

Mitosis and cancer: practice questions

6 questions · 18 marks · mark scheme at the back

For Edexcel GCSE Biology 1BI0 and Combined Science 1SC0. **Triple only** is not in Combined Science. **Higher tier** is only on the Higher paper.

Name

Total / 18

1 In which stage of the cell cycle is the DNA copied? [1 mark]

- A. ☐ Prophase
- B. ☐ Interphase
- C. ☐ Metaphase
- D. ☐ Telophase

2 Describe what happens during metaphase, during anaphase and during cytokinesis. [3 marks]

3 Mitosis is important to living organisms. State three ways in which mitosis is used. [3 marks]

4 A human skin cell has 46 chromosomes. The cell divides by mitosis. Describe the cells that are produced. [3 marks]

5 Describe what causes cancer. [2 marks]

[2 marks]

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6 Describe how a cell divides by mitosis, and explain why mitosis is important for a multicellular organism. **[6 marks]**

[6 marks]

[illegible]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (interphase) (1)

2. [3]

- metaphase: chromosomes line up along the middle / equator of the cell (1)
- anaphase: the two copies of each chromosome are pulled apart to opposite ends / poles of the cell (1)
- cytokinesis: the cytoplasm and cell membrane divide to form two cells (1)

3. [3]

- growth (1)
- repair / replacing damaged or worn-out cells (1)
- asexual reproduction (1)

4. [3]

- two (daughter) cells (1)
- each has 46 chromosomes / the same number of chromosomes as the parent cell (1)
- genetically identical to the parent cell / to each other (1)
- diploid cells / two sets of chromosomes (1)
- Max 3

5. [2]

- changes in cells (1) allow mutations / changes in DNA
- that lead to uncontrolled cell division (1) do not accept 'cells divide' without 'uncontrolled' or equivalent; ignore 'forms a tumour'

6. [6]

Level 3 5-6	Gives a clear, correctly ordered description of the cell cycle stages including cytokinesis. Explains that the daughter cells are genetically identical and gives all the uses of mitosis, linking them to the organism. Scientific terms are used accurately.
Level 2 3-4	Describes some of the stages with some correct detail, and gives at least two uses of mitosis. There may be minor errors or a missing link.
Level 1 1-2	Gives isolated points about the stages or the uses of mitosis, with little detail or order.

Indicative content

- interphase: the cell grows and the DNA is copied
- prophase: the chromosomes become visible and the nuclear membrane breaks down
- metaphase: the chromosomes line up along the equator of the cell
- anaphase: the chromosome copies are pulled to opposite ends of the cell
- telophase: nuclear membranes form around each set of chromosomes
- cytokinesis: the cytoplasm and cell membrane divide to give two daughter cells
- the two daughter cells are genetically identical to the parent
- growth: more cells are produced as the organism grows
- repair: damaged cells are replaced
- asexual reproduction: identical offspring are produced