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Level: SL IB in Biology
Subject: Biology
Topic: IB SL Biology
Type: Topic Question

2002



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All International Baccalaureate IB Topic Questions SL Biology

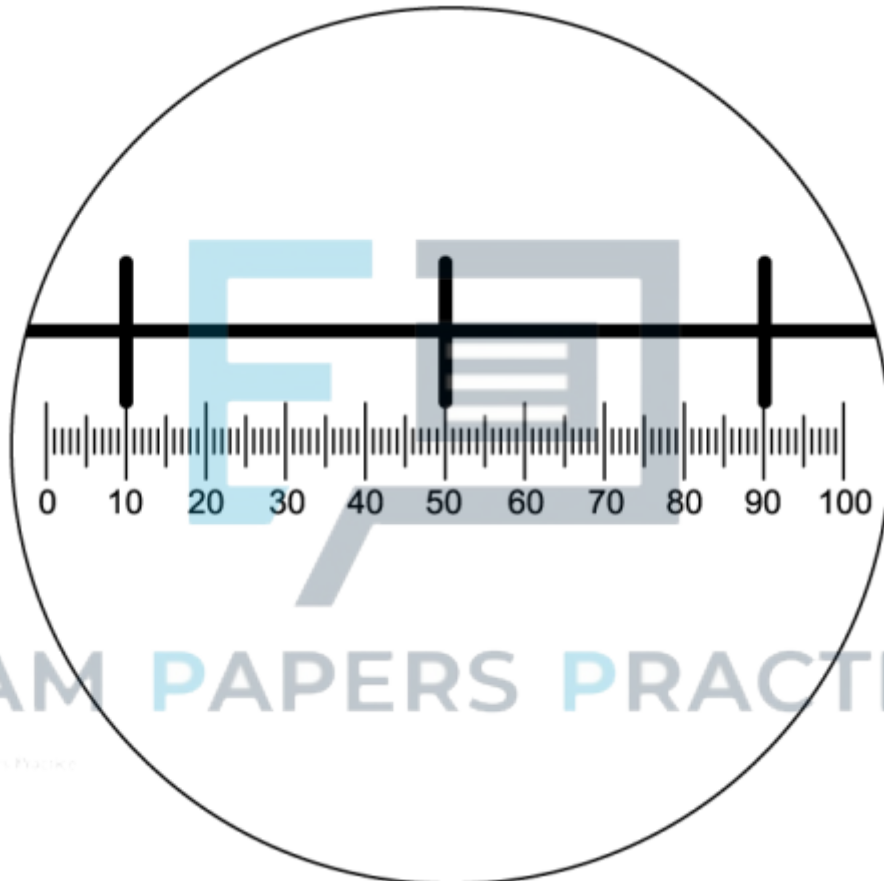
BIOLOGY

SL - IB

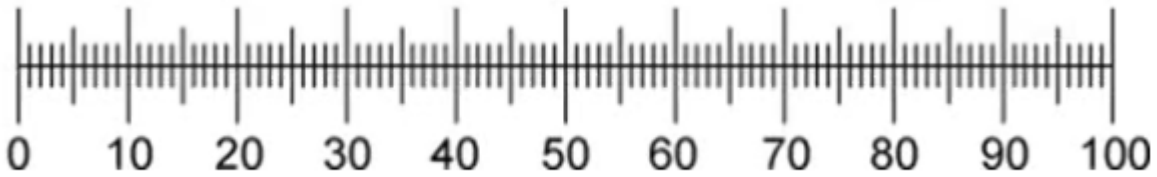
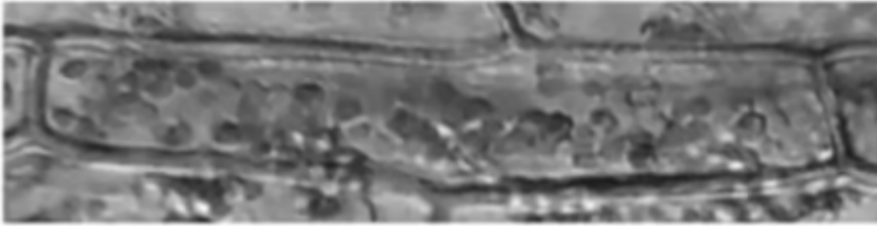
Key skills

Question 1.

A stage micrometer with small divisions of 0.1 mm was used to calibrate an eyepiece graticule, as shown in the diagram below.



A slide containing a plant cell was placed on the stage in place of the stage micrometer.
What is the width of one of the chloroplasts below?



- A. 100 μm
- B. 50 μm
- C. 10 μm
- D. 0.5 mm



[1 mark]

Question 2.

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A giant bacterium, *Epulopiscium fishelsoni* was discovered in 1985.

Which cell structure(s) would enable biologists to classify *Epulopiscium* as prokaryotic?

- A. Circular DNA and 70S ribosomes occurring freely in the cytoplasm, and a cell wall made of murein
- B. A pair of centrioles close to a nuclear pore, and 70S and 80S ribosomes occurring freely in the cytoplasm
- C. Smooth endoplasmic reticulum throughout the cytoplasm, and a cell wall made of murein
- D. A cellulose cell wall outside the plasma membrane, 70S ribosomes, and circular DNA occurring freely in the cytoplasm

[1 mark]

Question 3.

