

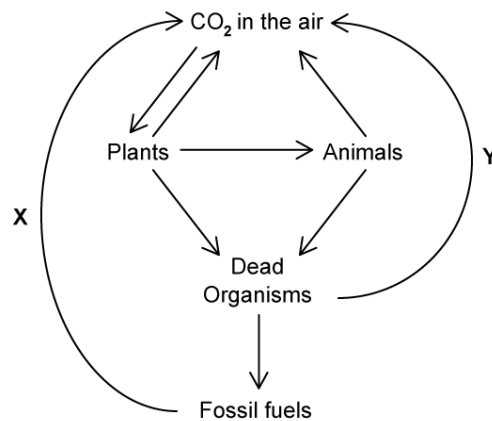


**Question 1 :**

(a) Which of A - D is the carbon cycle process by which carbon enters the tissues of living organisms from the atmosphere?

- A Decomposition
- B Photosynthesis
- C Aerobic respiration
- D Evaporation

(b) Part of the carbon cycle is shown in the diagram below.



Name processes X and Y in the diagram.

**X : Combustion / Y : Respiration**



(c) Describe how carbon is released during process Y in part (b).

Respiration is a chemical reaction, the carbon in glucose becomes part of a CO<sub>2</sub> molecule once again and is released back into air.

(d) Carbon is an element that is present in biological molecules such as proteins. Name two other elements that are present in all protein molecules.

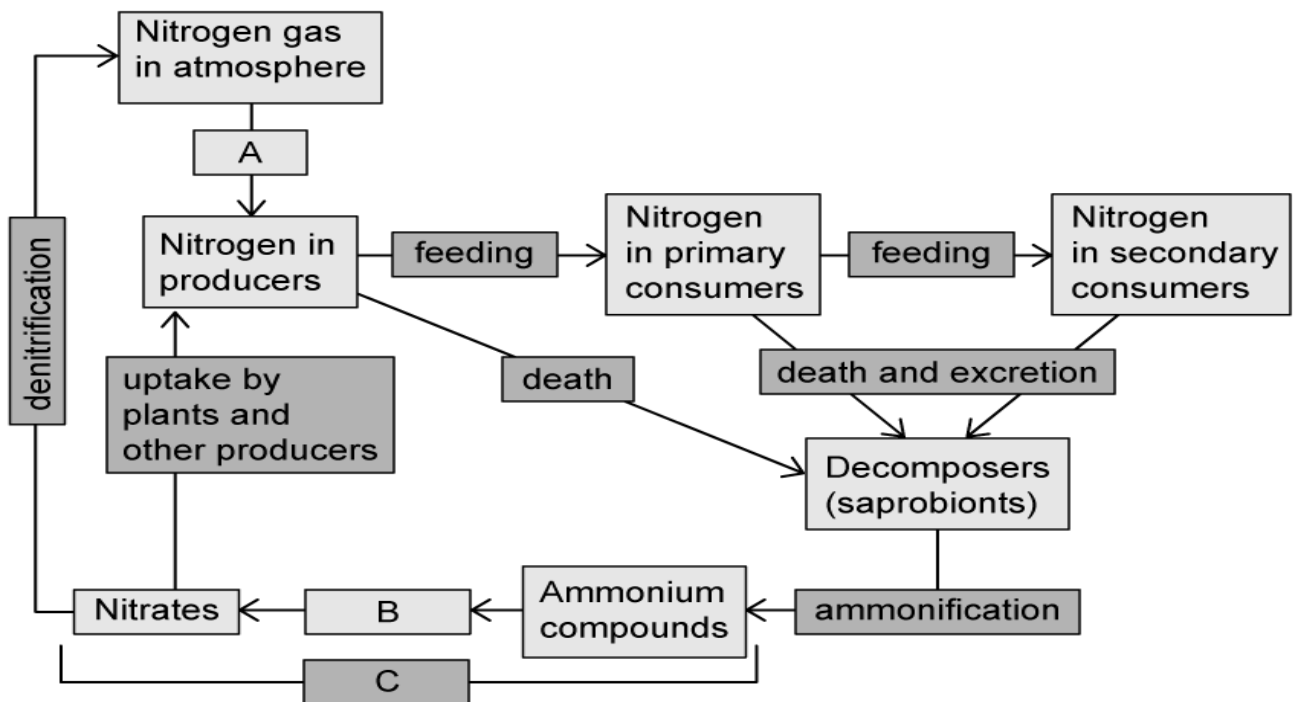
Oxygen / hydrogen

## Question 2

(a) State one role of nitrogen in living organisms.

Making proteins to build new cells

(b) The diagram below shows a representation of the nitrogen cycle.



Identify the processes or molecules marked A-C in the diagram.

A : Nitrogen fixation

B : Nitrite

C : Nitrification

(b) Describe the process of denitrification shown in part (b).

Bacteria called Denitrifying bacteria plays a role in the nitrogen cycle these turn ammonia and nitrates back into nitrogen gas which returns back to the atmosphere , completing the nitrogen cycle

(d) The process of denitrification occurs faster in soil that is flooded with water, reducing the availability of nitrates in the soil. Suggest how this might affect the appearance of any plants growing in flooded soil.

The amount of nitrogen in the soil will be reduced , plants will have nitrogen deficiency , their leaves become yellow and poor growth .

### **Question 3:**

(a) The diagram below shows a representation of the carbon cycle.

Explain how carbon is returned to the atmosphere at the stage labelled Y.

By respiration

When animals and plants die, decomposers feed on them, the carbon becomes part of the decomposers' bodies. When they respire they release CO<sub>2</sub> back into the air .

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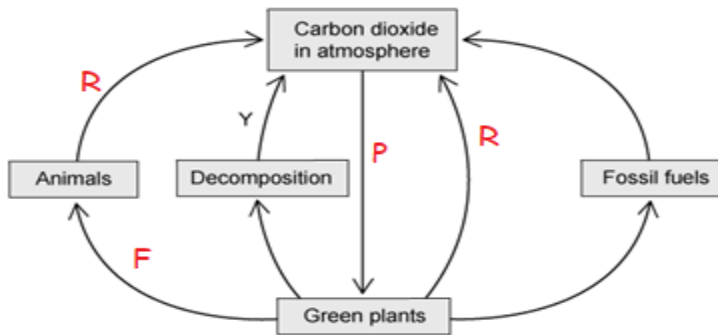
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(b) The diagram in part (a) is missing many details of the carbon cycle.

Label the diagram as follows to show where each of the processes occurs within the carbon cycle.

- (i) Use a letter R to show where respiration occurs.
- (ii) Use a letter P to show where photosynthesis occurs.
- (iii) Use a letter F to show where feeding occurs.

(c) Carbon from fossil fuels enters the atmosphere during combustion.

(i) Explain how this process contributes to rising average global temperatures.

Carbon dioxide is released .

Carbon dioxide is a green house gas .

Greenhouse gases trap heat energy inside the earth's atmosphere .

(ii) Explain how cutting down trees during deforestation increases the problem described in part (i).

Less carbon dioxide will be removed by trees in photosynthesis .

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