## AQA, OCR, Edexcel

## A Level

## A Level Biology

**Nutrient Cycles Answers** 

Name:



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Total Marks: /42

## **Nutrient Cycles**

| Answer   | Marks   |
|--|---------|
| 1.  a) Carbon in the atmosphere  Respiration  Carbon in plants  Carbon in animals  Death & Decay  Carbon in fossil fuels   | 7marks  |
| b) i) Eventually turned into a fossil fuel, combustion releases carbon into the atmosphere   | 2 marks |
| ii) Saprobionts/ detritus feeders  | 1 mark  |
| iii) They release the nutrients/<br>recycle nutrients  | 1 mark  |
| c) i) – CO <sub>2</sub> levels have been increasing over time since 1750 - Since 1950 the increase has been much greater/steeper curve   | 2 marks |
| <ul> <li>ii) - Burning of fossil fuels releases         CO<sub>2</sub> which increases         atmospheric levels         - Other factors contribute to         rising CO<sub>2</sub> levels: deforestation         as trees normally absorb CO<sub>2</sub></li> </ul> | 4 marks |
| <ul> <li>CO<sub>2</sub> levels were rising in 1700s when humans had less of an impact</li> <li>Correlation does not prove causation</li> </ul>   |         |

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|--|---------|
| d) i) A: - Respiration occurs during day and night – producing CO <sub>2</sub> - Photosynthesis which reduces CO <sub>2</sub> only occurs during the day - CO <sub>2</sub> levels fall during the day and increase at night  B: - More light in summer - More photosynthesis - So CO <sub>2</sub> levels fall in the summer and rise in winter   | 6 marks |
| 2.<br>a)<br>i) To make proteins and nucleic<br>acids/ DNA  | 1 mark  |
| <ul> <li>ii) Nitrogen Fixation: -Nitrogen gas is converted to ammonia -Nitrogen Fixing Bacteria</li> <li>Ammonification: -Nitrogen compounds are turned into ammonia -Decomposing bacteria/saprobionts</li> <li>Nitrification: -ammonia is converted to Nitrites -Nitrites to Nitrates - Nitrifying bacteria</li> <li>Denitrification: - Nitrates in the soil are converted to nitrogen gas - Denitrifying bacteria</li> </ul> | 8 marks |
|  |         |

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| ii) Nitrification  | 1 mark  |
|--|---------|
| iii) Rhizobium provides the plants with nitrogen compounds and plants provide the rhizobium with carbohydrates   | 2 marks |
| b) i) When excess nitrogen compounds in the soil are washed away   | 1 mark  |
| <ul> <li>ii) Eutrophication:</li> <li>Increased nitrogen compounds from leaching cause an algal bloom</li> <li>This blocks sunlight</li> <li>Plants die due to competition for light</li> <li>Bacteria feed on the dead plants</li> <li>Bacteria use oxygen for aerobic respiration</li> <li>Fish die from lack of oxygen</li> </ul> | 6 marks |