Cell Structure (H)

1. The resolution of an electron microscope is 0.1 nanometres.

The resolution of the eye is 100 micrometres.

How many times greater is the resolution of the electron microscope than the eye?

(1 micrometre = 1000 nanometres)

A 1000
B 10 000
C 100 000
D 1 000 000

Your answer ☐ **[1]**

2. A cell structure measures 1 micrometre in diameter.

What is the diameter of the cell structure in metres?

A 1×10^{-3} metres
B 1×10^{-6} metres
C 1×10^{-9} metres
D 1×10^{-12} metres

Your answer ☐ **[1]**

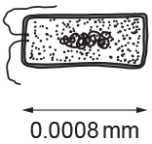
3. A human cell has 10 000 mitochondria and a yeast cell has 10.

A 2
B 3
C 10
D 1000

By how many orders of magnitude are there more mitochondria in a human cell than in a yeast cell?

Your answer ☐ **[1]**

4. Look at the bacterial cell that causes disease in humans.



The human eye can see objects 0.1 mm in size.

What **minimum** magnification will be needed before the eye can see this bacterial cell?

A 12.5×
B 125×
C 1250×
D 12500×

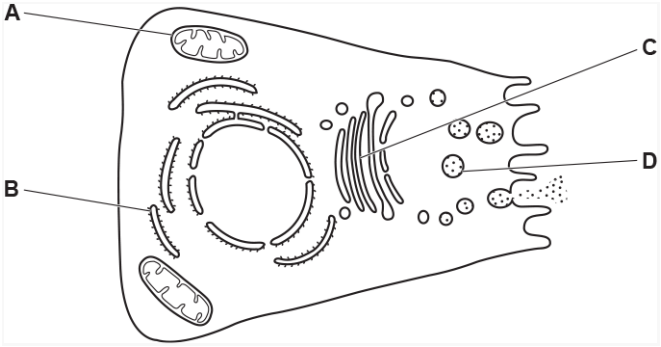
Your answer ☐ **[1]**

5. Which of these structures is found in eukaryotic but **not** prokaryotic cells?

A Cell wall
B Cytoplasm
C Nucleus
D Plasmid

Your answer ☐ **[1]**

6. This is a cell.

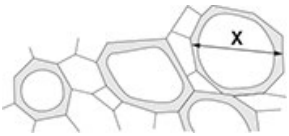


Where does cellular respiration occur?

Your answer ☐ **[1]**

7 (a). A scientist observes some of the tissues of the growing plants using a light microscope.

The diagram shows some of the plant cells.



The diameter of **X** has been magnified 500×.

What is the actual diameter of **X**?

Give your answer in **standard form**.

Diameter = ... mm **[2]**

(b). Transmission **electron** microscopes (TEM) work by passing a beam of electrons through a very thin slice of an object.

Suggest one advantage and one disadvantage of using TEM rather than a light microscope to look at cells.

advantage

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disadvantage

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[2]

END OF QUESTION PAPER