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1.4 Cells: Division

Medium



BIOLOGY

IB HL



EXAM PAPERS PRACTICE

1.4 Cells: Division

Question Paper

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

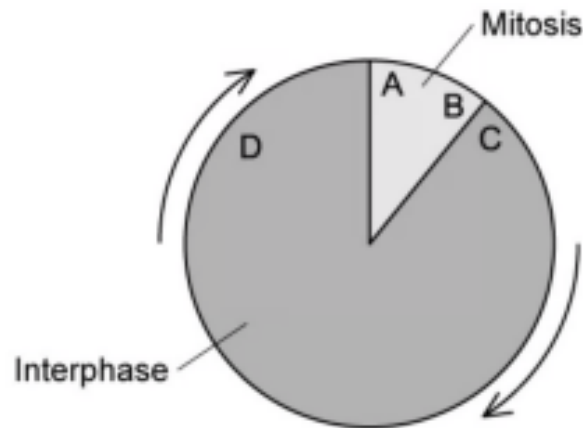
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Time allowed: 20
Score: /10
Percentage: /100



Question 1

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 2

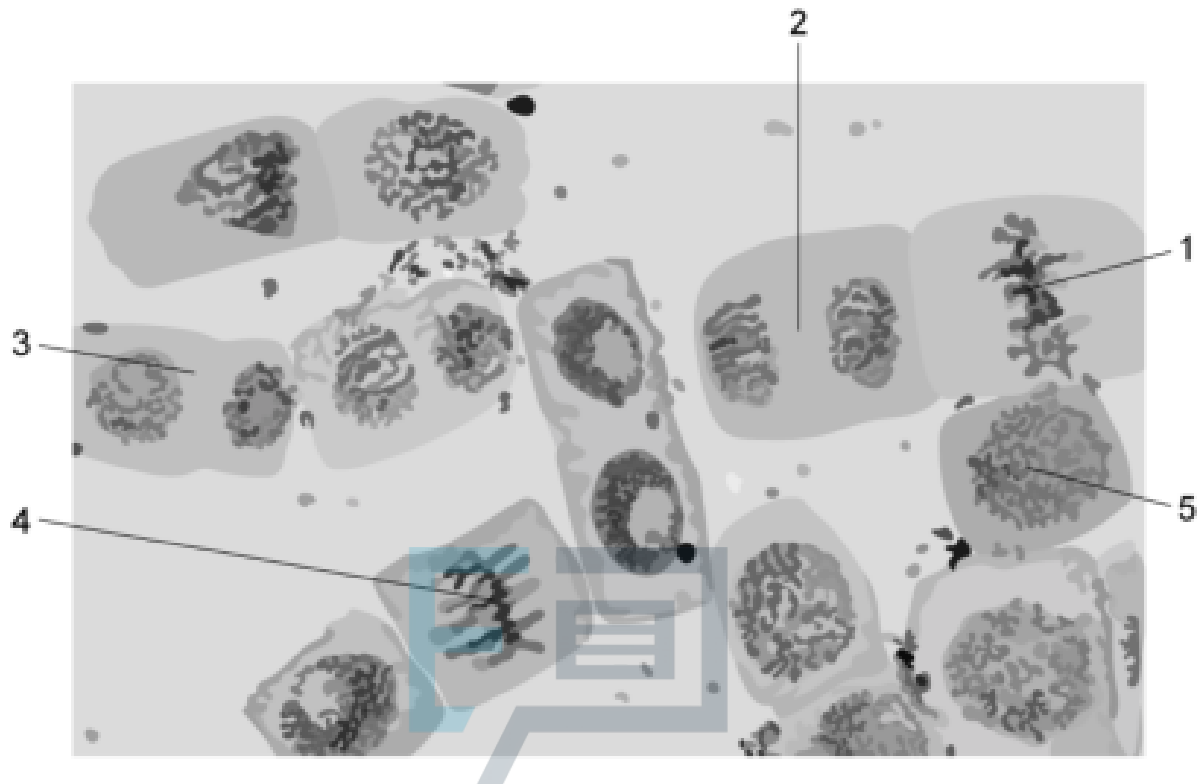
What properties does a human cell have just before it enters prophase?

