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**MATRIC NO; 17/MHS02/037**

**COURSE CODE; CHEM 102**

1.A

B**. The Importance of organic compounds**

* Organic compounds are released into the atmosphere deplete ozone layers and cause smog.
* Organic compounds create energy production in biological life.
* It also serves as the basis of all carbon based life on earth, an element that all living organisms contain.
* Carbohydrates, an organic compound give life forms the energy needed to maintain cellular functions.
* They can be used for sterilizing various objects e.g. phenol, formaldehyde due to their properties like solubility.
* It can also be used as cleansing agents for example in the extraction of drugs from plants, the fatty matter from the pulp is removed using petroleum ether.

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| **HOMOCYCLIC COMPOUNDS** | **HETEROCYCLIC COMPOUNDS** |
| These are cyclic compounds having atoms of the same element as ring members. | These are cyclic compounds having atoms of different elements as ring members, including carbon atoms . |
| Ring contains atom of the same element . | Ring contains atoms of different element. |
| It contains atoms of the same element bonded to each other forming a ring e.g. benzene, cyclohexane, toluene, cyclohexanol etc. | It contains atoms of at least two different elements bonded to each other forming a ring. e.g. pyridine, piperidine, pyrrole, etc. |
| They are sub-divided into alicyclic homocyclic and aromatic homocyclic. | They are sub-divided into alicyclic heterocyclic and aromatic heterocyclic. |

2. A. Rf = $\frac{distance moved by a the substance}{distance moved by the solvent front}$

 RFa = $\frac{2.4cm}{12.2cm}=0.1967≅0.20$

 RFb =$ \frac{5.6cm}{12.2cm} =0.459≅0.50$

 RFc = $\frac{8.9cm}{12.2cm} =0.729≅0.73$

 B. Organic compounds A which gave a positive test result to Tollen test belongs to the ALDEHYDE family.

 ii. Organic compounds B which decolorizes Bromine water belongs to the ALKENE family.

 C. 2,4- Dinitrophenyl hydrazine test is employed for Ketones and Aldehydes.

 D. Functional groups of organic compounds and their examples are as follows;

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| FUNCTIONAL GROUPS  | EXAMPLES |
| Alkanol / Alcohols (-OH) | Ethanol, propanol. |
| Alkanone / Ketones (-C=O) | Hexanone, Pentanone |
| Alkyl halides / Halo alkanes (-F, -Cl, -Br, -I) | 2- Iodopropane, 1, 2 -dichloroethane |
| Ethers (-OR) | Diethyl ether, methoxyethane( methyl ethyl ether) |
| Aldehydes / Alkanals (-COH) | Methanal, Propanal |
| Amines (-NH2) | Diphenylamine, Trimethylamine |
| Carboxylic acid / Alkanoic acid | Pentanoic acid, Propanoic acid |