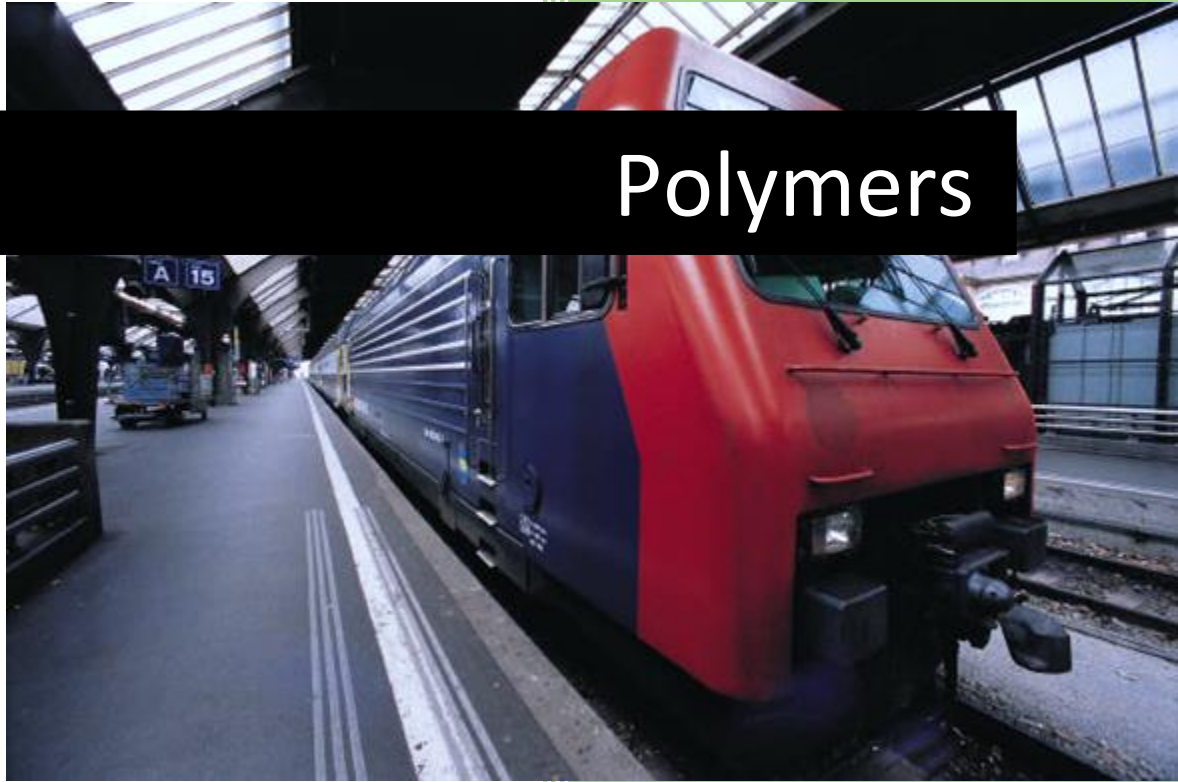


View the video before attempting the questions.

Year 11

Polymers

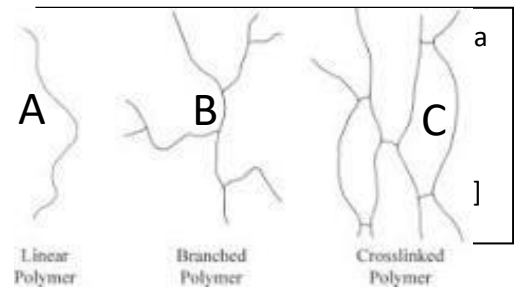


1. Consider the three polymer structures shown on the right.

a. Which of the three polymer structures :

- will not melt.
- has the highest viscosity in the liquid state.
- has the highest density in the liquid state.
- has the greatest structural strength.
- forms a plastic that is brittle and hard.
- is/are thermoplastic polymers

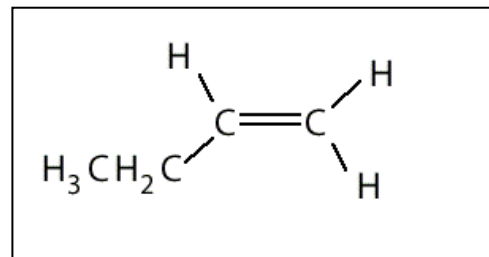
b. Justify your choices for question a. above



2. Consider the monomer shown below.

a. What type of polymerisation reaction will this monomer undergo?

b. Draw repeating unit of the polymer composed of three monomers.

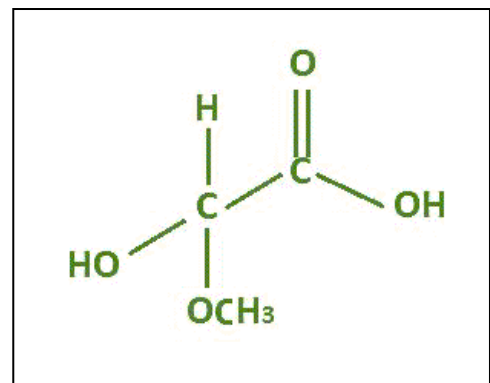


3. Consider the monomer of lactic acid (90.1 g/mol) shown on the right.

a. What type of polymerisation reaction will this monomer undergo?

b. Draw the polymer composed of three monomers.

c. What is the molar mass of the polymer formed in b. above?



