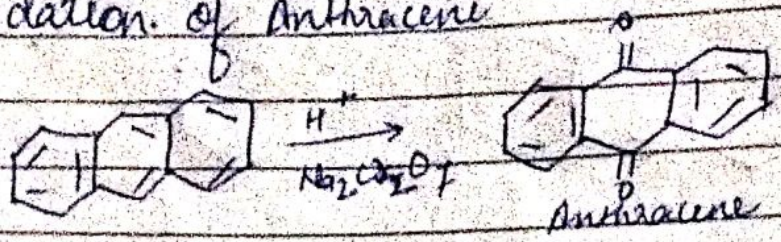
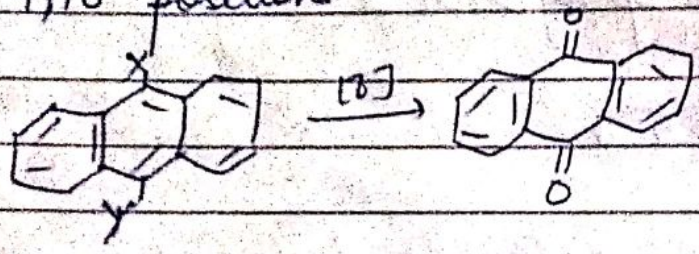
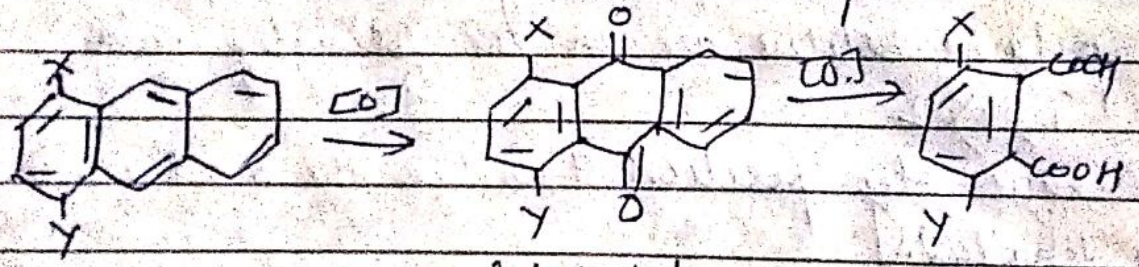
Oxidation of Anthracene



When a mono or disubstituted is oxidised with dichromate & Sulphuric acid an unsubstituted anthraquinone is generally obtained if the substituents were in 9,10 positions



If substituents were not in 9,10 positions



Substituted anthraquinone

On further oxidation phthalic acid or substituted phthalic acid is obtained.

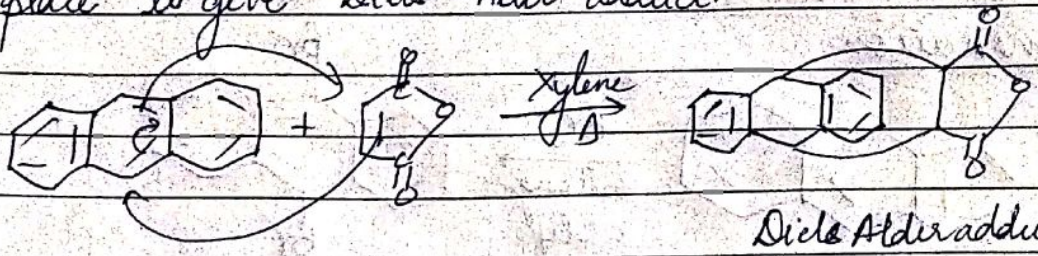
Properties of Anthracene :-

Anthracene is a colourless solid mp216 with blue fluorescence. It is insoluble in water and sparingly soluble in organic solvent. It is very reactive in the 9,10 positions

DATE

Diels Alder reaction:-

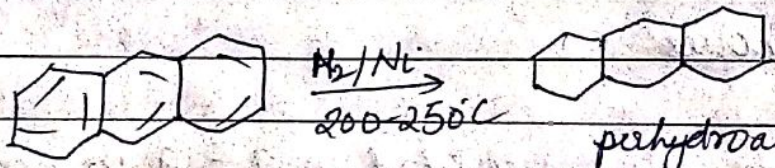
Anthracene undergoes diels alder reaction in 9,10 positions. Double bonds in 9,10 positions behave as diene so addition with dienophile like malice anhydride takes place to give Diels Alder adduct.



