

# Cell Structure

## Question Paper 2

Level	A Level
Subject	Biology
Exam Board	OCR
Module	Foundations in Biology
Topic	Cell Structure
Booklet	Question Paper 2

**Time allowed:** 38 minutes

**Score:** /28

**Percentage:** /100

### Grade Boundaries:

A*	A	B	C	D	E
>69%	56%	50%	42%	34%	26%

## Question 1

The use of microscopy has greatly enhanced our knowledge of cell structure.

(a) Explain the difference between *magnification* and *resolution*. [2]

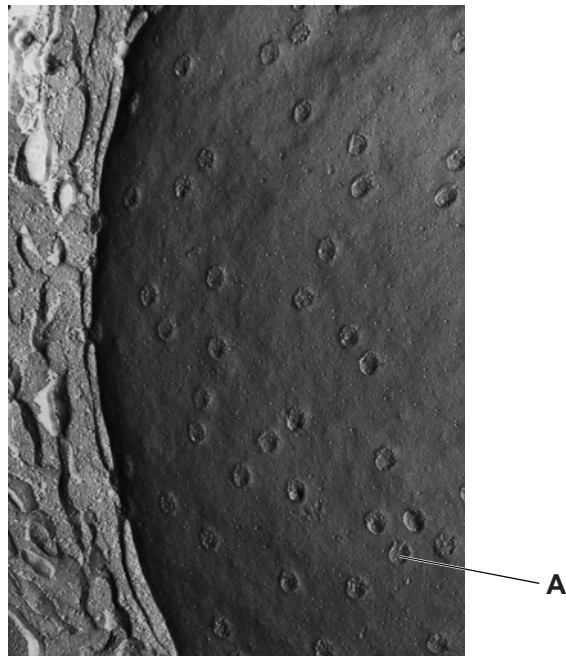
(b) State the resolution that can be achieved by each of the following types of microscope.

light microscope .....

transmission electron microscope .....

[2]

(c) Fig. 4.1 is an electron micrograph showing part of a nucleus.



x 25000

Fig. 4.1

(i) A student stated that Fig. 4.1 was taken using a scanning electron microscope.

What evidence supports the student's statement?

[1]

(ii) On Fig. 4.1, the nuclear pore complex, labelled **A**, is 3 mm wide.

Calculate the actual diameter of the pore, in nanometres.

[2]

(iii) State the function of the nuclear pores.

[1]

(d) State **two** features of a eukaryotic cell, other than nuclear pores, that would **not** be visible using medium power of a light microscope.

[2]

[Total: 10]

(a) Table 4.1 compares the structures of prokaryotic and eukaryotic cells.

Complete the table.

[4]

Table 4.1

prokaryotic	eukaryotic
no true nucleus	genetic material held in a nucleus
genetic material consists of 'naked' DNA	
average diameter of cell 0.5 – 5µm	
	ribosomes about 22 nm in diameter
	cell wall sometimes present

(b) The cytoskeleton is an important component in the cytoplasm of all eukaryotic cells.

(i) Name **one** structure, **associated with the cytoskeleton**, which can bring about cell movement.

[1]

(ii) Suggest **two** processes **inside cells** that rely on the cytoskeleton for movement.

[2]

[Total: 7]

Fig. 1.1 is a diagram of an animal cell as seen using a transmission electron microscope.

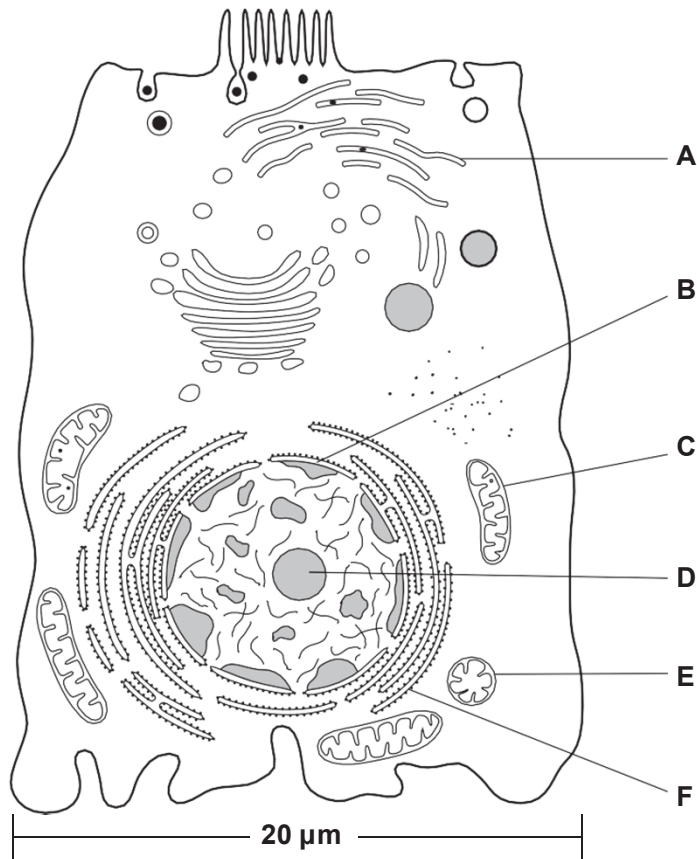


Fig. 1.1

(a) (i) Name the structures of the cell labelled **A**, **B**, **C** and **D**. [4]

**A**

**B**

**C**

**D**

(ii) Structures **C** and **E** are examples of the same organelle. Suggest why **E** looks so different to **C**. [2]

(iii) Calculate the actual length of structure **C**.

Show your working and give your answer in micrometres ( $\mu\text{m}$ ).

**[2]**

(b) Proteins are produced by the structure labelled **F**. Some of these proteins may be **extracellular** proteins that are released from the cell.

Outline the sequence of events following the production of extracellular proteins that leads to their release from the cell.

**[3]**

**[Total: 11]**