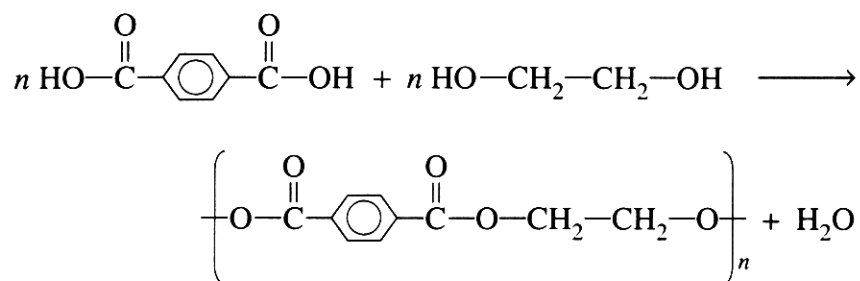


Question 18 (6 marks)

(a) Name the type of polymerisation shown in the following reaction:

1



.....Condensation polymerisation.....

(b) Assess current developments in the use of biopolymers.

5

The development of biopolymers is highly essential to reduce the use of non-renewable crude oil and to protect the environment (as biopolymers are biodegradable and environmentally friendly) however there has been stumbling blocks such as decomposing polymers such as cellulose and starch to glucose, which provides the building block for the formation of products obtained from crude oil. However there has been rapid momentum in developing propylene-like biopolymers called PHB (a type of PPHA) utilising microorganisms such as *Alcaligenes eutrophus* to synthesise the polymers in their bodies. This process is extremely valuable in providing biodegradability in products. Modern society needs, such as bottles, nappies and bags and so would provide wide-scale changes if used widely. Biopolymers such as cellulose (and its products such as cellulose nitrate, cellophane, paper and cardboard) are also used widely in everyday life and are valuable resources for humans. Current developments in the use of biopolymers stem from the development of new synthesis techniques which has allowed products used widely to be made environmentally friendly and able to be recycled, which have greatly increased use. Biopolymers such as nylon and polyester have allowed clothes and apparel to be produced on a world-wide scale too.