

Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

**Q1. State TWO uses of mitosis in the human body.**

[2 marks]

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**Q2. Describe the sequence of events in mitosis, starting with DNA replication.**

[4 marks]

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**Q3. Explain how cancer arises from abnormal cell division.**

[3 marks]

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★ HIGHER TIER

**Q4. ★ Describe the differences between a benign and a malignant tumour. Explain why malignant tumours are more dangerous.**

[3 marks]

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Total: 12 marks

**Q1 (2 marks)**

*State TWO uses of mitosis in the human body.*

- Growth — increasing the number of cells [1]
- Repair / replacement of damaged or worn-out cells [1]

**Q2 (4 marks)**

*Describe the sequence of events in mitosis, starting with DNA replication.*

- DNA replicates — each chromosome is copied exactly [1]
- Chromosomes condense and become visible [1]
- Chromosomes line up at the equator of the cell [1]
- Spindle fibres pull chromosome copies to opposite poles → cell divides → two genetically identical daughter cells, each with the original chromosome number [1]

**Q3 (3 marks)**

*Explain how cancer arises from abnormal cell division.*

- Mutations in genes that control the cell cycle [1]
- Normal checkpoints fail — cells no longer respond to stop signals [1]
- Cells divide continuously and uncontrollably → tumour forms [1]

**Q4 (3 marks) [★ HT]**

★ *Describe the differences between a benign and a malignant tumour. Explain why malignant ...*

- Benign: stays localised, does not invade surrounding tissue [1]
- Malignant: invades surrounding tissue; cells can break off and travel in blood/lymph to form secondary tumours (metastasis) [1]
- Malignant is more dangerous because secondary tumours can form in vital organs and are difficult to treat [1]