AZEMATA · IZEMINASI · FARIDAT

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MEDICAL LABORATORY SCIENCE

MEDICINE & HEALTH SCIENCE

QUESTION 1

a) Given (M/z) = 105

Maximum carbon atom = 105/12 = 8.75 ≈ 9.

Since the mass per charge ratio is odd it is possible for a nitrogen to be present in the compound.

$C_xH_yN$ then taking the carbon atoms to be 7

$H = 105 - (84 + 14)$

$= 7$

Compound 1 → $C_7H_7O$

$IHD = (2 \times 7) + 2 - 7 + 1/2$

$= 5$

Removing 4 atoms of hydrogen and one atom of oxygen

$C_8H_3NO$

$IHD = (2 \times 7) + 2 - 3 + 1/2$

$= 7$

b) Organic compounds are important because all living organisms contain carbon.

c)

| Homocyclic compounds | Heterocyclic compounds |
|---|---|
| - They contain only one type of atom including itself | They contain at least different type of atom |

2a) Distance moved by substance / distance moved by solvent points $= \frac{2.4}{12.0} = 0.20$

ii) Distance moved by substance / distance moved by solvent points $= \frac{7.6}{12.2} = 0.5$

iii) Distance moved by substance / distance moved by solvent points $= \frac{8.7}{12.2} \approx 0.7$

b) A: Aldehyde (alkanal)

VISTALINE

B : unsaturated hydrocarbon

C : Aldehydes & ketones

3 RX - Alkyl halides → $CH_3Cl$, $CH_3CH_2Br$

RCOOR — Ester → $CH_3CH_2COOCH_3$, $CH_3CH_2CH_2COOCH_3$

ROH — Alkanol → $CH_3OH$, $CH_3CH_2OH$

RCHO — Alkanal → $CH_3CHO$, $CH_3CH_2CHO$

RCOOH — Alkanoic acid → $CH_3COOH$, $CH_3CH_2COOH$

$R-CONH_2$ - Amides → $CH_3CONH_2$, $CH_3CH_2CONH_2$

R - CO - Acetones → $CH_3CO$, $CH_3CH_2CO$

RCOX — Acidic halides → $CH_3COCl$, $CH_3CH_2OBr$

$RCONH_2$ — Amides → $CH_3CONH_2$, $CH_3CH_2CONH_2$