

**AS Level Biology A**  
**H020/01 Breadth in Biology**

**Question Set 5**

1. A student looked at a slide containing onion root tip cells under a light microscope in order to identify cells in different stages of mitosis. Fig. 21 shows a diagram of what they observed.

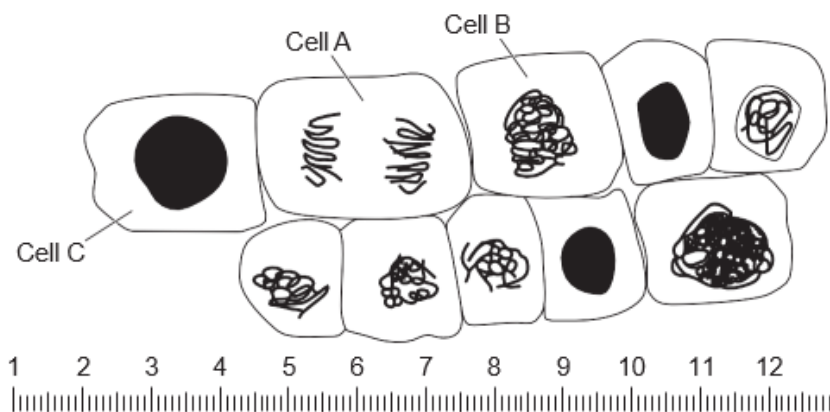


Fig 21

- (a) (i) Explain why onion root tips were used to view cells undergoing mitosis. [2]

Onion root tips contain meristematic tissue, the primary site of cell division in plants. Many cells are therefore undergoing mitosis.

- (ii) Suggest a stain that the student could have used to highlight the nuclei of these cells.

Toluidine blue

- (b) The student used an eyepiece graticule, which is shown in Fig. 21. The student calibrated the graticule before carrying out the root tip squash. He observed that 20  $\mu\text{m}$  measured 2.35 divisions on the graticule.

Calculate the diameter of the nucleus in cell C in Fig. 21.

Nucleus measures 1.4 graticule divisions.

$$\frac{20}{2.35} \times 1.4 = \underline{\underline{11.91 \mu\text{m}}}$$

Answer..... 1.91  $\mu\text{m}$  [2]

**Total Marks for Question Set 5: 5**

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