

Animal and plant cells

GCSE Biology — practice questions with answers

Practice questions

Answer in full sentences where the question says *describe* or *explain*. A one-word answer to an explain question rarely gets the mark, even when it is correct.

Section A — Naming the parts

- 1 Name the structure that controls what the cell does.
- 2 Name the structure where aerobic respiration takes place.
- 3 Name the structure where proteins are made.
- 4 Name the structure that controls what enters and leaves the cell.
- 5 Name the three structures found in a plant cell but not an animal cell.
- 6 What substance is the plant cell wall made of?

Section B — Describing what they do

- 7 Describe the function of the nucleus.
- 8 Describe the function of the permanent vacuole.
- 9 Describe the function of chloroplasts.
- 10 A muscle cell contains many more mitochondria than most other cells. Suggest why.
- 11 Describe where the cytoplasm is and what happens there.

Section C — Explaining the differences

- 12 Explain why a plant cell needs a cell wall as well as a cell membrane.
- 13 A student writes: "All plant cells contain chloroplasts." Explain why this is wrong.
- 14 Explain why a plant needs chloroplasts but an animal does not.
- 15 Explain how the permanent vacuole helps hold a plant upright.

Section D — Exam-style

- 16 A student looks at two cells under a microscope. Cell A has a nucleus, cytoplasm, a cell membrane and mitochondria. Cell B has all of those, plus a cell wall and a large permanent vacuole, but no chloroplasts. (a) Which cell is the plant cell? Give a reason. (b) Suggest which part of the plant cell B was taken from, and explain your answer.
- 17 Compare an animal cell and a plant cell. Your answer should include both similarities and differences.
- 18 A student says that because a plant cell has a cell wall, it does not need a cell membrane. Explain the error.

Answers

Section A

- 1 The **nucleus**
- 2 The **mitochondria**
- 3 The **ribosomes**
- 4 The **cell membrane**
- 5 **Cell wall, chloroplasts, permanent vacuole**
- 6 **Cellulose**

Section B

- 7 It contains the genetic material and controls the activities of the cell.
- 8 It is filled with cell sap. When full it pushes outwards and keeps the cell firm, which supports the plant.
- 9 They contain chlorophyll, which absorbs light so the cell can carry out photosynthesis.
- 10 Muscle cells need a lot of energy to contract. More mitochondria means more aerobic respiration, releasing more energy.
- 11 The cytoplasm fills the cell, between the membrane and the nucleus. Most of the cell's chemical reactions happen there.

Section C

- 12 They do different jobs. The membrane controls what enters and leaves the cell. The wall gives strength and support, and stops the cell bursting when it fills with water. One cannot do the other's job.
- 13 Root cells have no chloroplasts, because there is no light underground and so no photosynthesis for them to carry out.
- 14 A plant cannot move to find food, so it has to make its own where it stands, and chloroplasts allow it to do that using light. An animal takes in food that is already made, so it has no need for them.
- 15 Cell sap fills the vacuole and pushes outwards against the cell wall. Across many cells at once, that pressure keeps the plant firm and upright.

Section D

- 16 (a) **Cell B**, because it has a cell wall and a permanent vacuole, and neither is found in an animal cell.
(b) A **root** cell. It is a plant cell, since it has a cell wall and a vacuole, but it has no chloroplasts — so it is from a part of the plant that gets no light.
- 17 **Similarities:** both have a nucleus, cytoplasm, a cell membrane, mitochondria and ribosomes. Both are therefore able to respire aerobically and make proteins. **Differences:** the plant cell also has a cell wall made of cellulose for support, a permanent vacuole holding cell sap, and usually

chloroplasts for photosynthesis. The animal cell has none of these. A good answer also gives a reason: the plant cannot move, so it must make its own food and support itself where it stands.

- 18 The wall and the membrane do different jobs. The cell wall is made of cellulose and gives support, but it is freely permeable — it does not control what passes through. The cell membrane does that. Removing the membrane would leave the cell unable to control what enters and leaves it.