AQA, OCR, Edexcel

A Level

A Level Biology

Nutrient Cycles Questions

Name:

M M E

Mathsmadeeasy.co.uk

Total Marks: /42

Nutrient Cycles

Carbon and nitrogen are elements that are essential to life on earth. However the amount of each is finite, therefore these elements need to be recycled into different forms in order from them to be reused.

1. The Carbon Cycle:

a) i) Starting with the carbon compounds found in plants, draw and label a diagram to show the carbon cycle. (7 marks)

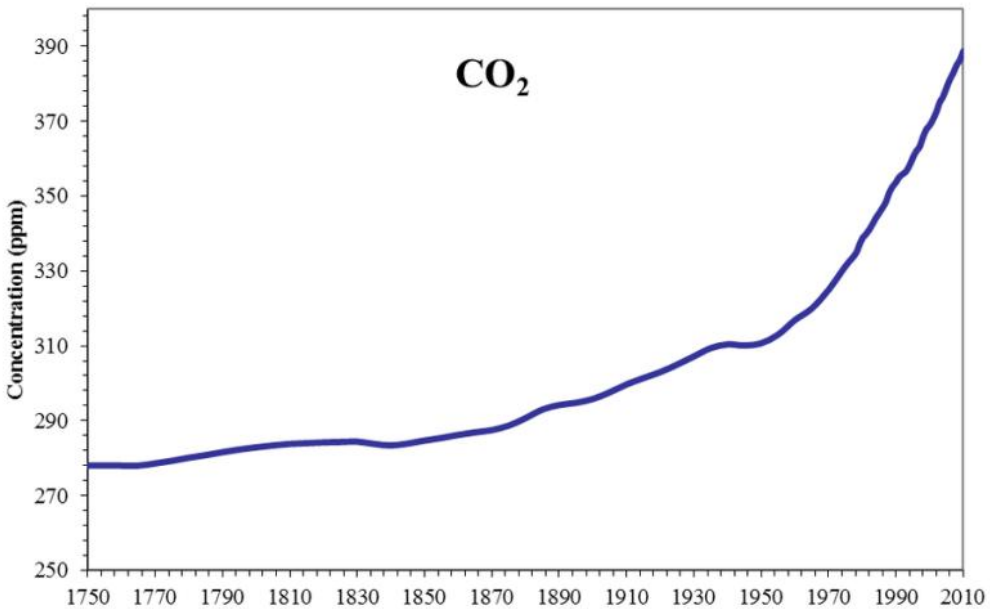
b) Decomposers feed on dead material.

i) What happens to the carbon if an organism dies in an environment where there are no decomposers? (2 marks)

ii) What is the term for organisms that feed on dead material? (1 mark)

iii) Why are microorganisms so important within nutrient cycles in general? (1 mark)

c) The graph below shows the change in atmospheric CO_2 levels over a period of time.

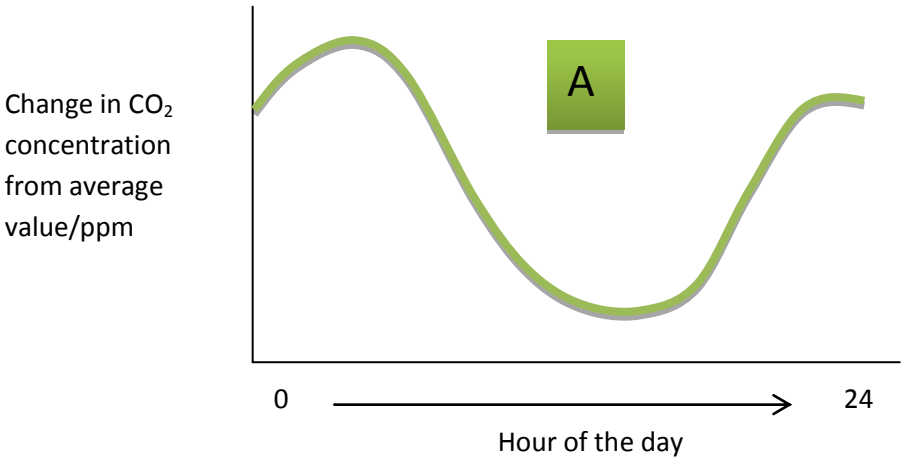


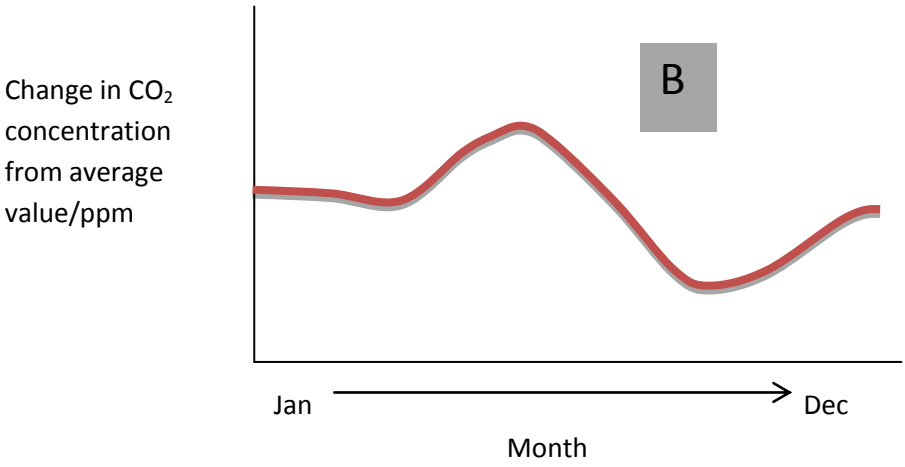
i) Describe the shape of the curve (2 marks)

ii) 'The increase in atmospheric carbon dioxide levels is as a result of burning fossil fuels' Evaluate this claim. (4 marks)

d) Carbon dioxide concentrations in the atmosphere also fluctuate daily and annually.

Graphs A and B below show carbon dioxide fluctuations in Britain over given time periods.





i) Explain the shape of each graph. (6 marks)

2. Nitrogen is vital in plant process. Nitrogen is the most abundant atmospheric gas in our atmosphere; however it is not useable in this gaseous form.

   ai) Why do plants need nitrogen? (1 mark)

   ii) Complete the table below to explain each stage of the nitrogen cycle and identify which microorganisms that are required. (8 marks)

Stage	Explanation	Microorganism
Nitrogen Fixation		
Ammonification		
Nitrification		
Denitrification		

ii) Lightning is sometimes drawn on nitrogen cycle diagrams. At what stage would lightning be drawn? (1 mark)

iii) Explain the mutualistic behaviour between *rhizobium* and leguminous plants. (2 marks)

b) Nitrogen is often added to the soil as part of industrial farming practices. While it is beneficial to plant growth, it can have detrimental effects on wildlife.

i) What is leaching? (1 mark)

ii) How can this have a detrimental effect on aquatic wildlife? (6 marks)