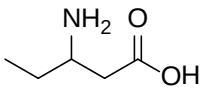
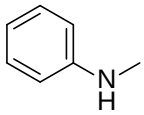
Christmas present 2012 Answers

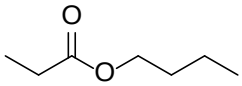
Problem1.



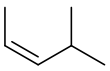
3-aminopentanoic acid



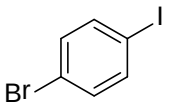
N-methyl aniline



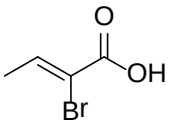
butyl propanoate



cis-4-methyl-2-pentene



p-bromoiodobenzene



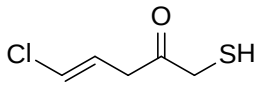
Z-2-bromo-2-butenoic acid

Problem 2.

a) Indicates halogen
b) indicates sulphur in the sample
c) shows Cl
d) either aldehyde or ketone
e) either triple, double bond or activated benzene ring'
f) Knowing the presence of Cl, S and C=O this leaves 150.5-95.5 = 55 which is C_4H_7 giving a formula C_5H_7ClOS. This means DBE = 2'5 +2 -7 -1/2 = 2.

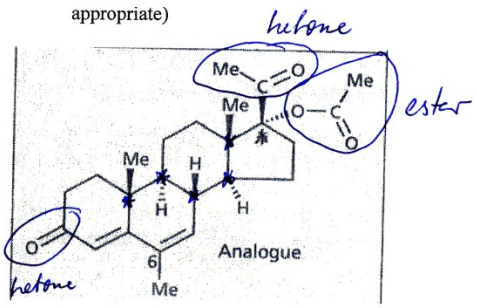
One DBE is going into C=O leaving one as a double bond (not ring) as we can add Br_2.

One out of many suggestions could be



1-mercapto-5-chloro-penta-4-en-2-one

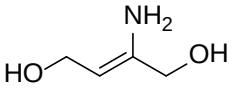
Problem 3.

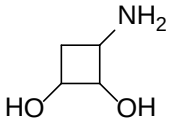


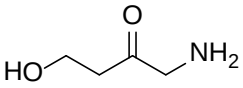
b) Identify the centres of chirality if any are present
c) How many stereoisomers are possible?

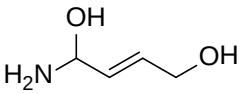
$2^6 = 64$

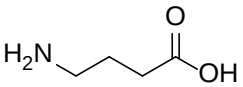
Problem 4.

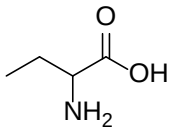


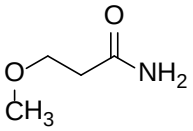


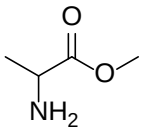






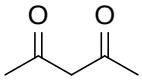


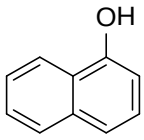




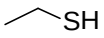
a) Amine, and alcohol, Z
b) cyclic
c) Amine, alcohol and ketone
d) Trans
e) Carboxylic acid and amine
f) Amino acid
g) Ether and amide
h) Ester and amine

Problem 5.

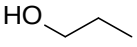




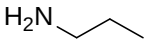
Problem 6.



a)



b)



c)