OCR GCSE 21ST CENTURY BIOLOGY B · J257

BIOLOGY



EXAM QUESTION PACK

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

SCORE	PERCENTAGE
/16	%

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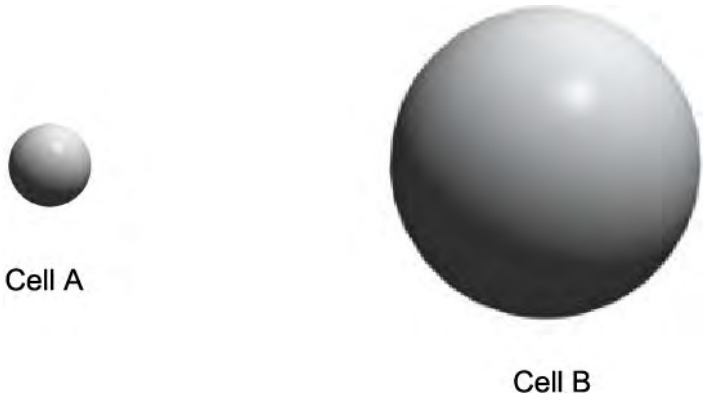
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1(a). The use of microscopes has greatly increased our understanding of the cell.

Cells come in different shapes and sizes.

Look at the diagrams of two **spherical** cells **A** and **B**.



Estimate how many times larger cell B is than cell A.

Describe the method you used to make your estimation.

Estimate _____ X larger

---[3]

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(b).

(i) A group of students decide to look at human red blood cells and human egg cells using a light microscope.

Name a structure that would be visible in the human egg cell but **not** in the human red blood cell.

_____ **[1]**

(ii) A human egg cell is approximately 10^2 μm in diameter.

A human red blood cell is approximately 10 μm in diameter.

How many times larger is an egg cell compared to a red blood cell?

_____ X larger **[1]**

(iii) Suggest an advantage of both cells being the size they are.

Human egg cell _____

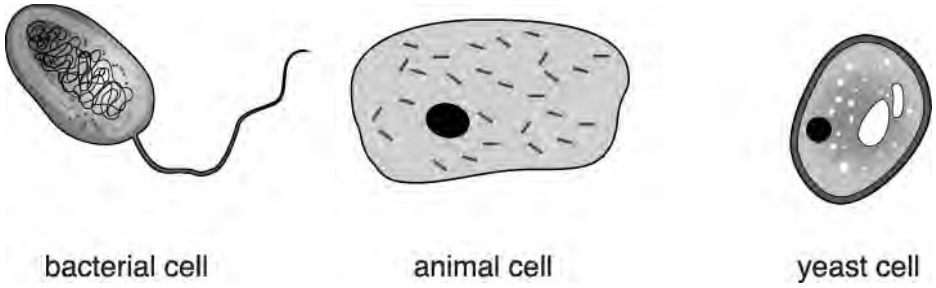
_____

Red blood cell _____

_____ **[2]**

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2. The diagrams show three different types of cell.



bacterial cell animal cell yeast cell

(i) Which of the structures below is **not** found in a bacterial cell?

Place a tick (✓) in the box next to the correct answer.

cell wall ☐

circular piece of DNA ☐

cell membrane ☐

mitochondrion ☐

[1]

(ii) Which of the structures below is **not** found in an animal cell or a yeast cell?

Place a tick (✓) in the box next to the correct answer.

cell wall ☐

circular piece of DNA ☐

cell membrane ☐

mitochondrion ☐

[1]

(iii) Which of the structures below is found in all **three** types of cell?

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Place a tick (✓) in the box next to the correct answer.

cell wall	☐
circular piece of DNA	☐
cell membrane	☐
mitochondrion	☐

[1]

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3. **Table 4.2** gives information about plant cells and pathogens.

Cell type	Mean diameter (μm)	Mean diameter (m)
Plant cell		8×10^{-5}
Bacterium	2	
Virus	0.25	

Table 4.2

(i) Give the mean diameter of the plant cell in μm.

Mean diameter = ... μm **[1]**

(ii) Give the mean diameter of the bacterium in m.

Give your answer in standard form.

Mean diameter = ... m **[1]**

(iii) Give the mean diameter of the plant cell, in m, to the nearest order of magnitude.

Mean diameter = ... m **[2]**

(iv) Show that the sizes of the bacterium and the virus are the same order of magnitude.

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[2]

END OF QUESTION PAPER

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