AROMATICS WORKSHEET

1. Try to draw the pi clouds of benzene in a way that shows the top and bottom.

2. Draw and name all the different isomers of

i) dichlorobenzene. Name these using the old and new versions.

ii) trichlorobenzene

iii) tetrachlorobenzene

3. Draw the mechanism for the reaction of Cl2 and methylbenzene to give 1-chloro-2-methylbenzene. Include an appropriate catalyst.

4. Another electrophilic aromatic substitution is sulfonation by “fuming” sulphuric acid (which contains SO3). Write down the mechanism according to the following description:



Step 1: sulphuric acid protonates an O of SO3; this activates the sulphur to be electrophilic and also produces hydrogen sulphate

Step 2: the sulphur serves as the electrophilic atom to make the intermediate

Step 3: the hydrogen sulphate abstracts the proton to leave behind -SO3H

5. Draw the product(s) of the following Freidel-Crafts reactions:

a) benzene + chloromethane in the presence of FeCl3.

b) benzene + 1-chlorobutane in the presence of FeCl3.

c) benzene + 2-chlorobutane in the presence of FeCl3.