



QUESTION WORKBOOK

DNA replication: one old strand in every new molecule

Nucleic acids, genomes and protein synthesis · Unit B05

AQA 3.4.1 · OCR A 2.1.3, 2.1.6 · Edexcel A Topic 2.7 · CAIE 6.1

5 questions · 17 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** State the role of DNA helicase and state the role of DNA ligase in the replication of a DNA molecule. [2]

SECTION B · Standard, 3 to 5 marks

- B1** Describe how a molecule of DNA is copied semi-conservatively, naming the enzymes involved and the bonds that are broken and formed. [5]

- B2** Explain why one of the two new DNA strands is built continuously while the other is built as a series of short fragments. [4]

- B3** Bacteria whose DNA contains only ^{15}N are transferred to a medium containing only ^{14}N and allowed to divide four times. Calculate the percentage of the DNA molecules that still contain a ^{15}N strand. [3]

- B4** DNA polymerase corrects most of its own copying errors, but a few substitutions survive in every cell division. Suggest three reasons why such a substitution often has no effect on the organism. [3]