	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 3

The photomicrograph shows cells in different stages of mitosis.



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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 4

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 5

Tumors are formed from uncontrolled cell division of cancer cells.

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

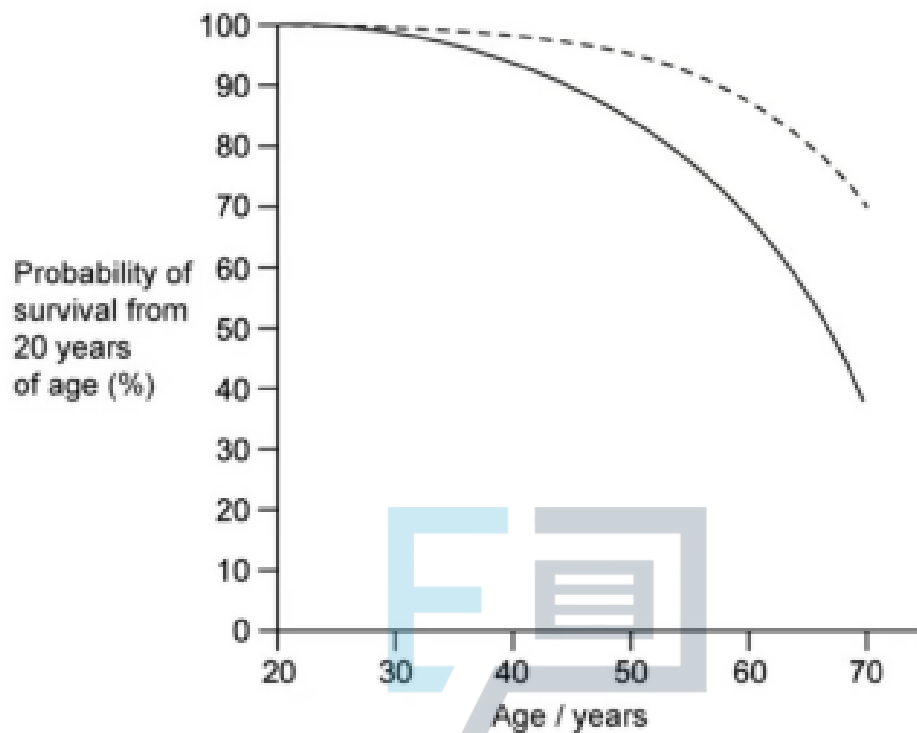
- A** Only cancer cells have mutated DNA.
- B** Cancer cells do not undergo cytokinesis.
- C** Cancer cells have a shorter interphase.
- D** Cancer cells do not have metaphase.

[1 mark]



Question 6

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



Key: — = Smoker - - = Never smoked

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]



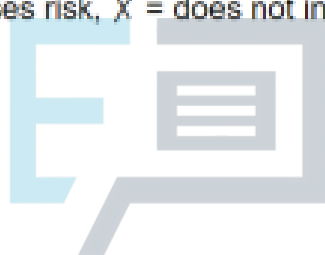
Question 8

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

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

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

[1 mark]



Question 9

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

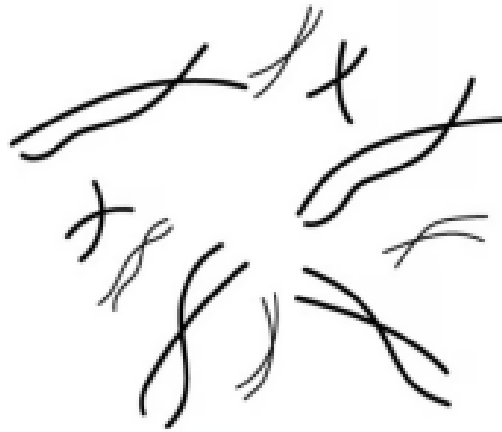
What is the mitotic index for this tissue?

- A 0.20
- B 20
- C 0.80
- D 4

[1 mark]

Question 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]