1.4 Cells: Division

Question Paper

Course	DP IB Biology
Section	1. Cell Biology
Topic	1.4 Cells: Division
Difficulty	Medium

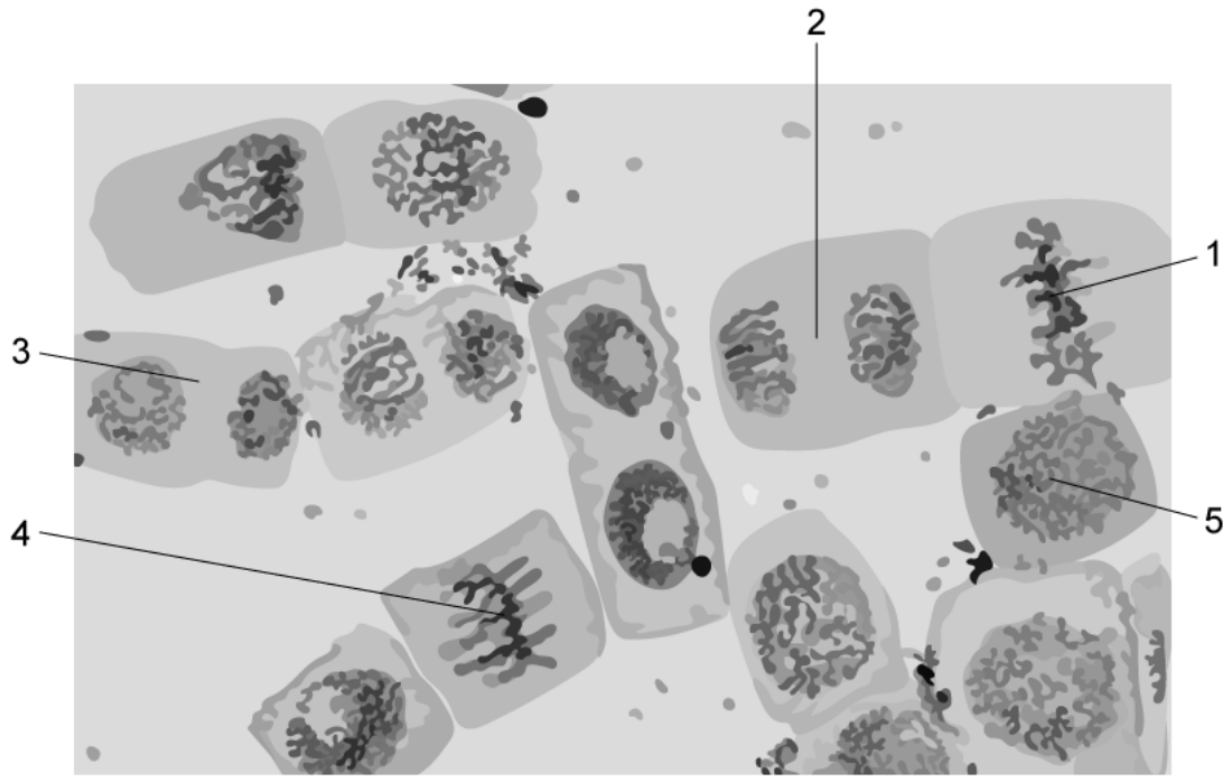
Time allowed: 20

Score: /10

Percentage: /100

Question 1

The photomicrograph shows cells in different stages of mitosis.



In which order do these stages occur?

A 4 → 1 → 3 → 2 → 5

B 4 → 1 → 2 → 3 → 5

C 4 → 3 → 5 → 1 → 2

D 4 → 5 → 1 → 2 → 3

[1 mark]

Question 2

Which of the following does not happen in an animal cell division?

I. DNA is transcribed and translated.
II. Spindle is formed from microtubules.
III. Cell plate forms to divide daughter cells
IV. Plasma membrane pulled inwards around cell equator to form cleavage furrow

A III only

B I and III only

C II only

D IV only

[1 mark]

Question 3

Tumors are formed from uncontrolled cell division of cancer cells.

Which statement describes the difference between a normal cell and a cancer cell?

A Only cancer cells have mutated DNA.

B Cancer cells do not undergo cytokinesis.

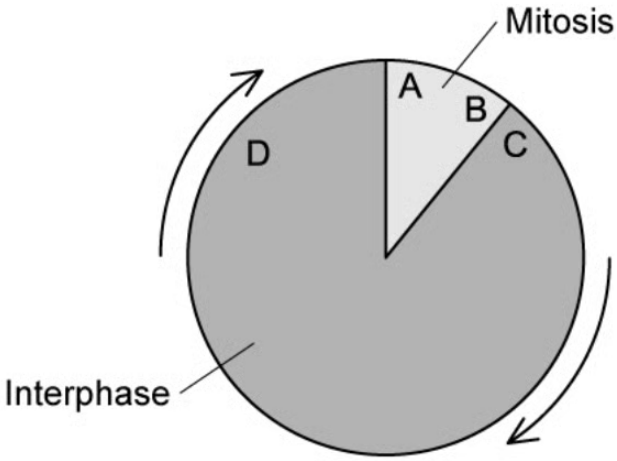
C Cancer cells have a shorter interphase.

