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

1.1.4-Light-Electron-Microscope-Set-5-qp

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Questions

Question 1:

Which of the cell organelles, when appropriately stained, will be clearly visible under the high power (×400) of the light microscope?

	lysosomes	endoplasmic reticulum	mitochondria	chloroplasts
A	✓	✓	✗	✗
B	✓	✗	✓	✗
C	✗	✓	✓	✓
D	✗	✗	✗	✓

key
✓ = visible
✗ = not visible

Question 2:

Which statements about light microscopes are correct?

1 To calculate the magnification of a light microscope the eyepiece lens and objective lens magnifications are added together.

2 As the magnification increases the resolution decreases.

3 The resolution of a light microscope is limited by the wavelength of light.

4 The scale on a stage micrometer is resolved more clearly than an eyepiece graticule.

A 1, 2, 3 and 4

B 1, 3 and 4 only

C 2 and 3 only

D 2 and 4 only

Question 3:

Plant cells are stained and then viewed through a light microscope.

Which structures would be clearly visible at a magnification of ×400?

A chloroplast grana

B lysosomes

C nucleoli

D ribosomes

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Questions (Continued)

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Question 4:

Plant cells are fixed, stained and viewed using a student microscope. The light source was natural light.

What would be clearly visible at ×400 magnification?

A cristae of mitochondria

B grana of chloroplasts

C nucleoli

D ribosomes

Question 5:

Which of the cell organelles will be clearly visible under the high power (×400) of the light microscope?

	lysosomes	endoplasmic reticulum	mitochondria	chloroplasts
A	✓	✓	✗	✗
B	✓	✗	✓	✗
C	✗	✓	✓	✓
D	✗	✗	✗	✓

key

✓ = clearly visible

✗ = not clearly visible

Question 6:

Plant cells are fixed, stained and viewed through a light microscope.

What would be clearly visible at x400 magnification?

A cristae of mitochondria

B grana of chloroplasts

C nucleoli

D ribosomes

Questions (Continued)

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Question 7:

At approximately which magnification is light microscopy not suitable because the resolution becomes too low?

A ×100 **B** ×200 **C** ×400 **D** ×1500

Question 8:

Plant cells are fixed, stained and viewed using a student microscope. The light source was natural light.

What would be clearly visible at ×400 magnification?

A cristae of mitochondria

B grana of chloroplasts

C nucleoli

D ribosomes

Question 9:

Which of these statements about light microscopy are correct?

1 The greater the resolution of a light microscope, the greater the detail that can be seen.

2 The greater the magnification of a light microscope, the greater the detail that can be seen.

3 Increasing the magnification of a light microscope up to its limit of resolution allows more detail to be seen.

4 The shorter the wavelength of light used in a light microscope, the greater the detail that can be seen.

A 1, 2, 3 and 4

B 1, 3 and 4 only

C 1 and 2 only

D 4 only

Questions (Continued)

Question 10:

Which statement about the light microscope is correct?

A As the smallest distance to see two points as distinct separate points decreases, the resolution also decreases.

B If the resolution is 220 nm, then a bacterium 0.2 μm in diameter will not be visible.

C If the wavelength of light is 600 nm, then two membranes 300 nm apart will be visible as two distinct membranes.

D Using visible light of a longer wavelength, such as red light, will improve the resolution.

Question 11:

Which eyepiece and objective lens combination enables you to see the greatest number of cells in the field of view?

	eyepiece	objective
A	×5	×10
B	×10	×10
C	×5	×40
D	×10	×40

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