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Level: 100 Level  
Course title: General chemistry 2  
Course Code:Chm 102  
Department:Mbbs  
Matric No:17/Mhs01/159 Answers*  
1.)a.)The possible formulas for a molecular ion (m/z) of 105 are as follows:   
 Step 1-If the mass of the molecular ion is odd it contains at least one N.  
 N=14amu 105-14=91  
 Step 2-determine max no. of C’s  
 91/12=7.5 C7NH?  
 Step 3-add enough H’s to make up the rest of the mass.  
 C7NH? 7H’s gives C7NH7.using the formula  
 IHD=2N+2-M  
 2  
7\*12=84  
1\*14=14 (2(7.5)+2-7)/2=5  
105-(84+14)=7  
Step 4-Add an O atom  
C7NH7>>C6NOH3(2(6.5)+2-3)/2=6  
1.)b.)The following are the importances of organic compounds;which include:  
 i.) Production of explosives.  
 ii.)Production of dyes,cosmetics,perfumes,etc.  
 iii.)Generation of energy from coal and petroleum products.  
 iv.)Production of paper,soap and detergents.  
 v.)Production of synthetic fibres like terylene as substitute from natural fibres.  
1.)c.) The differences between homocyclic and heterocyclic compounds include:

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| *Homocyclic compounds* | *Heterocyclic compounds* |
| i.)The ring of homocyclic compounds are made up of carbon atoms only. | i.)The ring of heterocyclic compounds is made up of more than one kind of atoms. |
| ii.)Examples include; cyclohexane,cyclohexanol,toluene,benzene,etc. | ii.)Examples include; thiocane,pyran,azocine,etc. |

2.) The retardation factor of the available bands=?  
 Retardation factor=(distance moved by solute)/(distance moved by solvent)  
 RfA=  
 RfA=0.1967  
 RfB=0.4590  
 RfC=  
 RfC=0.7295  
 Therefore,A and B are more attracted to the mobile phase than C.  
 2.)b.) The organic compound labelled A uses tollens test to give a positive test result belongs to the Aldehyde family.  
 The organic compound labelled B which decolourizes bromine water belongs to the Alkene family.  
 2.)c.) 2,4-Dinitrophenylhydrazine test is employed for qualitatively test for carbonyl groups associated with aldehydes and ketones.  
 2.)d.)

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| *Functional group* | *Examples* |
| i.)Ethers | Butylbromide,Methyl chloride |
| ii.)Esters | Ethyl propanoate,ethyl ethanoate |
| iii.)Alkyl halides | Butyl bromide,Methyl chloride |
| iv.)Ketones | Diphenyl methanone,2-butanone |
| v.)Alkanols | Ethanol,methanol |
| vi.)Aldehydes | Propanol,Butanal |
| vii.)Alkanoic acid | Ethanoic acid,methanoic acid |