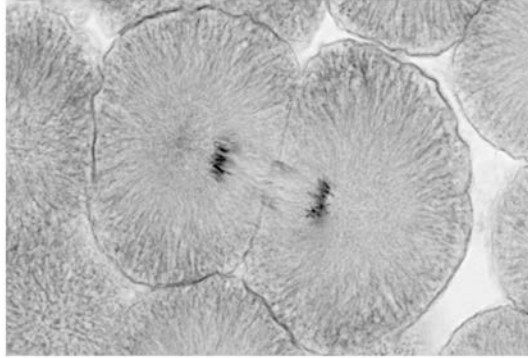


0	9
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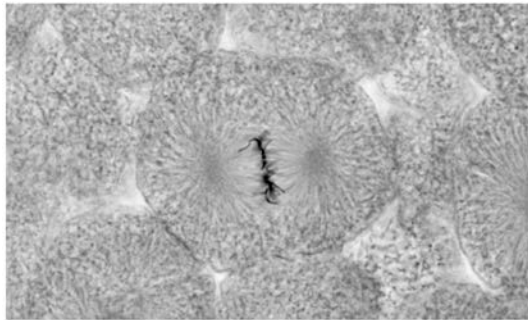
**Figure 6** shows photographs of some animal cells at different stages during the cell cycle.

**Figure 6**

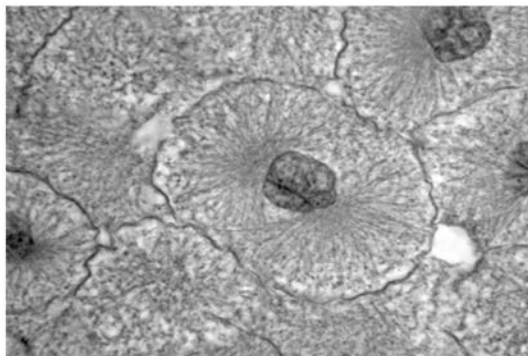
**A**



**B**



**C**



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**0 9** . **1** Which photograph in **Figure 6** shows a cell that is **not** going through mitosis? **[1 mark]**

Tick **one** box.

<b>A</b>	
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<b>B</b>	
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<b>C</b>	
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**0 9** . **2** Describe what is happening in photograph **A**. **[2 marks]**

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**Question 9 continues on the next page**

A student wanted to find out more about the cell cycle.

The student made a slide of an onion root tip.

She counted the number of cells in each stage of the cell cycle in one field of view.

**Table 4** shows the results.

**Table 4**

		Stages in the cell cycle				
	Non-dividing cells	Stage 1	Stage 2	Stage 3	Stage 4	Total
Number of cells	20	9	4	2	1	36

**0 9** . **3** Each stage of the cell cycle takes a different amount of time.

Which stage in **Table 4** is the fastest in the cell cycle?

Give a reason for your answer.

**[2 marks]**

Stage \_\_\_\_\_

Reason \_\_\_\_\_

\_\_\_\_\_

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**0 9** . **4** The cell cycle in an onion root tip cell takes 16 hours.

Calculate the length of time **Stage 2** lasts in a typical cell.

Give your answer to 2 significant figures.

**[3 marks]**

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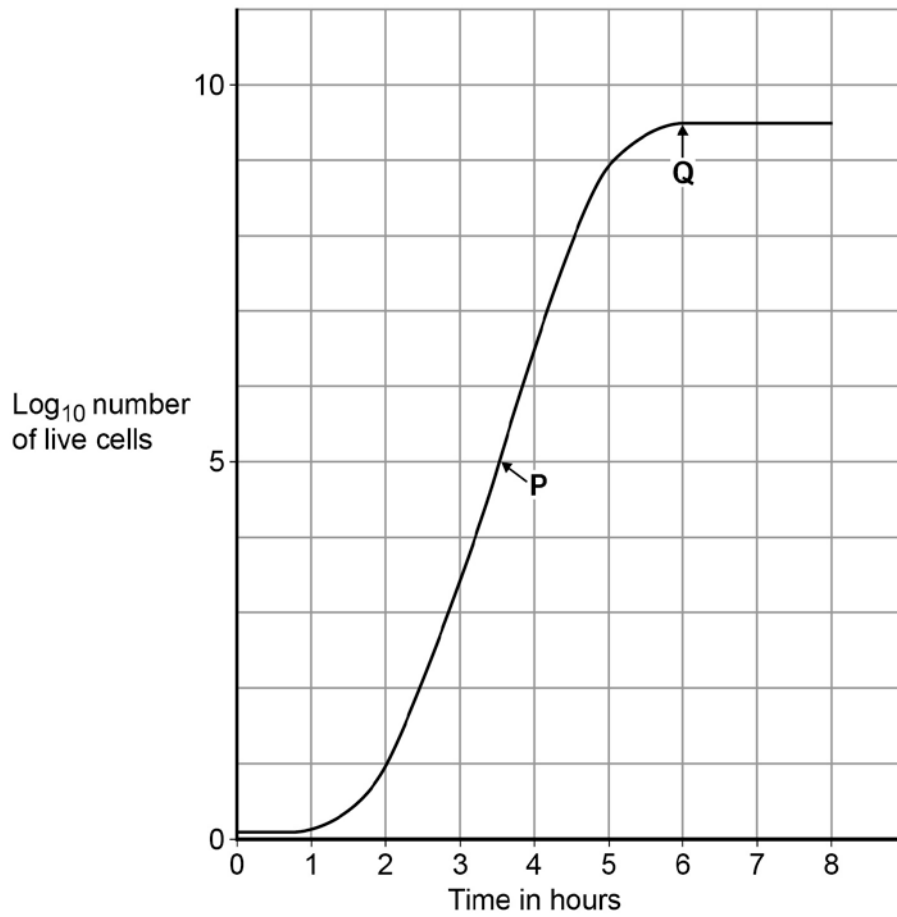
Time in **Stage 2** = \_\_\_\_\_ minutes

**Question 9 continues on the next page**

Bacteria such as *Escherichia coli* undergo cell division similar to mitosis.

**Figure 7** shows a growth curve for *E. coli* grown in a nutrient broth.

**Figure 7**



**0 9** . **5** What type of cell division causes the change in number of *E. coli* cells at **P**?

[1 mark]

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**0 9** . **6** Suggest why the number of cells levels out at **Q**.

**[2 marks]**

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**Turn over for the next question**

**Question 9**

Question	Answers	Extra information	Mark	AO / Spec. Ref.
09.1	C		1	AO2/1 4.1.2.2
09.2	cytoplasm <b>and</b> cell membrane dividing	accept cytokinesis for <b>1</b> mark	1	AO2/1 4.1.2.2
	to form two identical daughter cells		1	AO2/1 4.1.2.2
09.3	stage 4		1	AO3/1a 4.1.2.2
	only one cell seen in this stage		1	AO2/2 4.1.2.2
09.4	$(4/36) \times 16 \times 60$	allow 110 (minutes) with no working shown for <b>3</b> marks	1	AO2/2 4.1.2.2
	107 / 106.7		1	AO2/2 4.1.2.2
	110 (minutes)		1	AO2/2 4.1.2.2
09.5	binary fission	do <b>not</b> accept mitosis	1	AO1/1 4.1.1.6
09.6	shortage of nutrients / oxygen		1	AO3/1a 4.1.1.6
	so cells die <b>or</b> death rate = rate of cell division		1	AO3/1a 4.1.1.6
<b>Total</b>			<b>11</b>	