

QUESTION 1

71 Given  $(M/z) = 105$

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

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

$C_xH_yN$  then taking the carbon atoms to be 7

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

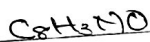
$$= 7$$

Compound 1  $\rightarrow C_7H_7O$

$$IND = (2 \times 7) + 0 - 7 + 1/e$$

$$= 5$$

Removing 4 atoms of hydrogen and one atom of oxygen



$$IND = (2 \times 7) + 0 - 3 + 1/e$$

$$= 7$$

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

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

2a Distance moved by substance =  $\frac{2.4}{12.0} = 0.20$

Distance moved by solvent points

ii Distance moved by substance =  $\frac{2.6}{12.0} = 0.5$

Distance moved by solvent points

iii Distance moved by substance =  $\frac{8.9}{12.0} = 0.7$

Distance moved by solvent points

b A: Aldehydes (alkanal)

B: unsaturated hydrocarbon

C: Aldehydes & ketones

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

$\text{RCOOR}$  - Ester  $\rightarrow$   $\text{CH}_3\text{CH}_2\text{COOCH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOCH}_3$

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

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

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

$\text{R-NH}_2$  - Amides  $\rightarrow$   $\text{CH}_3\text{NH}_2$ ,  $\text{CH}_3\text{CH}_2\text{NH}_2$

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

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

$\text{RCO NH}_2$  - Amides  $\rightarrow$   $\text{CH}_3\text{CONH}_2$ ,  $\text{CH}_3\text{CH}_2\text{CONH}_2$