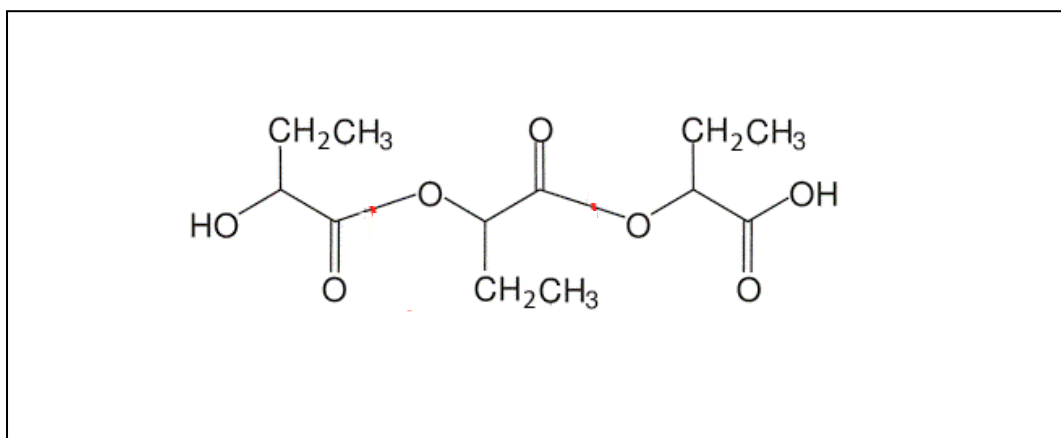
4. Consider the three polyethene structures shown below in their exact relative molecular size.

a. Place the three polymer chains in order of increasing melting temperature.

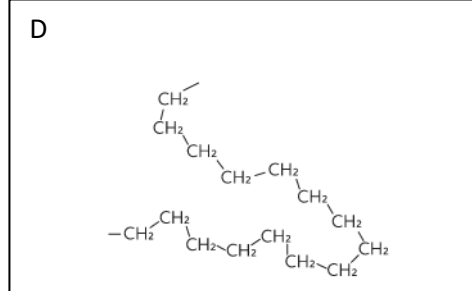
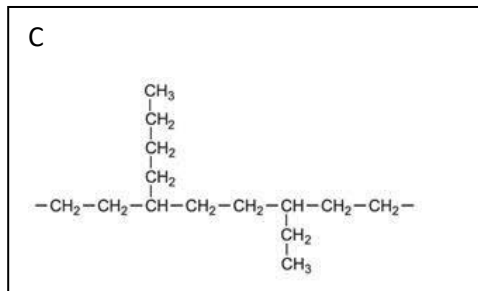
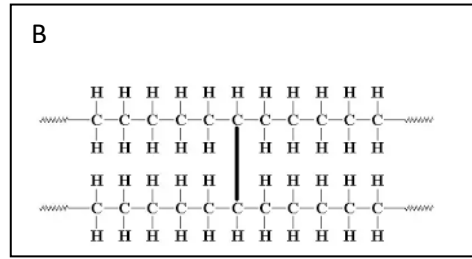
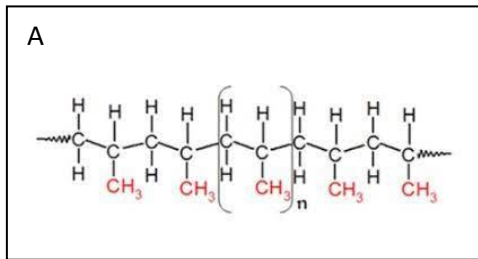
- b. Justify your decision to question a. above.
- c. Place the three polymer chains in order of increasing structural strength and justify your answer.
- d. Which polymer forms the best plastic to be used in buoyancy vests?



5. Consider the polymer shown below.
 - a. What type of reaction produced this polymer?
 - b. Draw the molecular structure of the monomer/s that produced this polymer.
 - c. Give the IUPAC name for the monomer/s.



8. Complete the table below. Assume all polymers have the same molar mass.



Use of plastic	Polymer	Reason
High voltage electrical socket		
In extrusion moulding		
Shopping bag		
In the production of high melting temperature components that can be heat moulded.		

9. Consider the video below and four polymer chains shown above in question 8. Which plastic is most likely used to form this electrical socket? Explain your reasoning.



10. View the video for question 10

11. Below is an image showing what the polymer structure of a plastic looks like when relaxed and when stressed by applying a tensile force, in other words stretching.
- Is this plastic a thermoplastic or a thermosetting plastic.
 - Explain why this polymer returns to its original shape when relaxed and not deform.

