1.7 Chromosomes, DNA and Mitosis: 10-minute Pack

Total Marks

EDEXCEL 4BI1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State how many chromosomes are present in each human body cell if the cell is diploid and has 23 chromosome pairs.

(Total for Question 1 is 1 mark)

2 Define the term 'gene' in the context of DNA and inheritance and give one example of a characteristic a gene might influence.

(Total for Question 2 is 1 mark)

3 Give one simple observable difference between mitosis in animal cells and mitosis in plant cells, referring to the final stage of division.

(Total for Question 3 is 1 mark)

4 Name the stage of the cell cycle, before mitosis, during which DNA is replicated.

(Total for Question 4 is 1 mark)

5 A microscope record shows chromosomes lined up at the equator of a plant cell. Name the stage of mitosis observed.

(Total for Question 5 is 1 mark)

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6 A diploid species has 14 chromosomes in each body cell. State the number of chromosome pairs in a body cell and the number of chromosomes in each daughter cell after mitosis.

(Total for Question 6 is 2 marks)

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7 A scientist counts cells in a root tip. The sample contains 40 cells, of which 10 have chromosomes clearly visible. Calculate the percentage of cells with visible chromosomes. Assume all 40 cells were counted once.

(Total for Question 7 is 2 marks)

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Mark scheme · 1.7 Chromosomes, DNA and Mitosis: 10-minute Pack

Question 1

46 chromosomes **B1**

Answer: 46 chromosomes

Question 2

a section of DNA that codes for a particular characteristic or a particular protein **B1**

Answer: A section of DNA that codes for a particular characteristic or protein, e.g. eye colour

Question 3

animal cells: cleavage furrow forms and cell pinches in; plant cells: cell plate forms between daughter nuclei **B1**

Answer: Animal cells form a cleavage furrow and pinch in; plant cells form a cell plate to divide the cytoplasm

Question 4

interphase **B1**

Answer: Interphase

Question 5

metaphase **B1**

Answer: Metaphase

Question 6

7 chromosome pairs **B1**

14 chromosomes in each daughter cell **B1**

Answer: 7 pairs; 14 chromosomes in each daughter cell

Question 7

10 / 40 x 100 **M1**

25% **A1**

Answer: 25%

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