Polymerisation - 2023 A2 Chemistry 9701

1. Nov/2023/Paper_9701/42/No.8(a)

Lactic acid, $CH_3CH(OH)COOH$, is the only monomer needed to form the polymer polylactic acid, PLA.

(a) (i) Draw a short length of the PLA polymer chain, including a minimum of two monomer residues. The methyl groups may be written as $-CH_3$ but all other bonds should be shown fully displayed.

Label one repeat unit of polylactic acid on your diagram.

[2]

(ii) Give the name of the type of polymerisation involved in the formation of PLA and the name of the functional group that forms between the monomers.

type of polymerisation .....

functional group .....

[1]

(iii) Predict whether PLA is readily biodegradable. Explain your answer.

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..... [1]

2. June/2023/Paper_9701/41/No.6(c)

Compound **H** has the structural formula CH_2=CHCH(NH_2)COOH.

(c) Polymers consist of monomers joined together by undergoing either addition or condensation polymerisation.

Compound **H** can react to form an addition polymer, **K**, or a condensation polymer, **L**, depending on the conditions.

(i) Draw **one** repeat unit of addition polymer **K**.

[1]

(ii) Draw **two** repeat units of condensation polymer **L**.

The new functional group formed should be displayed.

[2]

(iii) Explain why condensation polymers can normally biodegrade more readily than addition polymers.

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..... [1]