D Cancer cells do not have metaphase.

[1 mark]

Question 4

The cell cycle is shown in the diagram below.



If dividing cells are supplied with radioactive nucleotides, at which point will the nucleotides be incorporated into the chromosomes?

[1 mark]

Question 5

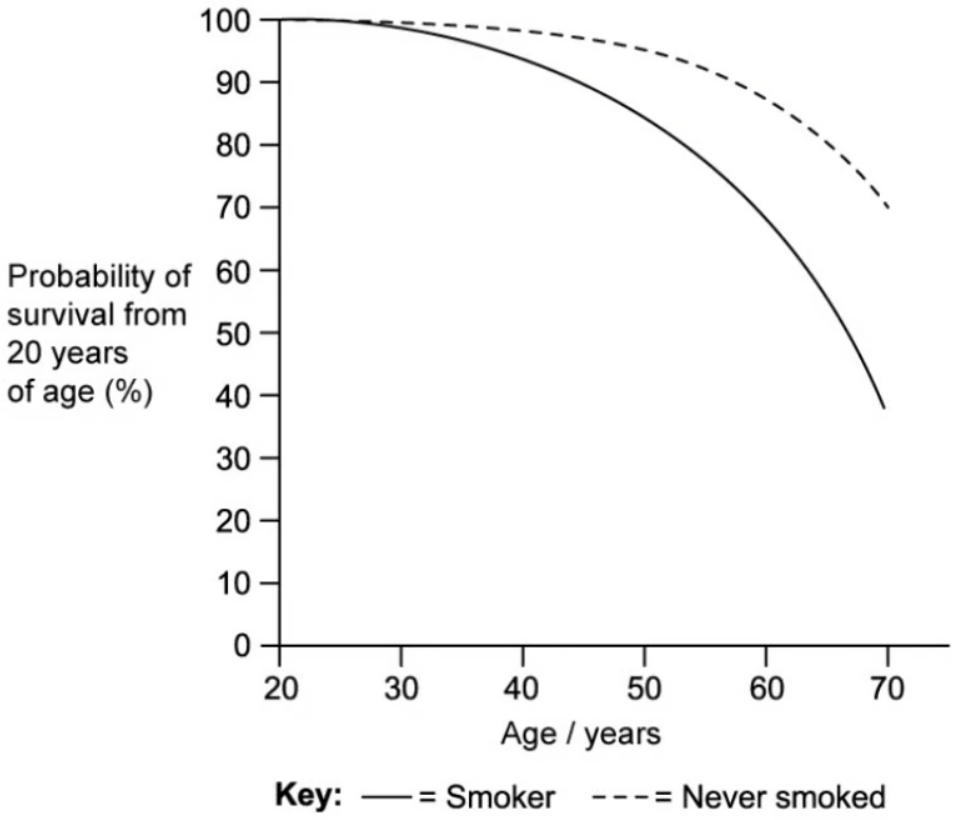
What properties does a human cell have just before it enters prophase?

	Nuclear membrane present	Spindle present	Number of chromatids
A	No	Yes	92
B	Yes	No	92
C	Yes	Yes	46
D	Yes	No	46

[1 mark]

Question 6

The graph shows the survival probabilities for current smokers and for those who never smoked among men 20 to 70 years of age.



What can be concluded from this graph?

A Smoking causes cancer.

B There is a correlation between smoking and cancer.

C Smoking reduces life expectancy.

D People who have never smoked can still die of cancer.

[1 mark]

Question 7

Each of the following events takes place during mitosis.

1 Chromosomes uncoil.

2 Chromatids move to opposite poles of the cell.

3 Centromeres divide.

4 Chromosomes line up along the equator of the spindle.

5 Two chromatids are joined by a centromere.

In which order do the events take place?

	First	→→→→→→→→	→→→→→→→→	→→→→→→→→	**Last**
A	1	2	4	5	3
B	3	1	2	4	5
C	4	5	3	1	2
D	5	4	3	2	1

[1 mark]

Question 8

The table below shows the number of cells in different stages of mitosis in a sample from a garlic root tip.

Stage of mitotic cell cycle	Number of cells
Interphase	80
Prophase	11
Metaphase	2
Anaphase	4
Telophase	3

What is the mitotic index for this tissue?

A 0.20

B 20

C 0.80

D 4

[1 mark]

Question 9

The risk of developing a cancerous tumour is increased by exposure to which of the following?

	Ultraviolet light	Viruses	Carbon monoxide	X-rays
A	✓	✓	✗	✓
B	✓	✗	✗	✓
C	✗	✓	✓	✗
D	✓	✗	✓	✗

Key: ✓ = increases risk, ✗ = does not increase risk

[1 mark]

Question 10

The diagram shows the chromosomes of a squashed cell during mitosis.

Which stage of mitosis is the cell in and what is the haploid chromosome number of this species?

	Stage of mitosis	Haploid chromosome number
A	Early prophase	5
B	Late prophase	5
C	Metaphase	10
D	Anaphase	10

[1 mark]