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

1.1.4-Light-Electron-Microscope-Set-3-qp

Total Questions: 11

Questions

Question 1:

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

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

Question 2:

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 3:

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

Questions (Continued)

Question 4:

An electron microscope has a higher resolution than a light microscope.

Which is a result of the higher resolution?

A the ability to produce larger images of cells

B the ability to see cristae in mitochondria

C the ability to see mRNA in all cells

D the ability to see the nucleus in eukaryotes

Questions (Continued)

Question 5:

The diagram below is drawn from an electronmicrograph of an animal cell.

Which represents the same cell, seen under a light microscope at ×400 magnification?

A

B

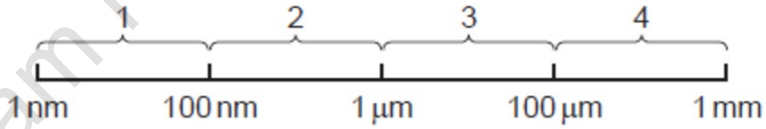
C

D

Questions (Continued)

Question 6:

Which size ranges can be viewed using a light microscope?



A 4 only

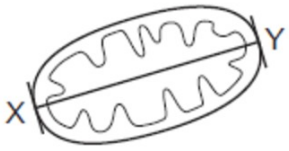
B 1 and 2 only

C 2 and 3 only

D 3 and 4 only

Question 7:

The diagram shows a mitochondrion drawn from an electronmicrograph.



The length of the mitochondrion from X to Y is 3000 nm.

What is the magnification of the drawing of the mitochondrion?

A ×100 **B** ×1000 **C** ×10 000 **D** ×100 000

Question 8:

A light microscope is used to observe two membranes that are 200 nm apart.

How far apart are the membranes when the objective lens is changed from low power (×40) to high power (×400)?

A 2 µm **B** 20 µm **C** 200 nm **D** 2000 nm

Questions (Continued)

Question 9:

Which group of structures are visible in a suitably stained plant cell using a high power (x400) light microscope?

	centriole	chromosomes	mitochondria	starch grains
A	✓	✓	✗	✓
B	✓	✓	✗	✗
C	✗	✓	✓	✗
D	✗	✗	✓	✓

key
✓ = visible
✗ = not visible

Question 10:

A student made notes describing photomicrographs of four cells.

cell 1 Grey cytoplasm at edge of cell contains many black lines and spots. Large white area in centre of cell.

cell 2 Grey cytoplasm contains many black lines and spots which fill the entire cell.

cell 3 Pale blue cytoplasm surrounds a single dark blue spot.

cell 4 Many green structures are enclosed within a rectangular shape with visible boundaries.

Which table identifies the type of cell and the type of microscope used to take each photograph?

A

	animal cell	plant cell
electron microscope	1	2
light microscope	3	4

B

	animal cell	plant cell
electron microscope	1	2
light microscope	4	3

C

	animal cell	plant cell
electron microscope	2	1
light microscope	3	4

D

	animal cell	plant cell
electron microscope	2	1
light microscope	4	3

Questions (Continued)

Question 11:

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.