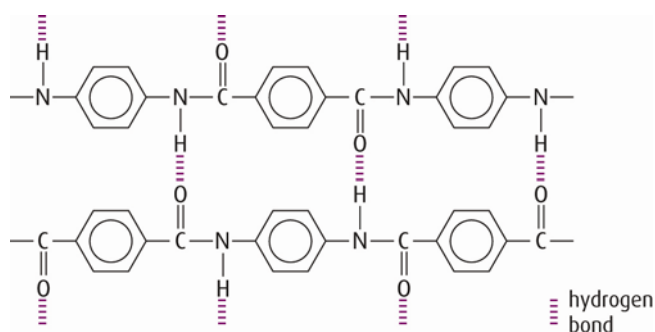
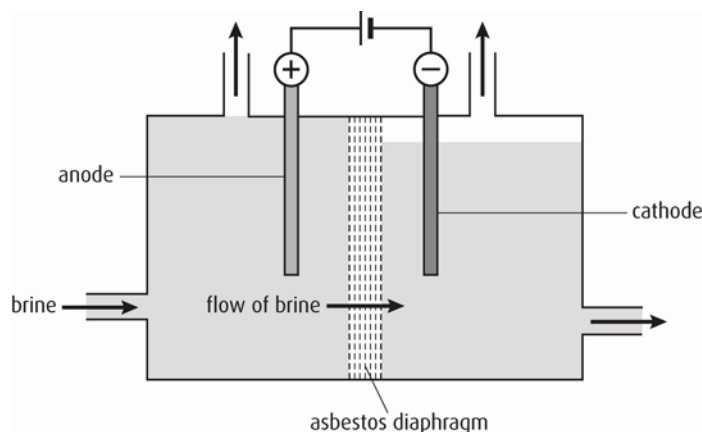


AHL Worksheet – Option C

- 1 The diagram shows a part of the structure of Kevlar.



- a Give the structures of the monomers from which Kevlar can be made and state the name of the type of reaction that occurs when Kevlar is formed. [3]
 - b Kevlar is described as a **lyotropic liquid crystal**. Explain what this means. [2]
 - c Liquid crystals are used in displays, for example in calculators. Explain how a twisted nematic liquid crystal works. [6]
- 2 State the type of semiconductor formed when silicon is doped with arsenic and explain how the doping increases the conductivity. [3]
 - 3 Write equations for initiation and propagation steps in the formation of low-density poly(ethene) using an organic peroxide as an initiator. [3]
 - 4 A diagram of a diaphragm cell that is used in the chlor-alkali industry is shown below.



- a State what the anode and cathode are made of. [2]
- b How does the liquid leaving the cell on the right-hand side differ from the brine entering the cell on the left-hand side? [2]
- c Write half equations for the reactions occurring at the anode and cathode. [2]