A cell which is actively growing is supplied with radioactive amino acids.

Which cell component will show an increase in radioactivity first?

- A. Mitochondria
- B. Golgi apparatus
- C. Rough endoplasmic reticulum
- D. Nucleus

[1 mark]



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Question 4.

The image below is an electron micrograph of part of an animal cell.

Which of the following options (A to D) would be the site of protein modification and packaging?



B

C

D

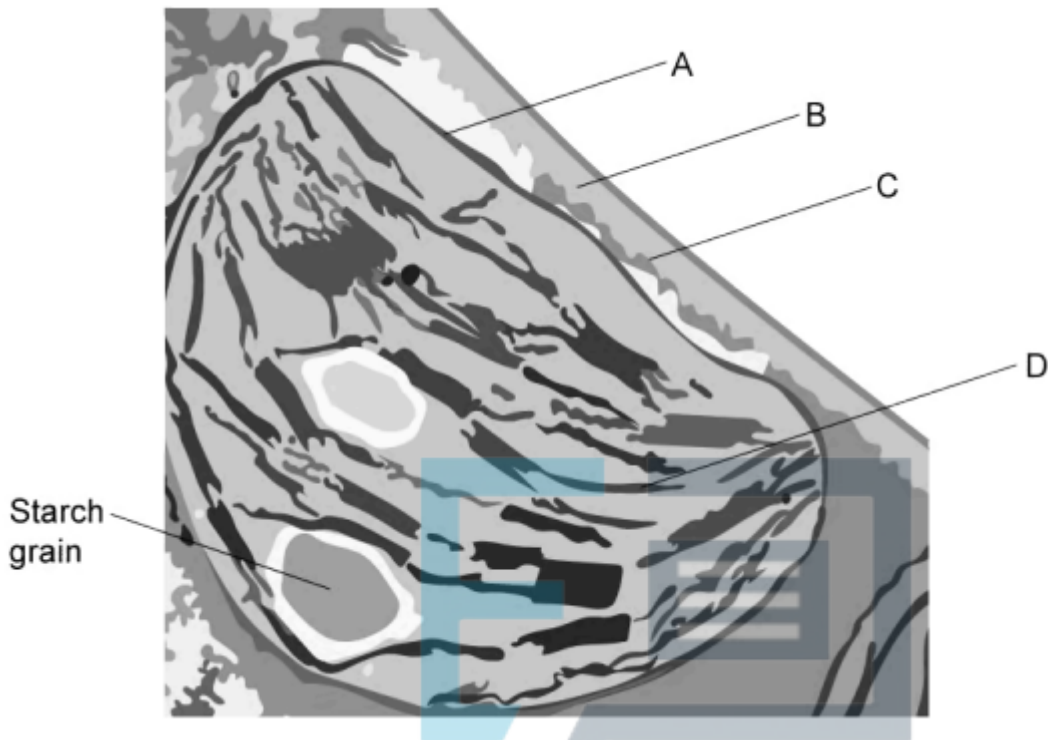
A

EXAM PAPERS PRACTICE [1 mark]

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Question 5.

The electron micrograph below shows a small section of a palisade mesophyll cell.



Which structure controls the exchange of substances into and out of the cell?

[1 mark]

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Question 6.

Which of the following statements best describes the role of the rough endoplasmic reticulum (ER) in eukaryotic cells?

- A. It synthesizes lipids and detoxifies drugs.
- B. It packages and modifies proteins for secretion.
- C. It assists in the synthesis and folding of proteins destined for secretion or membrane localization.
- D. It is involved in the degradation of cellular waste and recycling of components.

Question 7.

Which structural feature of the cell membrane allows it to maintain fluidity and adaptability in response to environmental changes?

- A. The presence of cholesterol molecules within the lipid bilayer
- B. The rigid nature of the phospholipid bilayer
- C. The formation of lipid rafts that anchor membrane proteins
- D. The complete impermeability to all types of molecules

[1 mark]

Question 8.

In a plant cell, what is the primary function of the central vacuole, and how does it contribute to cell structure?

- A. It stores nutrients and waste products while maintaining turgor pressure to support cell rigidity.
- B. It synthesizes proteins and lipids required for cell growth and repair.
- C. It digests cellular components and recycles them into usable materials.
- D. It transports synthesized proteins and lipids to various parts of the cell.

[1 mark]

Question 9.

How do prokaryotic cells differ from eukaryotic cells in terms of their ribosomal structure?

- A. Prokaryotic cells have ribosomes that are larger and more complex than those in eukaryotic cells.
- B. Prokaryotic cells contain ribosomes that are smaller and less complex than those in eukaryotic cells.
- C. Prokaryotic cells lack ribosomes altogether, relying on alternative structures for protein synthesis.
- D. Prokaryotic cells have ribosomes that are similar in size and complexity to those in eukaryotic cells.

[1 mark]

Question 10.

Which of the following statements accurately reflects the differences between plant and animal cell division?

- A. Plant cells undergo mitosis without forming a mitotic spindle, while animal cells do.
- B. Animal cells form a cleavage furrow during cytokinesis, whereas plant cells form a cell plate.
- C. Plant cells utilize centrosomes with centrioles to organize microtubules during mitosis, unlike animal cells.
- D. Animal cells do not require mitotic checkpoints, while plant cells use them to regulate division.

[1 mark]