This is the **Foundation Combined Science** version. Only Foundation-level content is included. Higher Tier and Separate-only questions have been removed.

Ecosystems and Food Webs (9.1–9.3)

Specification reference: 9.1

Q1. Explain why removing a keystone predator from an ecosystem can have wide-ranging effects.

[3 marks]

Q2. Explain why only about 10% of energy is transferred from one trophic level to the next. Give TWO specific reasons.

[4 marks]

Material Cycles (9.4–9.6)

Specification reference: 9.4

Q3. Describe the carbon cycle. State the ONE process that removes CO■ from the atmosphere and name THREE processes that return it.

[4 marks]

Biodiversity and Human Impact (9.7–9.8)

Specification reference: 9.7

Q4. Describe the full chain of events that leads to eutrophication in a lake. Start with fertiliser application.

[4 marks]

Q5. Evaluate TWO conservation strategies to maintain biodiversity.

[4 marks]

Total: 19 marks

Ecosystems and Food Webs (9.1–9.3)

Q1 (3 marks)

Explain why removing a keystone predator from an ecosystem can have wide-ranging…

• Prey species numbers increase without predation pressure [1]
• Increased prey leads to overgrazing/overconsumption of producers [1]
• This can cause collapse of other dependent species — cascade effect through food web [1]

Q2 (4 marks)

Explain why only about 10% of energy is transferred from one trophic level to th…

• Energy lost through respiration — organisms use energy for movement, maintaining body temperature, etc. → released as heat [1]
• Energy lost in waste products (faeces, urine) — not consumed by the predator [1]
• Energy used for biological processes (growth, reproduction) at each level [1]
• Only energy stored in new biomass is available to the next trophic level [1] — any two with clear explanation

Material Cycles (9.4–9.6)

Q3 (4 marks)

Describe the carbon cycle. State the ONE process that removes CO■ from the atmos…

• Only photosynthesis removes CO■ from atmosphere [1]
• Returns CO■: respiration (all organisms) [1]
• Decomposition by bacteria and fungi [1]
• Combustion (burning fossil fuels or wood) [1]

Biodiversity and Human Impact (9.7–9.8)

Q4 (4 marks)

Describe the full chain of events that leads to eutrophication in a lake. Start …

• Fertilisers (nitrates/phosphates) applied to farmland [1]
• Rainwater carries them into the lake (run-off) [1]
• Algae grow rapidly on surface (algal bloom) — blocking light to plants below [1]
• Plants die; bacteria decompose them and use O■; O■ depleted → fish and other aquatic organisms suffocate [1]

Q5 (4 marks)

Evaluate TWO conservation strategies to maintain biodiversity.

• Nature reserves: protects habitat from development [1]; may be too small for viable populations/cannot prevent climate change [1]
• Captive breeding: prevents extinction, allows reintroduction [1]; animals may lose survival behaviours/genetic diversity reduced in small captive populations [1] — accept any two methods with benefit + limitation