Oxford Cambridge and RSA

GCSE Chemistry B (Twenty First Century Science)

J258/04 Depth in chemistry (Higher Tier)

Question Set 15

1. The repeating unit of some polymers has the structure shown in **Fig. 4.1**.

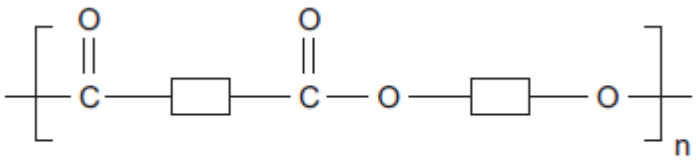

Fig. 4.1

(a) What is the name for this type of polymer?

Put a ring around the correct answer.

addition **polyamide** **polyamine** **polyester** **oxidised** **[1]**

(b) One repeating unit of the polymer can be broken down by a reaction with water into its monomers, **molecule A** and **molecule B**, as shown in **Fig. 4.2**.

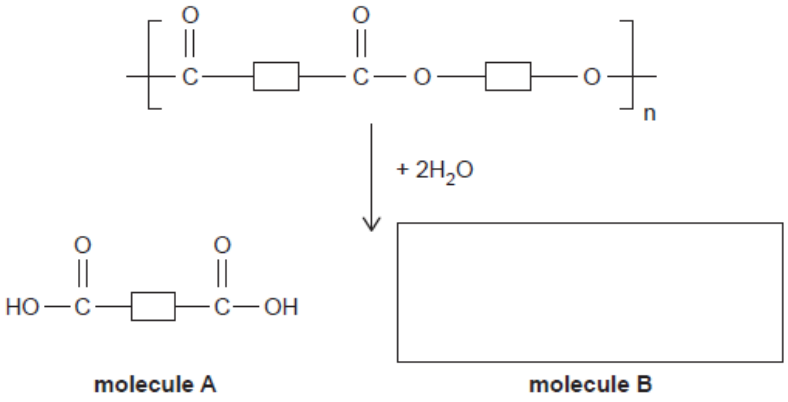

Fig. 4.2

(i) Complete the diagram in **Fig. 4.2** by drawing the structure of **molecule B**. **[1]**

(ii) The polymer was originally made by reacting monomers, **molecule A** and **molecule B**, together.

How is the reaction to make the polymer different from the reaction in **Fig. 4.2**?

Explain your answer. **[2]**

(iii) Explain why **molecule A** is called a **dicarboxylic acid**. **[2]**

(c) PET is a type of polymer used to make drinks bottles.

PET has the repeating unit shown in **Fig. 4.3**.

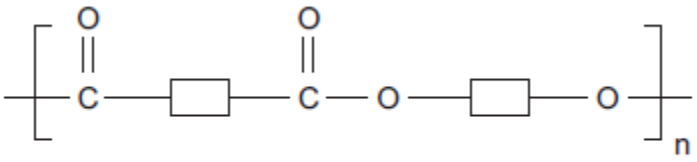

Fig. 4.3

In molecules of PET, ☐ represents C_2H_4.

The average relative formula mass of polymer molecules in a sample of PET is 55 000.

How many repeating units does each polymer molecule contain?

Give your answer to the **nearest whole number**.

Number of repeating units = ... **[2]**

Total Marks for Question Set 15: 8