



## Sample Answers – Mod 7 Polymer

Stage 6 Chemistry - Guided by 2019 NESA Sample examination question and responses

Our excursion at [St Marys Advanced Water Recycling Plant](#) applies some content from Module 7 in the NSW Stage 6 Chemistry syllabus. References to excursion experiences can help answer the following HSC exam questions.

### Mod 7 – Question 14 (7 marks)

Contrast ONE addition polymer and ONE condensation polymer in terms of their structures, properties and uses. Include structural formulae in your answers. 7

*Mapping grid:*

Content	Syllabus outcomes	Bands
Mod 7 Polymers	CH12–7, CH12–14	2–6

*Marking guidelines:*

Criteria	Marks
<ul style="list-style-type: none"><li>Shows differences between an addition and a condensation polymer in terms of their structures, properties and uses</li><li>Includes a structural formula for each</li></ul>	7
<ul style="list-style-type: none"><li>Shows differences between an addition and a condensation polymer in terms of their structures, properties and uses</li><li>Includes a structural formula</li></ul>	6
<ul style="list-style-type: none"><li>Shows differences between an addition and a condensation polymer in terms of at least two of these: structures, properties or uses</li></ul>	4–5
<ul style="list-style-type: none"><li>Outlines features of an addition and/or a condensation polymer</li></ul>	2–3
<ul style="list-style-type: none"><li>Identifies an addition or a condensation polymer</li></ul>	1

Source: NESA HSC Chemistry 2019 Additional sample examination questions p.63

### Content revision

Refresh your knowledge of the [St Marys Advanced Water Recycling Plant](#).

Try some of the supporting [High school](#) resources, content and activities.

Haven't been on excursion with us? Make a free [excursion request](#) online.

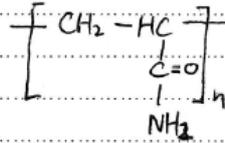
**Please note:** information provided in this document is from Sydney Water, STANSW information and NESA accredited sites.

Sample answer context - Stage 6 Chemistry Drinking Water excursion at St Marys Advanced Water Recycling Plant

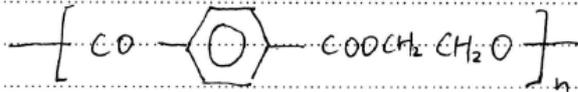
Identifies a polymer and includes a structure formula

1 mark each

Polyacrylamide is an addition polymer made by the addition of acrylamide monomers with the following structural formula.



- Polyester is a condensation polymer made from dicarboxylic acid and dihydric alcohol by splitting out water molecules with the following structural formula.



Outlines features of an addition and a condensation polymer

1 mark each

- Polyacrylamide is low cost, water soluble and water absorbent.
- There are two main types of polyacrylamide: linear chain polyacrylamide which is a highly viscous liquid used in the wastewater industry to enhance flocculation of suspended solids or to dewater solids; and cross-linked polyacrylamide is highly water absorbent and is used as a soil conditioner, in electrophoresis and in soft contact lenses.

- Polyester is strong, make excellent fibres and is used in many fabrics, and in plastic bottles. It is chemically resistant and long lasting which is used by the water industry in advanced water treatment. PET forms the supportive layer in reverse osmosis membranes used in desalination and water recycling.

Shows differences between an addition and a condensation polymer in terms of their structures, properties and uses

3 marks