Cambridge International AS & A Level

BIOLOGY (9700) PAPER 2

Past Paper Questions By Topic
+ Answer Scheme

2015 - 2020

Complete Syllabus

PapaCambridge

Chapter 1

Cell structure

1.1 Cells as the basic units of living organisms

1. 9700_s17_qp_21 Q: 1

(a) Each of the statements **A** to **D** describes a structure found in eukaryotic cells.

Identify the structure that is described in each statement.

A An organelle that contains 70S ribosomes.

.....

B A thread-like structure composed of DNA and histone proteins.

.....

C The organelle that modifies and packages proteins for secretion.

.....

D The structure that synthesises rRNA and combines it with proteins.

.....

[4]

(b) Prokaryotes and plant cells have cell walls.

Outline the composition of the cell wall of a prokaryote **and** the composition of the cell wall of a plant cell to show how they differ.

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.....[2]

[Total: 6]

2. 9700_s17_qp_22 Q: 1

(a) In multicellular organisms, the structure of different cell types is adapted to their function. Within these cells there are a number of different organelles, each with a particular function.

Table 1.1 contains information about the structure and function of five different types of cell. The table also includes, for each type of cell, one example of a cell organelle that is essential for the function to be carried out.

Complete Table 1.1.

Table 1.1

type of cell	function of cell	example of organelle required to carry out function
palisade mesophyll		chloroplast
Leydig	synthesis of steroid hormones	
	production of secretory vesicles for release of antibody	Golgi body
root hair cell	active uptake of mineral ions from the soil	
pancreas acinar	synthesis of enzymes	

[5]

(b) A tissue is a collection of one or more types of cell, specialised to carry out a particular function.

An organ can be considered a structural unit within an organism that:
- consists of more than one type of tissue
- performs a particular function.

The aorta is the main artery of the body.

Explain, with reference to its structure and function, whether the aorta may be described as a tissue or an organ.

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.....[4]

[Total: 9]

3. 9700_w17_qp_23 Q: 1

Fig. 1.1 is a transmission electron micrograph of a part of an animal cell.

Fig. 1.1

(a) Calculate the actual width of the organelle labelled **A**, as shown by line **X–Y**.

State the formula that you will use and show your working.

Give your answer in μm and to one decimal place.

formula

..... μm [3]

(b) **(i)** Name the organelle **A** and state its role in cells.

name .....

role .....

.....

.....[2]

(ii) Name the cell structure labelled **B** and state **one** reason for your answer.

name .....

reason .....

.....

.....[2]

[Total: 7]

4. 9700_M16_qp_22 Q: 2

Fig. 2.1 shows a root tip cell in interphase.

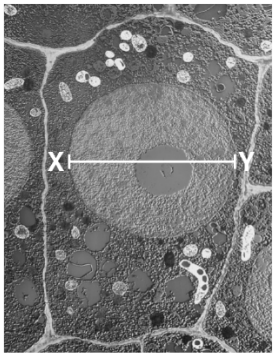

Fig. 2.1

(a) The actual diameter of the nucleus between **X** and **Y** is 9.0 µm.

Calculate the magnification of the plant cell shown in Fig. 2.1.

Write down the formula for magnification and use it to make your calculation. Show your working.

formula

magnification × ..... [3]

(b) Describe the structure of a nucleus.

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.....[3]

[Total: 6]

5. 9700_w15_qp_21 Q: 1

Fig. 1.1 is an electron micrograph of a mitochondrion.

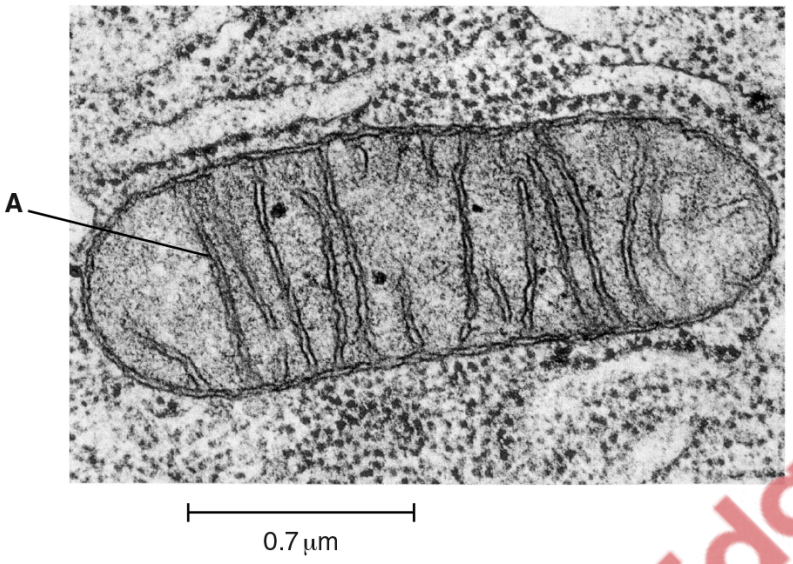

Fig. 1.1

(a) State the function of mitochondria.

..... [1]

(b) Name structure **A**.

..... [1]

(c) Calculate the magnification of the image in Fig. 1.1.

Show your working.

magnification × ..... [2]

(d) Explain why the light microscope could **not** be used to produce the image in Fig. 1.1.

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..... [2]

(e) Scientists think that mitochondria were once prokaryotes. The evidence for this is that mitochondria have features in common with prokaryotes.

State two features that mitochondria have in common with prokaryotes.

1. .....

2. .....

[2]

[Total: 8]