

Smart Edu Hub / Smart Exam Resources

9700 / CAIE A level Biology / Paper-1/ Multiple Choice
Questions

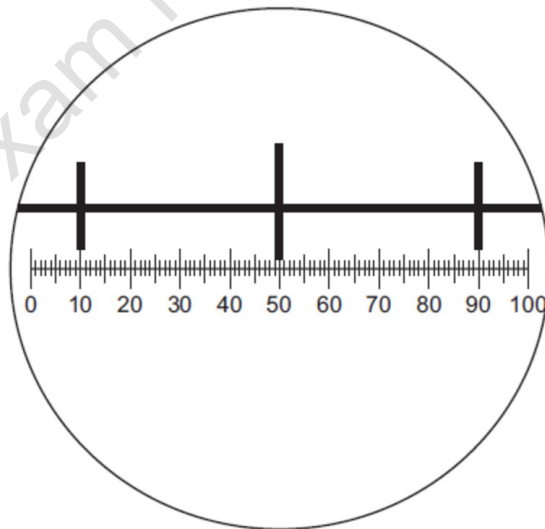
1.1.2-Comparing-Eyepiece-Graticule-and-stage-Micrometer-Set-2-qp

Total Questions: 11

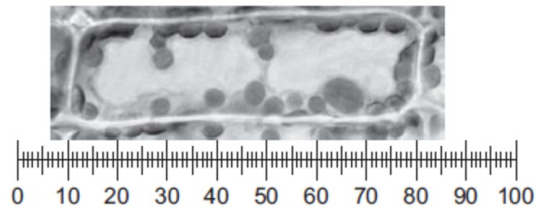
Questions

Question 1:

The diagram shows a stage micrometer on which the small divisions are 0.1 mm. It is viewed through an eyepiece containing a graticule.



The stage micrometer is replaced by a slide of a plant cell.



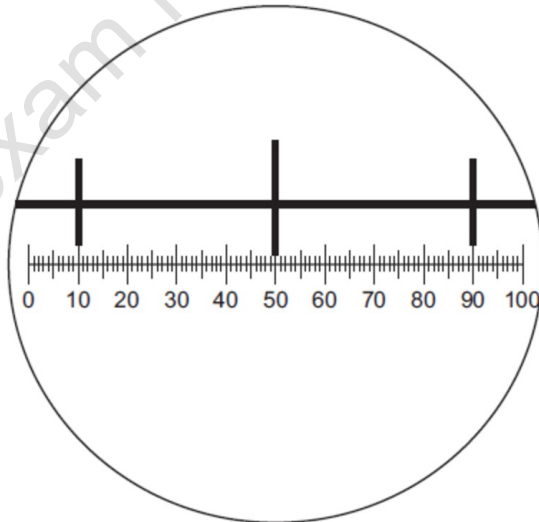
What is the width of a chloroplast?

- A 0.5 mm B 10 μm C 50 μm D 100 μm

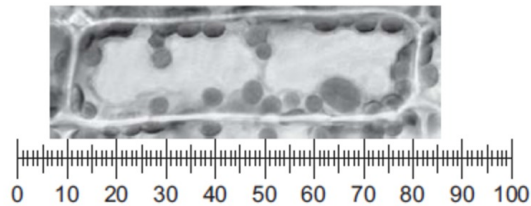
Questions (Continued)

Question 2:

The diagram shows a stage micrometer on which the small divisions are 0.1 mm. It is viewed through an eyepiece containing a graticule.



The stage micrometer is replaced by a slide of a plant cell.



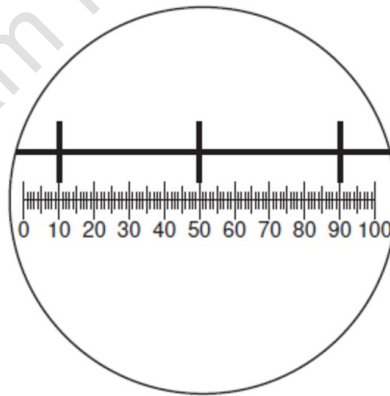
What is the length of the nucleus?

- A 0.8 mm B 8 μm C 25 μm D 200 μm

Questions (Continued)

Question 3:

- The diagram shows a stage micrometer, with divisions 0.1 mm apart, viewed through an eyepiece containing a graticule.



The same eyepiece is now used to examine a blood smear.

How many graticule divisions will cover the diameter of a white cell of $10\text{ }\mu\text{m}$?

- A 1 B 4 C 10 D 20

Question 4:

Using a stage micrometer scale, one unit of an eyepiece graticule was calculated as 0.005 mm . The diameter of a spongy mesophyll cell was counted as 3.5 units on the eyepiece graticule.

What is the estimate of the diameter of the cell?

