential biopolymers for all life forms (DNA is included in this category). They are composed of many elements but mainly coal and hydrogen, although there are also oxygen atoms in their sugars. Nucleic acids are the most important of all biomolecules. They are found in abundance in all living things, where their function is to create and encode, and then to store information in the nucleus of all living cells of all living organisms on Earth.

1. In Carbohydrates

A carbohydrate is a biological molecule consisting of carbon, hydrogen and oxygen. In biochemistry, the term is synonymous with a group of elements that may include sugars, celluloses and starch. Carbohydrates play important roles in living organisms. Polysaccharides serve to store energy and as structural components in plants and arthropods, for example; a type of saccharide is important I the molecules that make up the DNA. I general, saccharides and their derivatives include many other important biomolecules that play primordial roles in the immune system, in fertilization, in blood clotting and in the prevention of pathogenesis.

In food science, the term carbohydrate can be used to define any food that is rich in complex carbohydrate starches such as cereals, pasta, bread or rich I simple carbohydrates such as cadies or sweets.

1. In metabolism

The three main purposes of metabolism are energy for cellular processes, energy/fuel conversion to build blocks for proteins, lipids, nucleic acids and some carbohydrates as well as the elimination of nitrogenous waste.

These reactions allow organisms to grow and reproduce, maintain their structures and respond to the environment. Metabolism is usually divided into two categories: catabolism, which is the decomposition of organic matter and the breakdown of glucose by cellular respiration and in anabolism, which is the construction of components of cells such as proteins and nucleic acids.

1. In proteins

One type of organic molecules that must be present in every human’s diet is protein. Proteins are composed of chains of organic molecules called amino acids . The human body uses a combination 20 different types of amino acids, arranged in specific sequences to make thousands of unique human proteins present in cells and tissues.

Protein is important in diet to provide a source of amino acids- protein is broken down inside the stomach and intestines and the amino acids that make up the diet protein are absorbed inside the body and are used to make their own proteins.

1. Hydrocarbons

Hydrocarbons are organic compounds that are made up entirely of hydrogen and carbon. There are many different types of hydrocarbons such as methane, ethane, propane, pentane and octane among others. Most of the hydrocarbons found on Earth occur naturally in crude oil, where the decomposed matter provides an abundance of coal and hydrogen, which when joined can be chained to form unlimited chains. Hydrocarbons are the primary source of energy for most civilizations today. The prominent use of hydrocarbons is as a source of fuel. In their solid form, hydrocarbons can take the form of asphalt. The use of hydrocarbons is also prevalent in nature. Some arthropods such as the Brazilian Bee, use particular hydrocarbon smells to differentiate members of their family .

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| Homocyclic  | Heterocyclic |
| Homocyclic compounds are cyclic compounds of elements having atoms of the same elements as ring members | Heterocyclic compounds are cyclic compounds having atoms of different elements as ring members including carbon atoms |
| Homocyclic compounds have 100% carbon atoms in their ring  | Heterocyclic compounds have mainly carbon, in addition, heteroatoms such as nitrogen, oxygen and sulphur are found in their ring  |
| They are divided into alicyclic homocyclic and aromatic homocyclic  | They are divided into alicyclic heterocyclic and aromatic heteroicyclic |
| Homocyclic compound ring contains only one type atom | Heterocyclic compound ring contains at least two different types of atoms including carbon  |
| Examples are phenol, toluene, naphthalene and anthracene | Examples are terahydrofuran, piperidine, p;yridene, furan and pyrrole  |

1.

Questiuon 2

1. Distance of solvent front = 12.2cm

 Distance of band A = 2.4 cm

 Distance of band B = 5.6 cm

 Distance of band C = 8.9 cm

Retardation factor (Rf) of A = $\frac{Distance moved by band A}{Distance moved by solvent front}$

 = $\frac{2.4cm}{12.2cm}$

 = 0.1967

Retardation factor (Rf) of B = $\frac{Distance moved by band B}{Distance moved by solvent front}$

 = $\frac{5.6cm}{12.2cm}$

 = 0.4590

Retardation factor (Rf) of C = $\frac{Distance moved by band C}{Distance moved by solvent front}$

 = $\frac{8.9 cm}{12.2cm}$

 = 0.7295

1. Organic compound A which gave a positive test to Tollens test belongs to the Aldehyde

Organic compound B which decolourizes bromine water belongs to the Alkenes

1. 2,4-Dinitrophenylhydrazine is used to test for Aldehyde and Ketones
2. i) Carboxylic acids (-COOH)

Examples

Butanoic acid

Propanoic acid

ii.) Alkanoate (-COOR)

Examples

 Sodium ethanoate

 Sodium propanoate

iii.) Alkanols (-OH)

Examples

3–methyl pentan-2-ol

1,2,3-propentriol

iv.) Haloalkane (-Cl, - Br)

Examples

1- Bromo Butane

Chloro Ethane

v.) Aldehydes (-CHO)

Examples

Propanal

Ethanal

vi.) Alkene (C = C)

Examples

Pentene

Butene

vii.) Ethers (-OR)

Examples

Ethoxyethane

Methoxyethane