



Option: Materials & Polymers
Chemistry Past Exam Questions
Higher Level

Section B - Question 11 C (a)

(c) Answer either part A *or* part B.

A

Roy Plunkett, pictured on the right, produced the polymer poly(tetrafluoroethene) (Teflon) accidentally in 1938 when he was researching refrigerants.



- (i) Identify the monomer used to manufacture poly(tetrafluoroethene) (Teflon). (4)
- (ii) What type of polymerisation reaction occurs in the manufacture of poly(tetrafluoroethene) (Teflon)? (3)
- (iii) Draw two repeating units of the Teflon polymer. (6)
- (iv) Give two properties of poly(tetrafluoroethene) (Teflon). In the case of each property you have stated, give a major use of the polymer that makes use of that property. (12)

2010

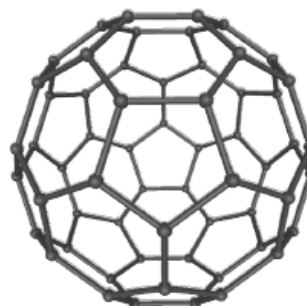
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A

Diamond and graphite are macromolecular crystalline forms of carbon. Explain in terms of bonding

- (i) the hardness of diamond,
- (ii) why graphite is soft and can be used as a lubricant,
- (iii) the electrical conductivity of graphite. (18)



Buckminsterfullerene is another crystalline form of carbon that consists of football shaped clusters of 60 carbon atoms as shown. What type of bond joins the carbon atoms in these 'bucky balls'? (3)

The spatial arrangement of carbon atoms in each of these three structures was established by analysing the scattering of X-rays by the crystals. What was the surname of the father and son who pioneered this technique? (4)

2005

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(c) Answer either part A *or* part B.

A

- (i) What is meant by the term *addition polymerisation*? (7)
- (ii) Name the Du Pont chemist pictured on the right who discovered poly(tetrafluoroethene), PTFE. (3)
- (iii) Describe using an equation how poly(tetrafluoroethene) is produced from its monomers. (9)
- (iv) Give **two** common uses of PTFE. (6)



Discoverer of PTFE