Topic 18 – Aromatic Chemistry

* I can describe the nature of the bonding in a benzene ring, limited to planar structure, bond length intermediate between single and double and delocalisation of p electrons which makes benzene more stable than the theoretical molecule cyclohexa-1,3,5-triene
* I can use thermochemical evidence from enthalpies of hydrogenation to account for this extra stability
* I can explain that electrophilic attack on benzene rings results in substitution, limited to monosubstitutions, and why substitution reactions occur in preference to addition reactions
* I can outline the electrophilic substitution mechanism of nitration, including the generation of the nitronium ion, and I can describe nitration as an important step in synthesis, including the manufacture of explosives and formation of amines
* I can outline the electrophilic substitution mechanism of Friedel–Crafts acylation, using AlCl3 as a catalyst, and I can describe Friedel-Crafts acylation as an important step in synthesis
* I can describe the preparation of aromatic amines from the reduction of nitro compounds, and I can state that aromatic amines are used in the manufacture of dyes
* I can describe amines are weak bases and I can explain the difference in base strength between ammonia, primary aromatic amines and primary aliphatic amines in terms of the availability of the lone pair of electrons on the N atom