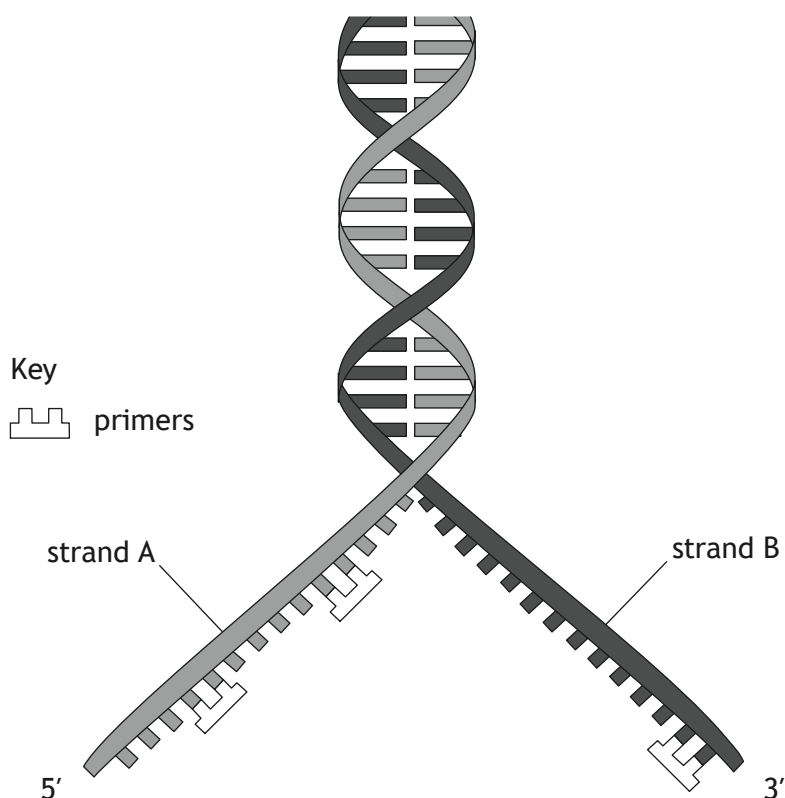


Total marks — 95
 Attempt ALL questions
 Questions 5 and 15 contain a choice

1. At the start of DNA replication, the double helix unwinds and the strands separate as shown in the diagram.



- (a) Name the enzyme that adds DNA nucleotides to newly synthesised strands. 1

- (b) Strand A is the lagging strand. 1

Use information from the diagram to support this statement.

1. (continued)

- (c) The polymerase chain reaction (PCR) is a technique carried out to amplify target sequences of DNA. It involves repeated cycles of heating and cooling.

Two different primers are used in each PCR procedure.

- (i) Give a reason why two different primers are used.

1

- (ii) State a temperature at which primers bind to the target sequence of DNA.

1

_____ °C

- (d) One complete cycle of a PCR took 3 minutes.

Calculate how many copies of the DNA there would be after 9 minutes from an original sample of 30 DNA molecules.

1

Space for calculation

_____ copies

[Turn over

