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Pharmacology

Medicine and Health Science

Question 1

1a  $M_w (m/z) = 105$

$$\text{Maximum carbon atom} = 105/12 = 8.75 \approx 9$$

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

(with N) then taking the carbon atoms to be 7

$$H = 105 - (84 + 14)$$

$$= 7$$

Compound 1  $\rightarrow C_7H_7N$

$$IND = (2 \times 7) + 2 - 7 + \frac{1}{2}$$

$$= 5$$

Removing 4 atoms of hydrogen and one atom of oxygen



$$IND = (2 \times 7) + 2 - 3 + \frac{1}{2}$$

$$= 7$$

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

c) Homocyclic compounds  
- they contain only one type of atom including itself

Heterocyclic compounds  
they contain at least different types of atom

2a  $\frac{\text{Distance moved by substance}}{\text{distance moved by solvent point}} = \frac{2.4}{12.2} \approx 0.20$

a  $\frac{\text{Distance moved by substance}}{\text{distance moved by solvent points}} = \frac{5.6}{12.2} = 0.5$

iii  $\frac{\text{Distance moved by substance}}{\text{distance moved by solvent points}} = \frac{8.9}{12.2} = 0.7$

6 A: Aldehyde (Alkanal)

B: Unsaturated hydrocarbon

C: Aldehydes & ketones

8 Rx - Alkyl halides  $\rightarrow$   $\text{CH}_3\text{Cl}$ ,  $\text{CH}_3\text{CH}_2\text{Br}$

R<sub>2</sub>COOR - Ester  $\rightarrow$   $\text{CH}_3\text{CH}_2\text{COOCH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOCH}_3$

ROH - Alkanol  $\rightarrow$   $\text{CH}_3\text{OH}$ ,  $\text{CH}_3\text{CH}_2\text{OH}$

RCHO - Alkanal  $\rightarrow$   $\text{CH}_3\text{CHO}$ ,  $\text{CH}_3\text{CH}_2\text{CHO}$

RCOOH - Alkanol. acid  $\rightarrow$   $\text{CH}_3\text{COOH}$ ,  $\text{CH}_3\text{CH}_2\text{COOH}$

R-NH<sub>2</sub> - Amides  $\rightarrow$   $\text{CH}_3\text{NH}_2$ ,  $\text{CH}_3\text{CH}_2\text{NH}_2$

R-CO - Acetones  $\rightarrow$   $\text{CH}_3\text{CO}$ ,  $\text{CH}_3\text{CH}_2\text{CO}$

RCOX - Acid halides  $\rightarrow$   $\text{CH}_3\text{COCl}$ ,  $\text{CH}_3\text{CH}_2\text{COBr}$

RCO<sub>2</sub>NH<sub>2</sub> - Amides  $\rightarrow$   $\text{CH}_3\text{CONH}_2$ ,  $\text{CH}_3\text{CH}_2\text{CONH}_2$