Biology
Standard level
Paper 1B

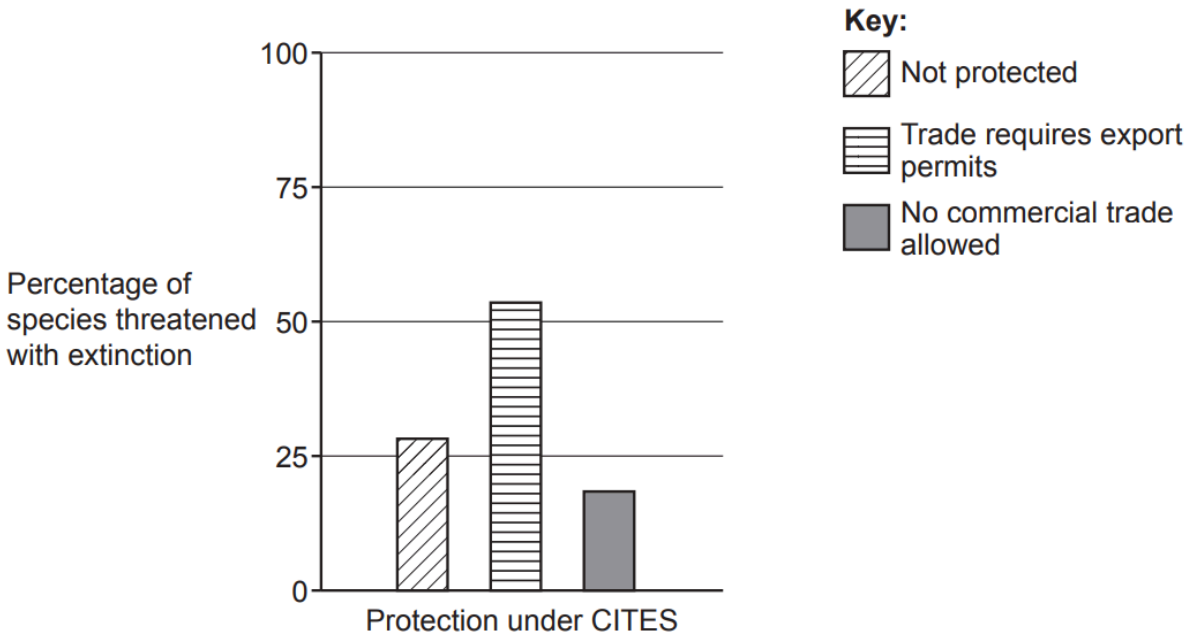
IB Biology SL prediction paper 1B

1 hour 30 minutes [Paper 1A and Paper 1B]

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- This product is an unofficial resource and is not affiliated with, endorsed by, or produced by the International Baccalaureate Organization (IBO).
- The maximum mark for paper 1B is **[25 marks].**
- The maximum park for paper 1A and paper 1B is **[55 marks].**

1. The image shows a bar chart of the percentage of species threatened with extinction that fall into three categories of international wildlife trade control. CITES (the Convention on International Trade in Endangered Species) is an international agreement that sets rules for cross-border trade in listed wild animals and plants to help safeguard species.



(a) State which conservation status categories are usually included when a species is described as “threatened with extinction.” [1]

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(Question 1 continued)

(b) Describe how threatened species are distributed among the three trade-control categories shown in the figure. [2]

(c) Suggest one reason why some species that are threatened with extinction might still **not** appear in any trade-control category. [2]

(Question 1 continued)

(d) Evaluate the claim that “the pattern in the figure shows conservation targeting is optimal.” Use one **piece of evidence** from the figure and one **limitation** not visible in the figure, then give a reasoned judgement. [2]

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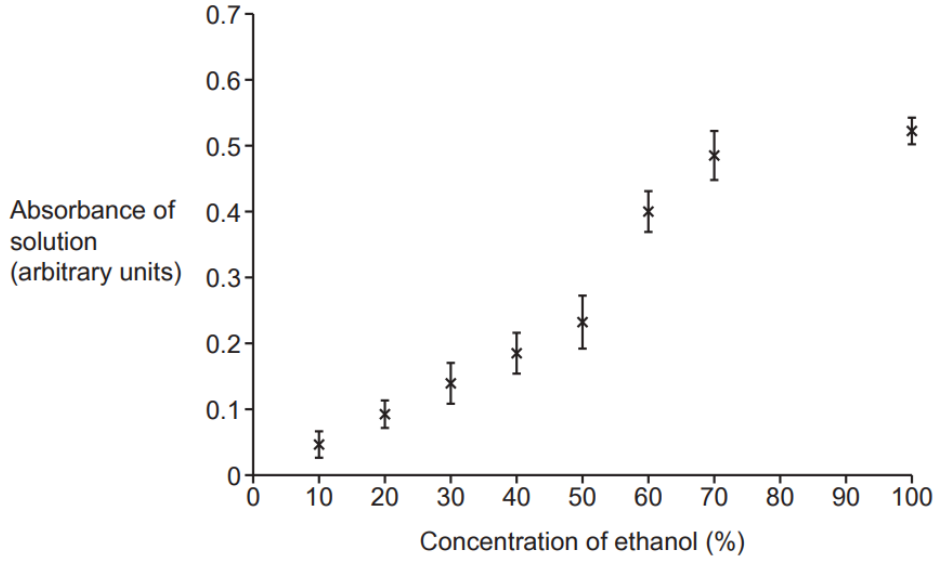
2. The image shows a graph of pigment absorbance from beetroot discs after soaking in different ethanol concentrations.