- A $0.18\text{ }\mu\text{m}$ B $1.8\text{ }\mu\text{m}$ C $18.0\text{ }\mu\text{m}$ D $180\text{ }\mu\text{m}$

Question 5:

The eyepiece lens of a microscope is fitted with an eyepiece graticule.

Which statements about the graticule are correct?

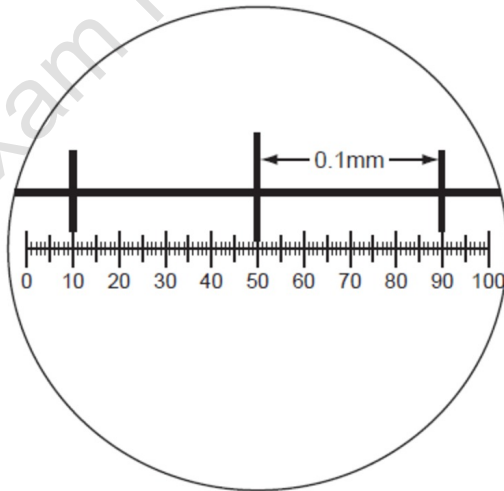
- 1 It allows you to measure the actual length of cells.
- 2 It allows you to draw cells with correct proportions.
- 3 It changes in size as the objective lens changes from $\times 10$ to $\times 40$.

- A 1, 2 and 3 B 1 and 3 only C 1 only D 2 only

Questions (Continued)

Question 6:

The diagram shows a stage micrometer viewed with an eyepiece graticule scale, using a magnification of $\times 400$.



Using the same magnification, a chloroplast is measured and found to be 4 eyepiece graticule divisions long.

How long is the chloroplast?

- A $1.0 \times 10^1 \mu\text{m}$
- B $4.0 \times 10^2 \mu\text{m}$
- C $2.5 \times 10^{-1} \mu\text{m}$
- D $2.5 \times 10^{-2} \mu\text{m}$

Question 7:

An eyepiece graticule can be calibrated using a stage micrometer.

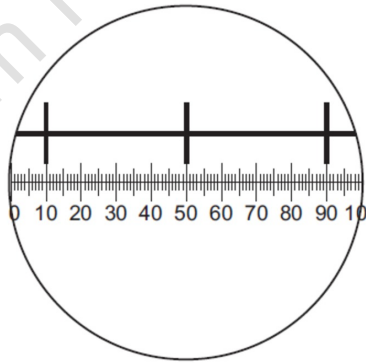
What is the correct reason why an eyepiece graticule is calibrated?

- A An eyepiece graticule can be used to make measurements.
- B An eyepiece graticule is magnified by the objective lens.
- C An eyepiece graticule magnifies the specimen.
- D An eyepiece graticule makes comparisons.

Questions (Continued)

Question 8:

The diagram shows a stage micrometer scale, with divisions 0.1 mm apart, viewed through an eyepiece containing a graticule.



What is the area of the field of view of the microscope at this magnification? ($\pi = 3.14$)

- A $\pi \times 12.5 \times 12.5 = 4.9 \times 10^2 \mu\text{m}^2$
- B $\pi \times 50 \times 50 = 7.9 \times 10^3 \mu\text{m}^2$
- C $\pi \times 125 \times 125 = 4.9 \times 10^4 \mu\text{m}^2$
- D $\pi \times 250 \times 250 = 2.0 \times 10^5 \mu\text{m}^2$

Question 9:

The eyepiece of a microscope is fitted with an eyepiece graticule and a stage micrometer scale is placed on the microscope.

Which statements about the stage micrometer scale are correct?

- 1 It allows you to measure the actual length of cells.
- 2 It allows you to calibrate the eyepiece graticule.
- 3 It changes in size as the objective lens changes from $\times 10$ to $\times 40$.

- A 1, 2 and 3 B 2 and 3 only C 1 only D 2 only

Questions (Continued)

Question 10:

Which steps are needed to find the actual width of a xylem vessel viewed in transverse section using a $\times 10$ objective lens?

- 1 Convert from mm to μm by multiplying by 10^{-3} .
- 2 Calibrate the eyepiece graticule using a stage micrometer on $\times 4$ objective lens.
- 3 Measure the width of the xylem vessel using an eyepiece graticule.
- 4 Multiply the number of eyepiece graticule units by the calibration of the eyepiece graticule.

- A 1, 2, 3 and 4
B 2, 3 and 4 only
C 1 and 2 only
D 3 and 4 only

Question 11:

The graticule and stage micrometer are used to measure cells.

Which is the correct reason why the graticule calibrated?

- A The graticule can be used to make measurements.
B The graticule is magnified by the objective lens.
C The graticule magnifies the specimen.
D The graticule makes comparisons.