

20 Telomeres become shorter during each cell cycle of a specialised cell.

In which phase of the cell cycle do telomeres shorten?

- A** cytokinesis
- B** G₁
- C** S
- D** G₂

21 Telomeres prevent the loss of genes during DNA replication.

Which row correctly shows cell types that contain telomeres?

	typical animal cell	typical plant cell	typical bacterial cell
A	✓	✓	✓
B	✓	✓	✗
C	✗	✗	✓
D	✓	✗	✗

key

✓ = present

✗ = **not** present

21 What are roles of adult stem cells in humans?

- 1 repair other cells by mitosis
- 2 divide to replace cells in tissues
- 3 differentiate into a new organism

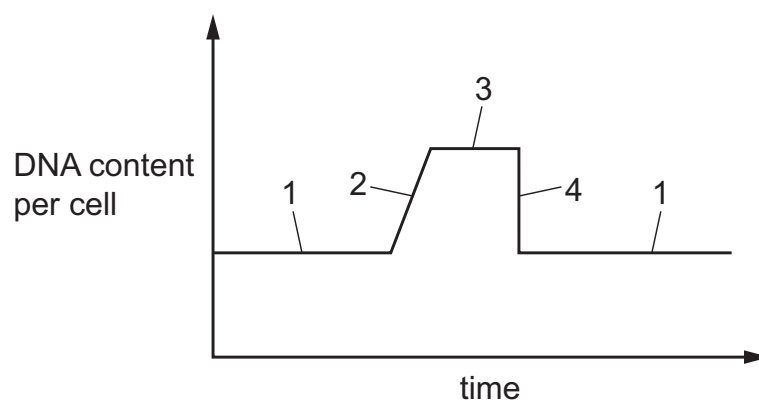
- A** 1 and 3 **B** 1 only **C** 2 and 3 **D** 2 only

22 Which statements are correct for the mitotic cell cycle?

- 1 DNA is replicated semi-conservatively during mitosis.
- 2 DNA is never changed from one generation of cells to the next generation.
- 3 The daughter cells at the end of a mitotic cell division have the potential to produce the same enzymes as the parent cell.
- 4 The same quantity of DNA is distributed to the nuclei of two new cells at the end of a mitotic cell division.

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

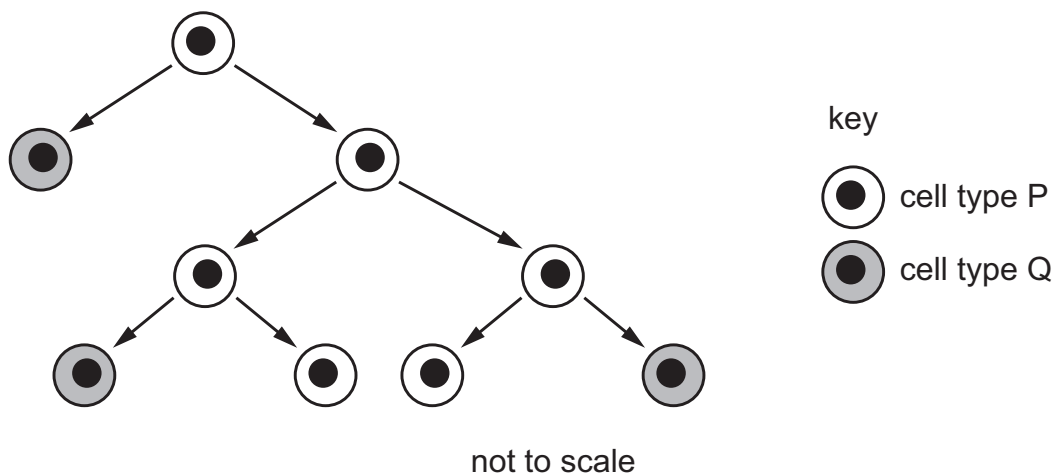
19 The DNA content of a cell changes as the mitotic cell cycle proceeds through a series of stages.



Which row correctly identifies when DNA replicates and when the nuclear envelope breaks down?

	DNA replicates	nuclear envelope breaks down
A	1	3
B	1	4
C	2	3
D	2	4

20 The diagram shows three cycles of cell division from an original cell of cell type P in bone marrow. Some of the cells that form are cell type Q.



Which row correctly identifies cell type P and cell type Q?

	cell type P	cell type Q
A	cancer cell	differentiated cell
B	cancer cell	stem cell
C	differentiated cell	stem cell
D	stem cell	differentiated cell