OCR GCSE 21ST CENTURY BIOLOGY B · J257

BIOLOGY



EXAM QUESTION PACK

B4.2 HOW DO WE KNOW ABOUT MITOCHONDRIA AND OTHER CELL STRUCTURES? (FOUNDATION)

SCORE	PERCENTAGE
/12	%

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1. A cell is observed to divide once every hour, doubling the total number of cells.

A student estimates the number of cells after ten hours to be 1024.

Explain why this number is an estimate and is not an exact number of cells after ten hours.

---

[2]

2. Nanotechnology involves structures that are about the same size as some molecules.

Write down these structures in order of size.

Start with the smallest structure.

molecule	human hair	atom	cell
_____	_____	_____	_____

[1]

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3. Amir works in a laboratory. His job is to identify the pathogens that cause plant diseases.

Amir plans to look at a sample of infected plant tissue using a light microscope.

The table shows some information about the cells in the sample.

Cell type	Diameter (μm)	Diameter (m)
Plant cell		8×10^{-5}
Bacterium	2	

(i) What is the diameter of the bacterium, in m, in standard form?

Put a (ring) around the correct answer.

2×10^{6} m 20^{6} m 2×10^{-6} m 20^{-6} m [1]

(ii) What is the diameter of the plant cell, in μm?

Put a (ring) around the correct answer.

80^{-6} μm 80 μm 75 μm 40 μm 0.00008 μm [1]

(iii) Amir knows that:

- most viruses measure less than 250 nm in diameter
- his light microscope will not allow him to see objects smaller than 1 μm in diameter.

Can Amir use his light microscope to see viruses in the sample of infected plant cells?

Explain your answer.

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[2]

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(iv) Suggest a piece of apparatus that Amir could use to see viruses in the infected plant cells.

Explain your answer.

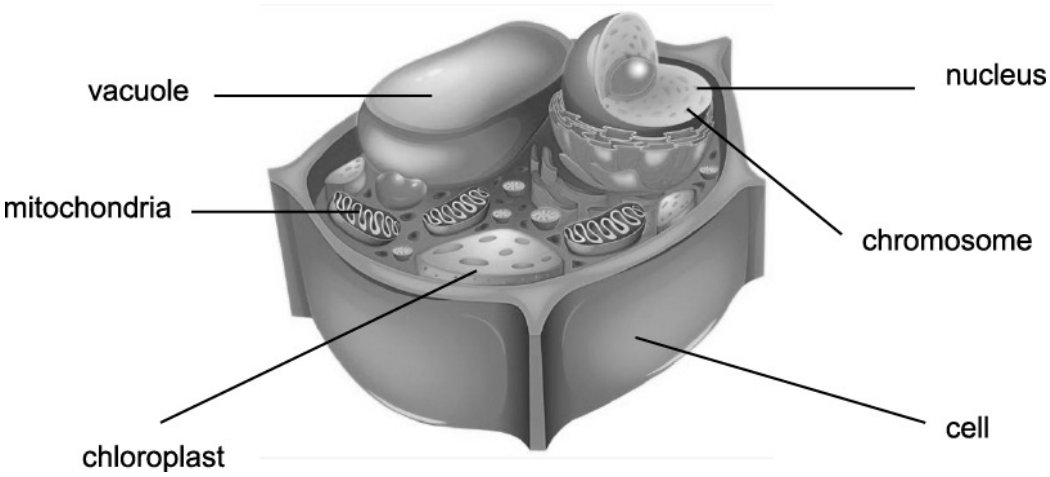
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[2]

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4. The use of microscopes has greatly increased our understanding of the structure and function of the cell.

The diagram shows a typical cell and some of the structures found inside it.



Write down the name of each structure in order, starting with the largest and ending with the smallest.

The first one has been done for you.

cell _____ _____

_____ _____ _____ [3]

END OF QUESTION PAPER

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