This is the **Foundation Separate** version. Higher Tier (★) questions have been removed. All remaining questions are Foundation-level.

Cell Structures (B1a)

Specification reference: B1a

Q1. State TWO differences between a plant cell and an animal cell.

[2 marks]

Q2. Explain how cells become specialised. Give ONE example with named adaptations.

[3 marks]

Respiration (B1c)

Specification reference: B1c

Q3. Compare aerobic and anaerobic respiration in terms of oxygen requirement, products and energy released.

[4 marks]

Q4. Explain what is meant by an oxygen debt and when it occurs.

[3 marks]

Photosynthesis (B1d)

Specification reference: B1d

Q5. Write the word equation for photosynthesis and state where it occurs in plant cells.

[2 marks]

Q6. Describe how light intensity, CO■ concentration and temperature each affect the rate of photosynthesis.

[4 marks]

Cell Division (B1a)

Specification reference: B1a.2

Q7. State THREE differences between mitosis and meiosis.

[3 marks]

Total: 21 marks

Cell Structures (B1a)

Q1 (2 marks)

State TWO differences between a plant cell and an animal cell.

- Plant cell has a cell wall (cellulose); animal cell does not [1]
- Plant cell has chloroplasts; animal cell does not [1] — accept: permanent vacuole

Q2 (3 marks)

Explain how cells become specialised. Give ONE example with named adaptations.

- Differentiation: certain genes are switched on/off causing cells to develop specific features [1]
- Example: red blood cells — no nucleus [1] — biconcave shape increases surface area for O■ diffusion; haemoglobin carries oxygen [1]

Respiration (B1c)

Q3 (4 marks)

Compare aerobic and anaerobic respiration in terms of oxygen requirement, produc…

- Aerobic requires oxygen; anaerobic does not [1]
- Aerobic produces CO■ and water; anaerobic produces lactic acid (animals) or ethanol + CO■ (yeast) [1]
- Aerobic releases much more energy than anaerobic [1]
- Both start with glucose as substrate [1]

Q4 (3 marks)

Explain what is meant by an oxygen debt and when it occurs.

- During intense exercise, muscles switch to anaerobic respiration — lactic acid accumulates [1]
- After exercise, extra oxygen is needed to convert lactic acid back to glucose (in the liver) [1]
- This extra oxygen required is the oxygen debt — explains continued heavy breathing after stopping exercise [1]

Photosynthesis (B1d)

Q5 (2 marks)

Write the word equation for photosynthesis and state where it occurs in plant ce…

- Carbon dioxide + water → glucose + oxygen (light energy required) [1]
- Chloroplasts [1]

Q6 (4 marks)

Describe how light intensity, CO■ concentration and temperature each affect the …

- Light intensity: increases rate up to a limit (then another factor becomes limiting) [1]
- CO■ concentration: increases rate up to a limit [1]
- Temperature: increases rate up to optimum; above optimum enzymes denature → rate drops [1]
- Any one factor can be limiting — the one in shortest supply controls the rate [1]

Cell Division (B1a)

Q7 (3 marks)

State THREE differences between mitosis and meiosis.

- Mitosis: 2 daughter cells; meiosis: 4 daughter cells [1]
- Mitosis: daughter cells genetically identical; meiosis: genetically different [1]
- Mitosis: daughter cells diploid; meiosis: daughter cells haploid [1]