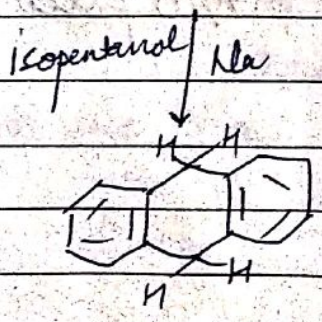
Diels Alder adduct

Catalytic Reduction:-

Reduction of anthracene using nickel at 200 - 250°C gives according to the amount of hydrogen used tetra, hexa, and octahydroanthracene and finally perhydro anthracene

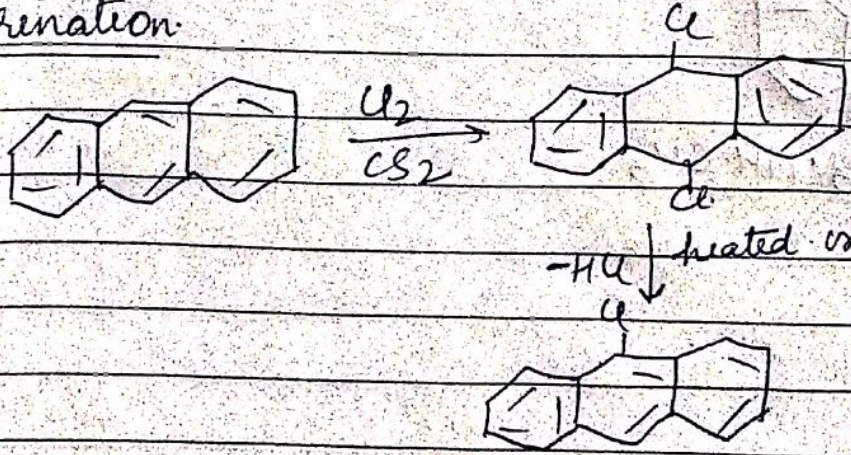


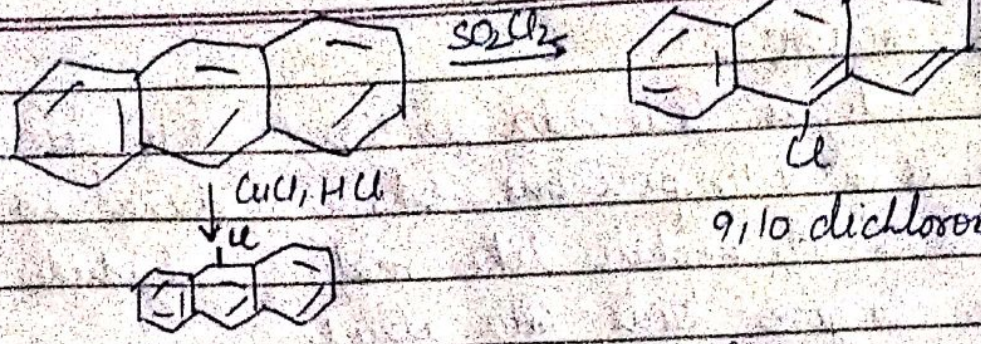
perhydroanthracene



9,10 dihydro anthracene

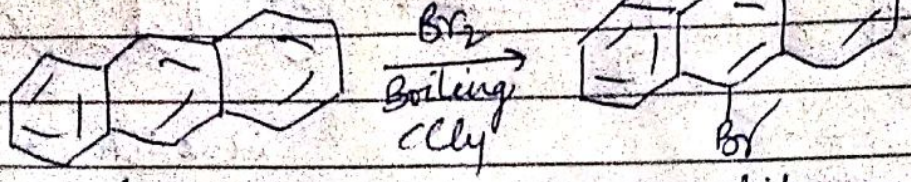
Chlorination



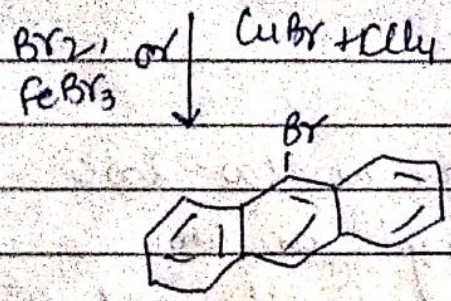


9,10 dichloroanthracene

Bromination

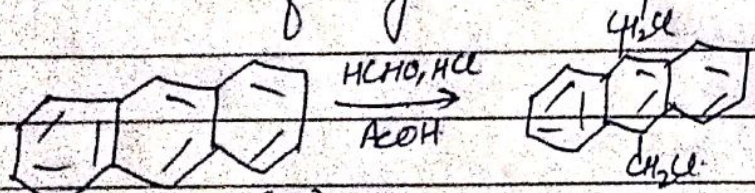


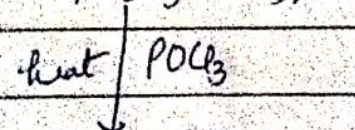
9,10 dibromoanthracene



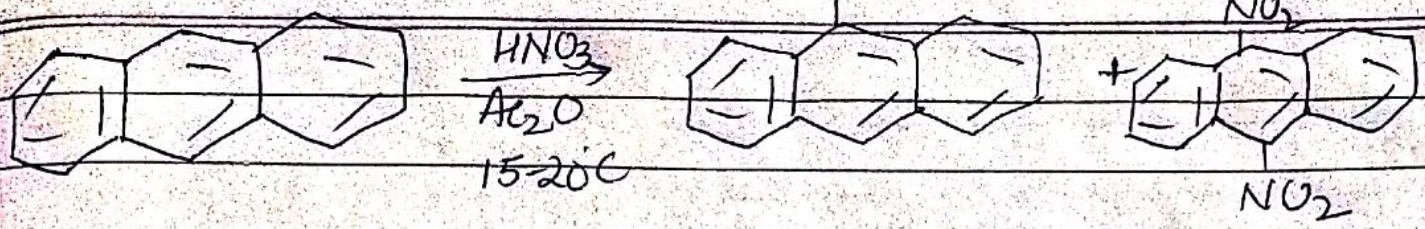
