



QUESTION WORKBOOK

Mutation and cancer: what goes wrong, and where it goes wrong

Gene regulation, genomics and biotechnology · Unit B17

AQA 3.8.1, 3.8.2.1, 3.8.2.3 · OCR A 6.1.1, 6.1.2 · Edexcel A Topic 3 · CAIE 6.2, 16.2

5 questions · 17 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** Name the kind of substitution that produces a stop codon, and name the property of the genetic code that allows a different substitution to change no amino acid at all. [2]

SECTION B · Standard, 3 to 5 marks

- B1** Explain why the deletion of a single base near the start of a gene usually destroys the protein, while the deletion of three bases at the same point usually does not. [4]

- B2** Compare a proto-oncogene with a tumour suppressor gene, referring to what the product of each normally does and to how many alleles must be affected before division is lost from control. [4]

B3 A research group wishes to obtain stem cells from embryos left over from IVF treatment. Evaluate the case for allowing this work. [4]

B4 A drug that inhibits the enzymes adding methyl groups to DNA is being trialled in patients whose tumours carry an intact but heavily methylated tumour suppressor gene. Suggest why the drug might restore control of division in those cells, and suggest one reason it may also harm healthy cells. [3]