(a) Identify the dependent variable. [1]

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(b) Describe the relationship between ethanol concentration and membrane permeability in the graph. [2]

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(**Question 2 continued)**

(c) Explain how ethanol disrupts the structure of the plasma membrane to produce the observed effect. [2]

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(d) Suggest one suitable control variable (besides volume of ethanol) and justify why it must be controlled. [1]

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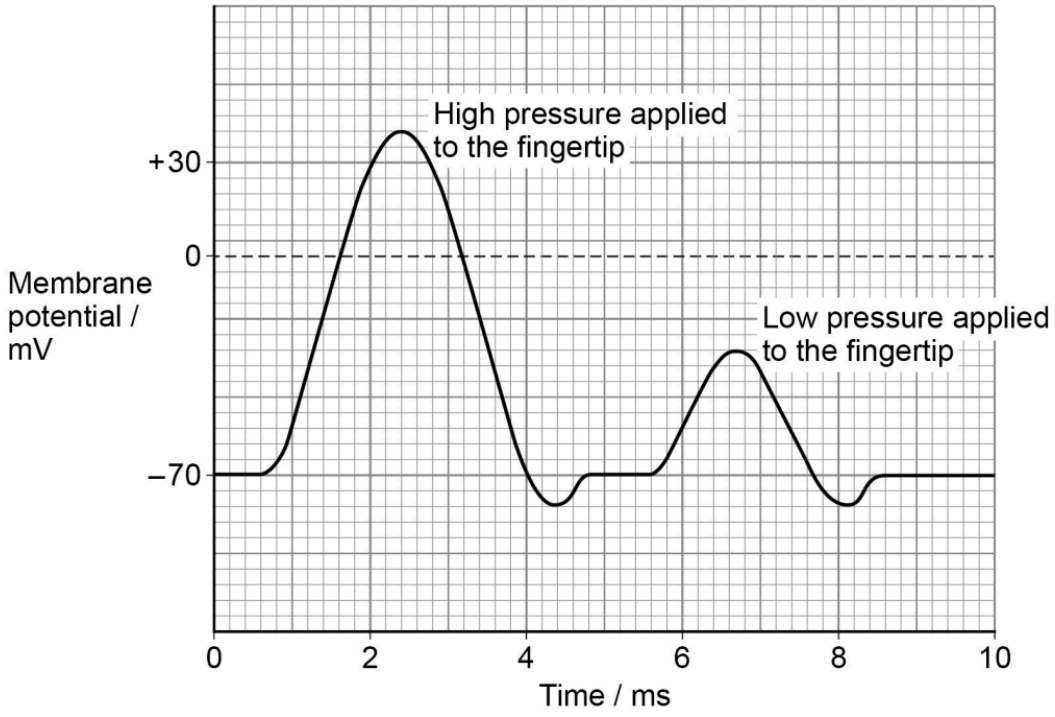
3. The image shows a trace of membrane potential changes in a sensory neurone during stimulation (resting potential, threshold, depolarization, repolarization, refractory period).



(a) Identify the phase during which voltage-gated Na^+ channels are open and the membrane potential rises rapidly. [1]

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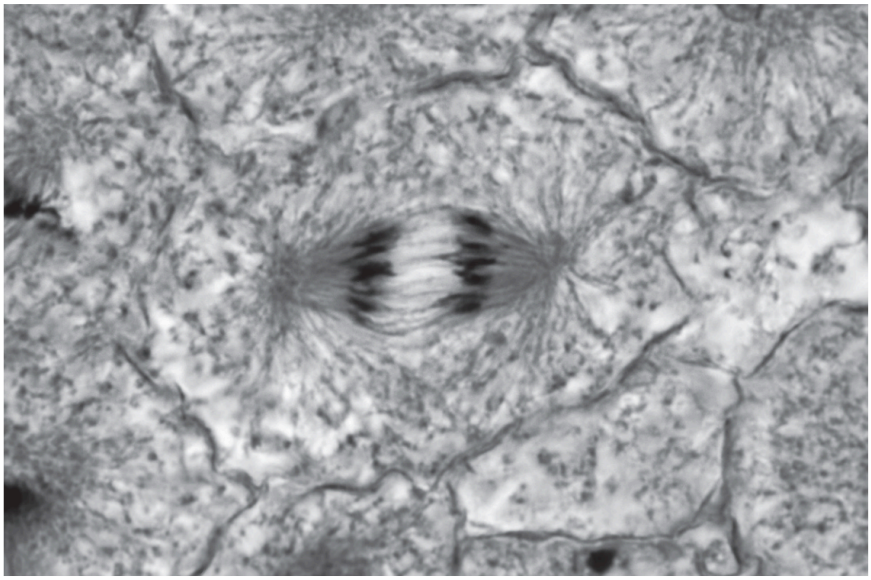
(Question 3 continued)

(b) Explain the sequence of ion movements and channel states that produce depolarization and repolarization. [3]

(c) Predict how the trace would change if the neurone were exposed to tetrodotoxin (TTX), a blocker of voltage-gated Na^+ channels, and justify your prediction. [2]

4. The image shows a plant cell in mitosis viewed under a microscope.



(a) Identify the mitotic stage shown in the image. [1]

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(b) Explain the role of spindle microtubules and centromeres in achieving accurate chromosome segregation. [2]

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(Question 4 continued)

(c) Distinguish between cytokinesis in plant cells and animal cells. [2]

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(d) Outline how you would determine the mitotic index from a microscope slide of root tip cells. [1]

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