Oxidation of all these halogeno-anthracenes converts them into anthraquinones

Anthracene can be chloromethylated in 9 & 9,10 positions and can be formylated at 9 position

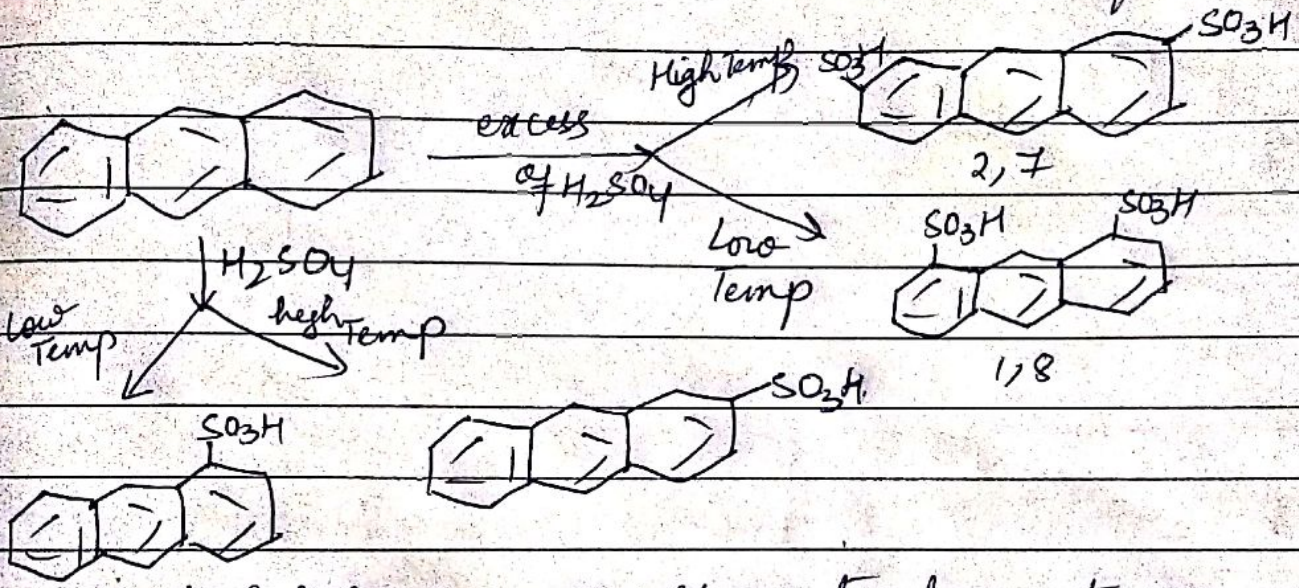




$+ C_6H_5 \cdot NH \cdot CH_3$



The usual nitrating mixture $HNO_3 + H_2SO_4$ is not used because it oxidises anthracene to anthraquinone.



The 1-Sulphonic acid show tendency to rearrange to 2-Sulphonic acid.

If Sulphonation of anthracene is carried out in glacial acetic acid, a mix of about equal amounts of 1 & 2 anthracene Sulphonic acid is obtained

The 1-Sulphonic acid shows no tendency to rearrange to the 2-acid.