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MATRIC NUMBER: 17/ENG06/037

DEPARTMENT: MECHANICAL ENGINEERING

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CHM 102

Question 1

1a) Given (M/Z) = 105

Maximum carbon atom = 105/12 =8.75 = 9 approximately

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

CxHYN then taking the carbon atoms to be 7

H = 105-(84+14)

=7

Compound 1 –C7H7N

IND – (2x7) +2-7+1/2 = 5

Removing 4 atoms of hydrogen add one atom of oxygen

C6H3NO

IND – (2x7)+2-3+1/2 = ­7

1b) organic compounds are important because all living organisms contain carbon. Their importances include:

1. The decomposition of carbon life forms returning to the soil and are been generated in new plants
2. The three macro molecules are the basic structures of life and they all contain carbon

1c) Homocyclic compounds Heterocyclic commpounds

They contain only one type of atom They contain at least different type of atom including

Carbon itself

Question 2

2a) = =0.20

ii) ==0.5

iii) = = 0.7

b) A: Aldehyde (alkanal)

B: Unsaturated hydrocarbon

c) Aldehydes and Ketones

3) Rx – Alkyl halides- CH3CL, CH3CH2Br

RCOOR – Esther – CH3CH2COOCH3, CH3CH2CH2COOCH3

ROH – Alkanols - CH3OH, CH3CH2OH

RCHO – Alkanals – CH3CHO, CH3CH2CHO

RCOOH – Alkanoic acid – CH3COOH, CH3CH2COOH

R- NH2 – Amides –CH3NH2, CH3CH2NH2

R – CO – Acetones –CH3CO, CH3CH2CO

RCOX – Acidic halides - CH3COCL, CH3CH2OBr

RCONH2 – Amides – CH3CONH2, CH3CH2CONH2