

Full Higher Separate content. ★ = Higher Tier. ◆ = Separate Science only.

Q1. Describe THREE differences between animal and plant cells.

[3 marks]

Q2. Explain cell specialisation with an example. Include the term differentiation.

[3 marks]

★ HIGHER TIER

Q3. ★ Explain how the SA:V ratio affects gas exchange in organisms of different sizes.

[3 marks]

Total: 9 marks

Q1 (3 marks)

Describe THREE differences between animal and plant cells.

- Plant has cell wall; animal does not [1]
- Plant has chloroplasts; animal does not [1]
- Plant has permanent vacuole; animal does not [1]

Q2 (3 marks)

Explain cell specialisation with an example. Include the term differentiation.

- Differentiation: specific genes switched on/off → cell develops unique structure [1]
- Example: red blood cell [1]
- No nucleus → more space for haemoglobin; biconcave → large SA for O₂ diffusion [1]

Q3 (3 marks) [★ HT]

★ Explain how the SA:V ratio affects gas exchange in organisms of different sizes.

- Smaller organisms: higher SA:V ratio — diffusion sufficient [1]
- Larger organisms: lower SA:V ratio — diffusion alone too slow [1]
- Large organisms need specialised surfaces (lungs, gills, villi) with large area and thin membranes [1]