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B1 L1

B1 L1 Animal and plant cells: Exam questions worksheet

Mark scheme · Total 20 marks

/ means alternative answers. ( ) words in brackets are not needed for the mark. **allow** = accept this answer. **ignore** = this does not lose or gain a mark. **do not accept** = this answer cannot score the mark. If a tick-box question has more than one box ticked, give 0 marks.

Question	Answers	Extra information	Mark	AO / Spec. ref.
01.1	1 (the cell wall): **cell wall** (1) 2 (a chloroplast): **chloroplast** (1) 3 (the permanent vacuole): **permanent vacuole** (1)	1 mark for each correct label. If more than one word from the box is written on one line, do not give that mark. **allow** "vacuole" for 3. **do not accept** "cell membrane" for 1.	3	AO1 4.1.1.2
01.2	**It strengthens the cell.**	If more than one box is ticked, give 0 marks.	1	AO1 4.1.1.2
01.3	**cellulose**	**allow** phonetic spellings, such as "celulose". **do not accept** "cell sap", "chlorophyll" or "cellular".	1	AO1 4.1.1.2
		Question 01 total	**5**	
02.1	any **one** from: the cheek cell has **no chloroplasts** it has **no permanent vacuole** it has an **irregular / uneven shape** (the plant cell is a regular / brick shape)	**allow** the same points written about the plant cell (for example "the plant cell has chloroplasts"). **ignore** "no cell wall" (given in the question). **do not accept** "it has no nucleus" or "it has no mitochondria".	1	AO2 4.1.1.2
02.2	48 ÷ 6 (1) = **8** (µm) (1)	Correct answer with no working = 2 marks. **allow** 8 µm written anywhere in the space. **do not accept** 288 (48 × 6) or 42 (48 − 6).	2	AO2 4.1.1.2 (maths: estimation)
02.3	they are **too small** (to be seen with a light microscope) (1)	**allow** "too small to see clearly". **allow** "the magnification / resolution of a light microscope is not high enough". **do not accept** "cheek cells have no mitochondria" or "the stain hides them".	1	AO2 4.1.1.2 (4.1.1.5)
		Question 02 total	**4**	
03	Mitochondria → **Aerobic respiration** (1) Nucleus → **Contains genetic material, which controls the activities of the cell** (1) Ribosomes → **Protein synthesis** (1)	If more than one line is drawn from a structure, do not give the mark for that structure.	3	AO1 4.1.1.2
		Question 03 total	**3**	
04.1	**cell sap** (1)	**allow** "a (weak) solution of sugars and salts". **do not accept** "water" alone or "cytoplasm".	1	AO1 4.1.1.2

Question	Answers	Extra information	Mark	AO / Spec. ref.
04.2	(it helps to) **keep the cell firm** (1)	**allow** "supports the cell" or "keeps the cell turgid". **ignore** "stores cell sap". **do not accept** "strengthens the cell wall" or "makes food".	1	AO1 4.1.1.2
		Question 04 total	**2**	
05	Level of response: see below.	Read the whole answer, choose the level that fits best, then the mark within the level.	6	AO1 AO2 4.1.1.1 4.1.1.2
		Question 05 total	**6**	
		TOTAL	**20**	

05 Level descriptors

Level	Marks	Descriptor
3	**5–6**	A detailed and coherent comparison. At least three structures are correctly given as found in both cells and at least two as found only in the pondweed leaf cell, with a correct function for most structures named.
2	**3–4**	Some structures are correctly given as found in both cells or only in the pondweed leaf cell, with a correct function for some of them. The comparison may be incomplete.
1	**1–2**	Simple statements, such as "the plant cell has a cell wall" or "both have a nucleus", with few or no functions.
0	**0**	No relevant content.

05 Indicative content

- both cells have a nucleus, which contains genetic material that controls the activities of the cell
- both have cytoplasm, where most chemical reactions happen
- both have a cell membrane, which controls the movement of substances into and out of the cell
- both have mitochondria, where aerobic respiration happens, releasing energy
- both have ribosomes, where proteins are made (protein synthesis)
- both are eukaryotic: the genetic material is enclosed in a nucleus
- only the pondweed cell has a cell wall, made of cellulose, which strengthens the cell
- only the pondweed cell has chloroplasts, which absorb light to make food by photosynthesis
- only the pondweed cell has a permanent vacuole, filled with cell sap, which keeps the cell firm
- the cheek cell has an irregular shape; the pondweed cell has a regular, brick shape

do not accept "mitochondria make / produce energy" (that statement scores nothing; other points can still score).

Model answers

01.1 1 cell wall; 2 chloroplast; 3 permanent vacuole. **01.2** It strengthens the cell. **01.3** Cellulose. **02.1** The cheek cell has no chloroplasts. **02.2** 48 ÷ 6 = 8 µm. **02.3** Mitochondria are too small to see clearly with a light microscope, and ribosomes are far too small to see at all: its resolution is not high enough. **03** Mitochondria: aerobic respiration; nucleus: contains genetic material, which controls the activities of the cell; ribosomes: protein synthesis. **04.1** Cell sap. **04.2** It helps to keep the cell firm.

05 (Level 3) Both cells are eukaryotic, so both have a nucleus, which contains genetic material that controls the activities of the cell. Both have cytoplasm, where most chemical reactions happen, and a cell membrane, which controls the movement of substances into and out of the cell. Both have mitochondria, where aerobic respiration releases energy, and ribosomes, where proteins are made. Only the pondweed cell has a cell wall made of cellulose, which strengthens the cell. Only the pondweed cell has chloroplasts, which absorb light to make food by photosynthesis, and a permanent vacuole filled with cell sap, which keeps the cell firm. The cheek cell has an irregular shape, but the pondweed cell is a regular brick shape.

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