

Blast-off : Living Organisms Mark Scheme

Page 4: Animal Cell Table

Cell Part	Function
Nucleus	Controls cell activities; contains genetic material.
Cell membrane	Regulates the movement of substances in and out of the cell.
Cytoplasm	Site of chemical reactions within the cell.
Mitochondria	Generates energy for the cell through respiration.

Page 5: Plant Cell Table

Cell Part	Function
Nucleus	Controls cell activities; contains genetic material.
Cell membrane	Regulates movement of substances in and out of the cell.
Cytoplasm	Site of chemical reactions within the cell.
Mitochondria	Generates energy for the cell through respiration.
Cell wall	Provides structure and support to the cell.
Vacuole	Stores nutrients, waste products, and helps maintain cell structure.
Chloroplasts	Contains chlorophyll for photosynthesis, converting sunlight into energy.

Page 6: Questions on Plant and Animal Cells

1. **Part of the cell that controls the cell:** Nucleus
2. **Three parts found in both animal and plant cells:** Nucleus, cell membrane, cytoplasm
3. **Function of the cell wall in a plant cell:** Provides structure and support.

4. **Why no chloroplasts in animal cells:** Animals do not perform photosynthesis; chloroplasts are only needed in plants.
 5. **Function of mitochondria:** Site of respiration; generates energy for the cell.
 6. **Role of chlorophyll in chloroplasts:** Traps sunlight energy for photosynthesis.
 7. **Where cell reactions take place:** Cytoplasm
 8. **Three structures only found in plant cells:** Cell wall, chloroplasts, vacuole
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Page 9-10: Questions on Specialized Cells

1. **Two plant cells:** Root hair cell, Palisade cell
 2. **Plant cell containing chloroplasts:** Palisade cell
 3. **Function of chloroplasts:** Site of photosynthesis; captures sunlight to produce food.
 4. **Letter of the ciliated cell:** D (if labelled as such in booklet).
 5. **Function of ciliated cell:** Moves dust and mucus out of the airways.
 6. **Cell that transfers genetic information from father to offspring:** Sperm cell
 7. **Specializations of red blood cell:**
 - No nucleus to increase space for haemoglobin.
 - Biconcave shape increases surface area for oxygen absorption.
 8. **Diagram of a cell adapted to carry electrical impulses:** Should depict a nerve cell with a long axon.
 9. **Labelling the nucleus and cell membrane on a ciliated cell:** Nucleus should be located centrally; cell membrane outlines the cell.
 10. **Location of ciliated cells in the body:** Airways or respiratory tract.
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Page 19: Classification of Invertebrates (Groups and Reasons)

1. **Group:** Crustaceans
Reason: Has two pairs of antennae and a tough exoskeleton.
2. **Group:** Insects
Reason: Has three pairs of legs, one pair of antennae, and a body divided into three sections.

3. **Group:** Arachnids

Reason: Has four pairs of legs, no antennae or wings, and a body divided into two sections.

4. **Group:** Molluscs

Reason: Soft body, often has a shell.

Pages 24-38: Exam-Style Questions

Page 24

1. (a)

- **Which heads were soaked?:** A and B
- **How can you tell?:** The seeds sprouted in heads A and B due to water availability (2 marks).

(b) Appearance of frequently watered model: It would have more growth or be greener due to more hydration (1 mark).

(c)

- (i) **Root hair cell:** Tick C (1 mark).
 - (ii) **Root hairs take in...:** Water and minerals (1 mark).
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2. (a) **Organ protected by riding hat:** Brain (1 mark).

(b) Fact showing horse is a mammal: Gives birth to live young (1 mark).

(c) Match organ to function:

- **Heart** → Pumps blood faster
- **Lung** → Takes in oxygen faster (2 marks).

(d)

- (i) **Insect features:** Tick "They have a segmented body," "They have six legs," and "They have two pairs of wings" (3 marks).
- (ii) **Feeding type:**
 - **Female horsefly** → Carnivore
 - **Male horsefly** → Herbivore (2 marks).

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3. (a) **Location of plant cell:** In the leaf (1 mark).

(b)

- (i) **Function of nucleus:** Controls cell activities (1 mark).
- (ii) **Function of chloroplasts:** Site of photosynthesis (1 mark).
- (iii) **Function of cell wall:** Provides structure and support (1 mark).

(c) **Parts only in plant cells:** Cell wall, chloroplasts (2 marks).

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4. (a)

- **Name of part A:** Vacuole
- **Function of part A:** Stores nutrients and helps maintain cell structure (2 marks).

(b)

- **Name of part E:** Chloroplast
- **Function of part E:** Captures sunlight for photosynthesis (2 marks).

(c) **Parts not found in animal cells:** A (Vacuole) and E (Chloroplast) (2 marks).

(d) **Evidence cell is from a leaf:** Presence of chloroplasts for photosynthesis (1 mark).

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5. (a)

- (i) **Name of part P:** Nucleus
 - **Function:** Controls cell activities and contains genetic material (2 marks).

(ii) **Cell type:** Tissue (Tick "Tissue") (1 mark).

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6. **(a) Other adaptation of sperm cell:** Contains many mitochondria for energy (1 mark).

(b)

- (i) **Location of genetic material:** In bacteria, it's in the cytoplasm; in animal cells, it's in the nucleus (1 mark).

(ii) Function of genetic material: Controls cell functions and contains instructions for protein synthesis (1 mark).

(c) How folded membrane aids absorption: Increases surface area for absorption (1 mark).

(d) Why sperm cells aren't a tissue: Tissue requires similar cells working together for a function; sperm are individual cells with unique functions (1 mark).

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7. **(a)**

- (i) **Difference between snail and slug:** Snail has a shell; slug does not (1 mark).
- (ii) **Similarity:** Both are soft-bodied and produce mucus (1 mark).

(b) Function of mucus: Reduces friction, helping the snail move (1 mark).

(c) Food web completion: Plants → Snails → Thrushes/Blackbirds (2 marks for correct arrows).

(d) Colour protection in woodland: Brown or red colouring helps snails camouflage, protecting them from predators (1 mark).

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8. **(a) Unique feature of mammals:** Produce milk to feed young (1 mark).

(b) Otter adaptation for swimming: Streamlined body (or webbed feet) (1 mark).

(c)

- (i) **Benefit of burrow:** Provides shelter and protects from predators (1 mark).
- (ii) **Why burrow should be above water:** Prevents flooding, which could harm cubs (1 mark).

Plant Cell Questions

- **Name of part A:** Cell wall (Tick "Cell wall") (1 mark).
- **Location of cell:** Leaf (Tick "Leaf") (1 mark).
- **Three parts found in plant cell:** Cell wall, chloroplasts, vacuole (Tick the correct option) (1 mark).

Function of nucleus: Controls cell activities (1 mark).



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