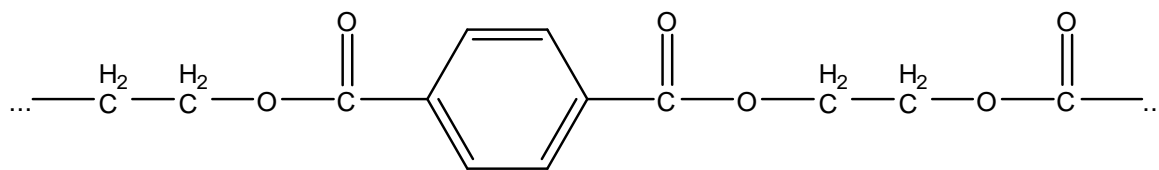


Question One- Terylene (Dacron) is a **polyester** and a **condensation polymer**, a section of which is shown below:

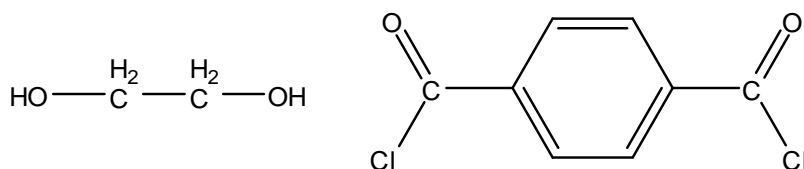


a) Explain the meaning of the words in bold

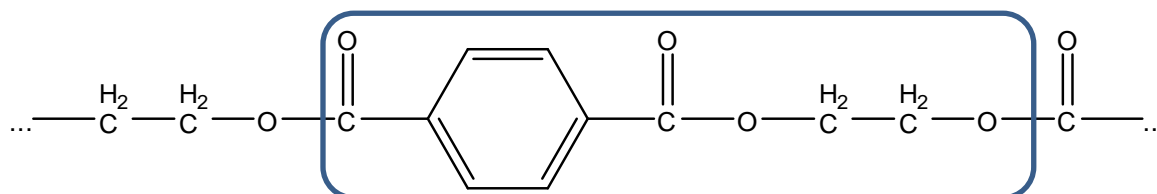
A Polymer is a long chained molecule that is formed by joining many small molecules (called monomers). When the monomers join together by a condensation reaction (two molecules join together by removing a small molecule (such as water)), the product is called condensation polymer.

Polyester is an example of condensation polymer. The monomer is joined by the reaction between carboxylic acid (or acylchloride) and alcohol forming a Ester functional group.

b) Draw the structural formulae of two monomers from which this polymer could be prepared.



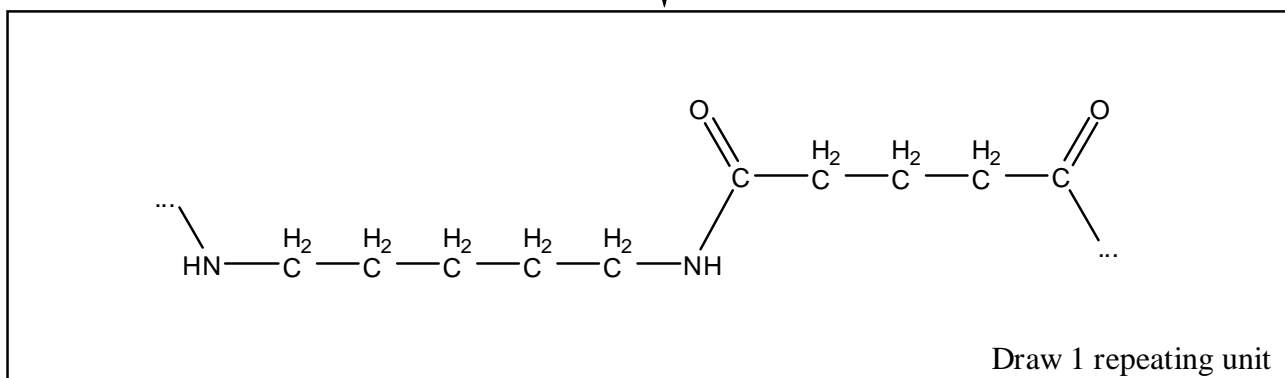
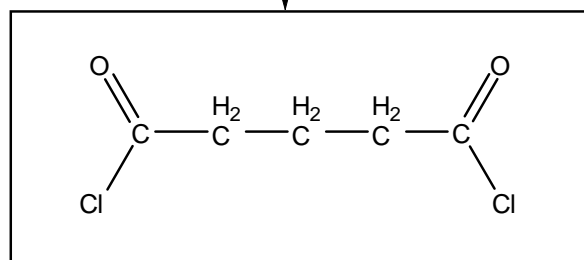
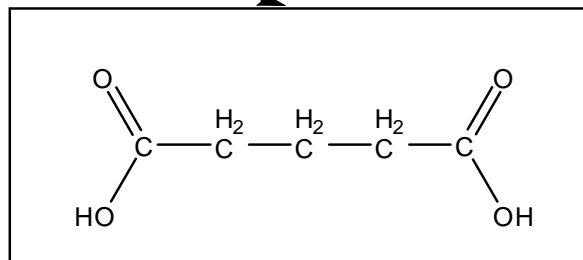
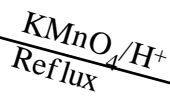
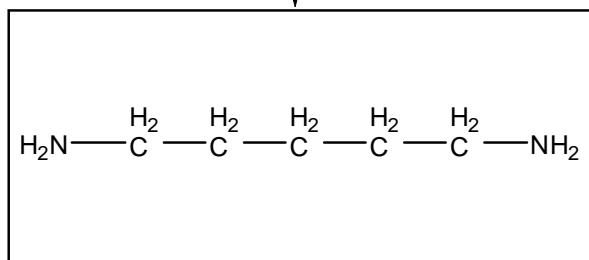
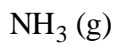
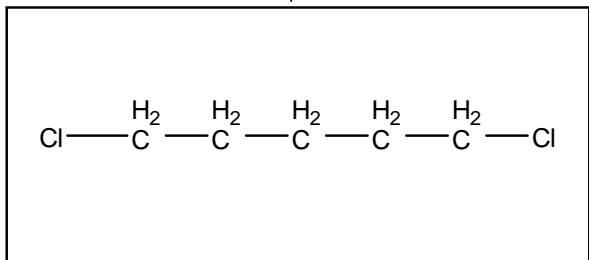
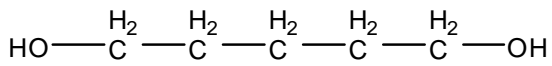
Question Two- Give the structures of the monomers used in the formation of "Terylene". State the type of polymerisation occurring in the preparation of terylene and give the repeating unit (circle on the diagram above) and give two methods for preparation of such polymer in the laboratory



This is condensation polymerisation.

If diacyl chloride is used, then mix the two reactants (as drawn above) together and the reaction should occur immediately. The reaction is violent, giving off toxic gas (HCl), therefore it should be conducted in fume hood.

If carboxylic acid is used (replace the diacylchloride with carboxylic acid), then a dehydrating agent (concentrated H_2SO_4) should be added and heat under reflux with constant stirring (otherwise it will end up VERY viscous).



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