

GCSE Biology B (Twenty First Century Science)
J257/03 Breadth in Biology (Higher)

Question Set 23

1

Growth in multicellular organisms involves an increase in the number of body cells. New cells are made by mitosis, which is part of the cell cycle.

There are two main phases in the cell cycle.

(a) The statements in the table describe events in the cell cycle.

For each statement tick (✓) **one** box to show which phase of the cell cycle is being described.

Event in the cell cycle	Takes place in interphase	Takes place in mitosis
Each chromosome is copied.	✓	
The cell grows larger.	✓	
The chromosome copies separate.		✓
The nucleus divides.		✓
The number of organelles increases.	✓	

[2]

(b) Amir is observing the stages of mitosis in cells found in the root tips of garlic.

To prepare his slide he follows this method.

1. Cut a thin section of the root tip.
2. Place on the microscope slide.
3. Add a coverslip.

Describe how Amir would use the light microscope to view his slide.

[3]

Start with low power objective lens to identify the area of dividing cells and position those cells in the centre of the field of view. Focus the slide away from the lens by turning the coarse focus adjustment. Move to the highest power to observe various stages of mitosis. Bring the slide back into focus if needed using the fine focus adjustment.

- (c) When Amir looks at the slide using a light microscope, the chromosomes are still not clear.

Suggest **one** improvement he could make when preparing his slide that will make the chromosomes more visible.

He can stain the chromosomes with acetin orcein

[1]

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge