

SCIENCE COORDINATE 9-1

0973 | Paper 2

2020 — 2025

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1 - (0973/21_Summer_2020_Q1)

Which characteristic of living organisms is defined as the chemical reactions that break down nutrient molecules and release energy for metabolism?

- A** excretion
- B** nutrition
- C** respiration
- D** reproduction

2 - (0973/22_Summer_2020_Q1)

Which characteristic of living things is described as the removal of toxic materials and substances in excess of requirements?

- A** excretion
- B** homeostasis
- C** nutrition
- D** respiration

3 - (0973/21_Summer_2022_Q1)

Which statement about one of the characteristics of living organisms is correct?

- A** Excretion is the removal of excess substances and toxic materials.
- B** Movement is the ability to detect and respond to changes in the environment.
- C** Nutrition is the maintenance of a constant internal environment.
- D** Respiration is the manufacture of nutrients from raw materials.

4 - (0973/22_Summer_2022_Q1)

Which statement about the characteristics of living organisms is correct?

- A** Excretion is the chemical reactions in cells that release energy.
- B** Nutrition is the taking in of materials for energy, growth and development.
- C** Respiration is the process that makes more of the same kind.
- D** Sensitivity is the removal of toxic materials and excess substances.

5 - (0973/22_Summer_2023_Q1)

Which is **not** a characteristic of all living organisms?

- A** excretion
- B** growth
- C** photosynthesis
- D** sensitivity

6 - (0973/21_Winter_2023_Q1)

Which characteristic of a living organism releases energy for growth?

- A** excretion
- B** reproduction
- C** respiration
- D** sensitivity

7 - (0973/21_Summer_2024_Q1)

Which processes are done by green plants?

- 1 detect stimuli and make appropriate responses
- 2 break down nutrient molecules to release energy for metabolism
- 3 take in carbon dioxide, water and ions for energy, growth and development

- A** 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

8 - (0973/21_Winter_2024_Q1)

Which term describes the ability to detect and respond to changes in the environment?

- A** excretion
- B** growth
- C** movement
- D** sensitivity

9 - (0973/22_Summer_2025_Q1)

Which characteristic occurs in **all** living organisms?

- A** egestion
- B** excretion
- C** photosynthesis
- D** plasmolysis

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1 - (0973/22_Summer_2020_Q2)

What is **not** in contact with cytoplasm?

- A** cellulose cell wall
- B** cell membrane
- C** chloroplast
- D** nucleus

2 - (0973/21_Winter_2021_Q2)

Which structure is only found in plant cells?

- A** cell membrane
- B** cytoplasm
- C** nucleus
- D** vacuole

3 - (0973/21_Summer_2022_Q2)

Which statement about cells is correct?

- A** Cell membranes are found only in animal cells.
- B** Cell membranes are found only in plant cells.
- C** Cell walls are found only in animal cells.
- D** Cell walls are found only in plant cells.

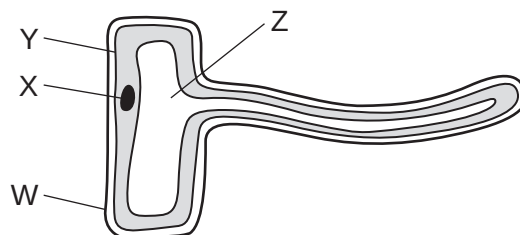
4 - (0973/22_Summer_2022_Q2)

Which statement about cells is correct?

- A** Cell membranes are found only in animal cells.
- B** Cell membranes are found only in plant cells.
- C** Cell walls are found only in animal cells.
- D** Cell walls are found only in plant cells.

5 - (0973/22_Summer_2023_Q2)

The diagram shows a specialised cell from a plant.



Which structures **not** found in animal cells are shown in the diagram and which structure often found in other plant cells is missing?

	structures not found in animal cells	structure found in other plant cells
A	W and X	chloroplast
B	X and Y	nucleus
C	Y and Z	nucleus
D	Z and W	chloroplast

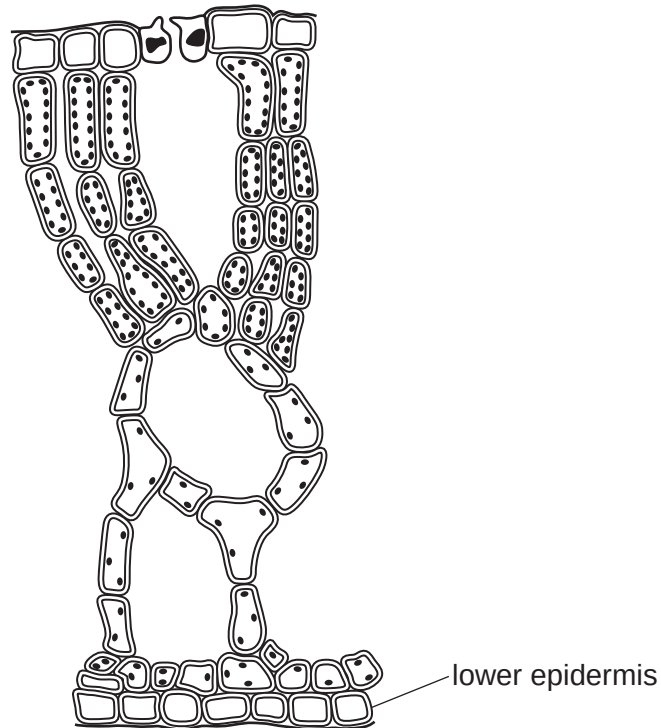
Which structure is only found in plant cells?

- A** cell membrane
- B** cytoplasm
- C** nucleus
- D** vacuole

6 - (0973/21_Summer_2024_Q5)

The diagram shows a cross-section of a leaf of a plant.

The leaf is adapted to float on water with the upper epidermis exposed to the air.



Which statement explains one adaptation visible in the diagram?

- A** Guard cells in the lower epidermis are always closed to stop water escaping the leaf.
- B** The palisade mesophyll cells are next to the lower epidermis to maximise photosynthesis.
- C** The stomata are in the upper epidermis so that gas exchange with the air can take place.
- D** There is no cuticle in the upper epidermis to prevent water entering the leaf.

7 - (0973/22_Summer_2024_Q2)

What are all living organisms made from?

- A** cells
- B** eggs
- C** mesophyll
- D** sperm

8 - (0973/22_Summer_2025_Q2)

Which row shows a specialised cell type matched with its function?

	cell type	function
A	ciliated	movement of mucus
B	egg	transport of oxygen
C	red blood	phagocytosis
D	root hair	photosynthesis

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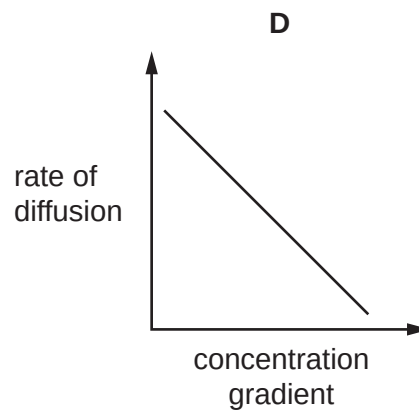
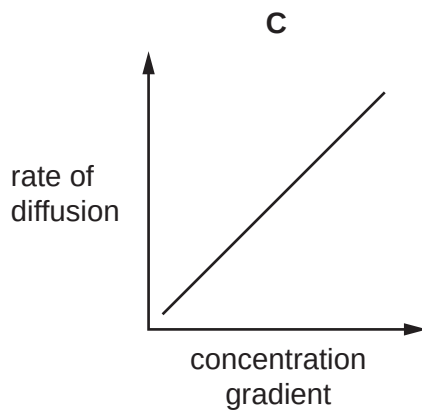
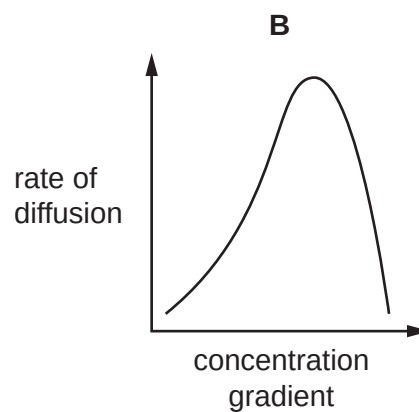
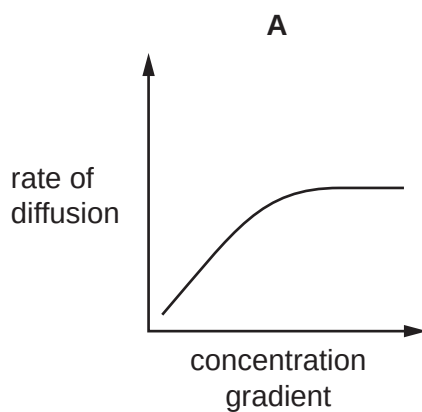
1 - (0973/21_Summer_2020_Q2)

What is the net movement of molecules during diffusion?

- A** from a higher concentration to a lower concentration down a concentration gradient
- B** from a higher concentration to a lower concentration up a concentration gradient
- C** from a lower concentration to a higher concentration down a concentration gradient
- D** from a lower concentration to a higher concentration up a concentration gradient

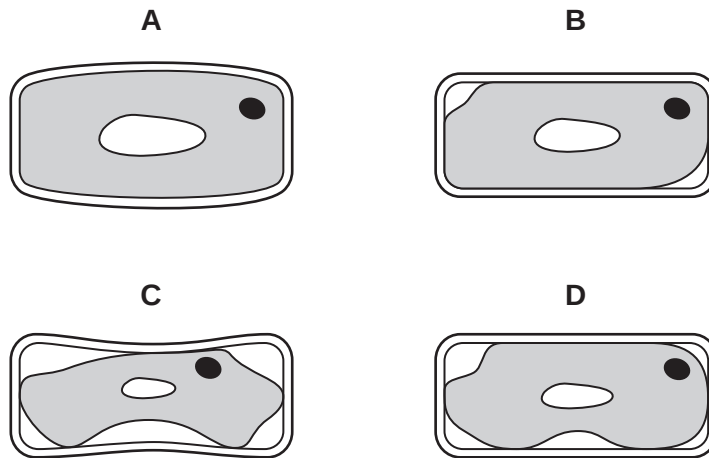
2 - (0973/21_Summer_2021_Q2)

What is the effect of increasing the concentration gradient on the rate of diffusion?



3 - (0973/22_Summer_2021_Q2)

Which cell is most flaccid?



4 - (0973/21_Winter_2022_Q2)

Red onion cells are placed in distilled water.

Which statement is correct?

- A** The cells plasmolyse; water moves into the cells from a high to a low water potential.
- B** The cells plasmolyse; water moves out of the cells from a low to a high water potential.
- C** The cells become turgid; water moves into the cells from a high to a low water potential.
- D** The cells become turgid; water moves out of the cells from a low to a high water potential.

5 - (0973/21_Summer_2023_Q2)

What is meant by osmosis?

- A** the net movement of water molecules from a region of higher water potential to a region of lower water potential through a cell wall
- B** the net movement of water molecules from a region of higher water potential to a region of lower water potential through a partially permeable membrane
- C** the net movement of water molecules from a region of lower water potential to a region of higher water potential through a cell wall
- D** the net movement of water molecules from a region of lower water potential to a region of higher water potential through a partially permeable membrane

6 - (0973/21_Winter_2023_Q2)

When a plant cell is put into a solution that has a lower water potential than the cell, the cytoplasm can pull away from the cell wall.

What is the term for this?

- A** flaccid
- B** plasmolysis
- C** turgid
- D** turgor pressure

7 - (0973/21_Summer_2024_Q2)

Which conditions will result in the fastest rate of diffusion?

	temperature	concentration gradient	diffusion distance
A	high	large	short
B	high	small	long
C	low	small	short
D	low	large	long

8 - (0973/22_Summer_2025_Q3)

The mass of a peeled potato is recorded.

The potato is put in a salt solution with a lower water potential than the potato for two hours.

The outside of the potato is then dried and the mass recorded.

Which statement explains what happens to the potato after two hours in the salt solution?

- A** It gained mass by osmosis as salt moved into the potato from the surrounding solution.
- B** It gained mass by osmosis as water moved into the potato from the surrounding solution.
- C** It lost mass by osmosis as water moved from the potato into the surrounding solution.
- D** It lost mass by osmosis as salt moved from the potato into the surrounding solution.

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