Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

Q1. Describe the carbon cycle. Name ALL processes that move carbon between atmosphere and organisms.

[4 marks]

Q2. Explain the process of eutrophication and its effect on an aquatic ecosystem.

[4 marks]

★ HIGHER TIER

Q3. ★ Describe the nitrogen cycle. Name the four types of bacteria and their roles.

[4 marks]

Total: 12 marks

Q1 (4 marks)

Describe the carbon cycle. Name ALL processes that move carbon between atmosphere and orga…

- Photosynthesis removes CO■ from atmosphere → fixed in glucose [1]
- Respiration (all organisms) returns CO■ [1]
- Decomposition: decomposers break down dead matter → CO■ released [1]
- Combustion (burning) releases stored carbon as CO■ [1]

Q2 (4 marks)

Explain the process of eutrophication and its effect on an aquatic ecosystem.

- Fertiliser run-off → excess nitrates/phosphates in water [1]
- Algal bloom on surface → blocks light to plants below [1]
- Aquatic plants die → bacteria decompose → use dissolved O■ [1]
- O■ depleted → fish and aquatic organisms suffocate [1]

Q3 (4 marks) [★ HT]

★ *Describe the nitrogen cycle. Name the four types of bacteria and their roles.*

- Nitrogen-fixing bacteria: N■ → ammonia/nitrates [1]
- Nitrifying bacteria: ammonia → nitrates (for plants) [1]
- Decomposers: dead matter → ammonia [1]
- Denitrifying bacteria: nitrates → N■ (back to atmosphere) [1]