

19. Organisms and their environment

19.3 Nutrient cycles

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 Some of the processes involved in the carbon cycle are listed.

- 1 combustion
- 2 decomposition
- 3 photosynthesis
- 4 respiration

During the carbon cycle, which processes release carbon dioxide into the atmosphere?

A 1, 2 and 3 **B** 1, 2 and 4 **C** 1 and 4 only **D** 2 and 3 only

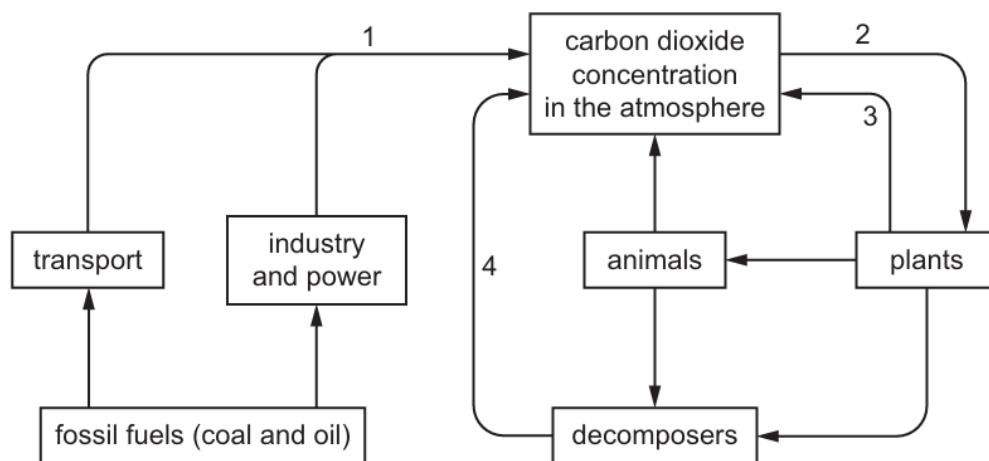
2 These are processes found in the carbon cycle.

- combustion
- decomposition
- feeding
- photosynthesis
- respiration

How many of these processes release carbon dioxide into the atmosphere?

A 1 **B** 2 **C** 3 **D** 4

3 The diagram shows part of the carbon cycle.



Which processes reduce or increase carbon dioxide concentration in the atmosphere?

	reduces	increases
A	1	4
B	2	3
C	3	2
D	4	1

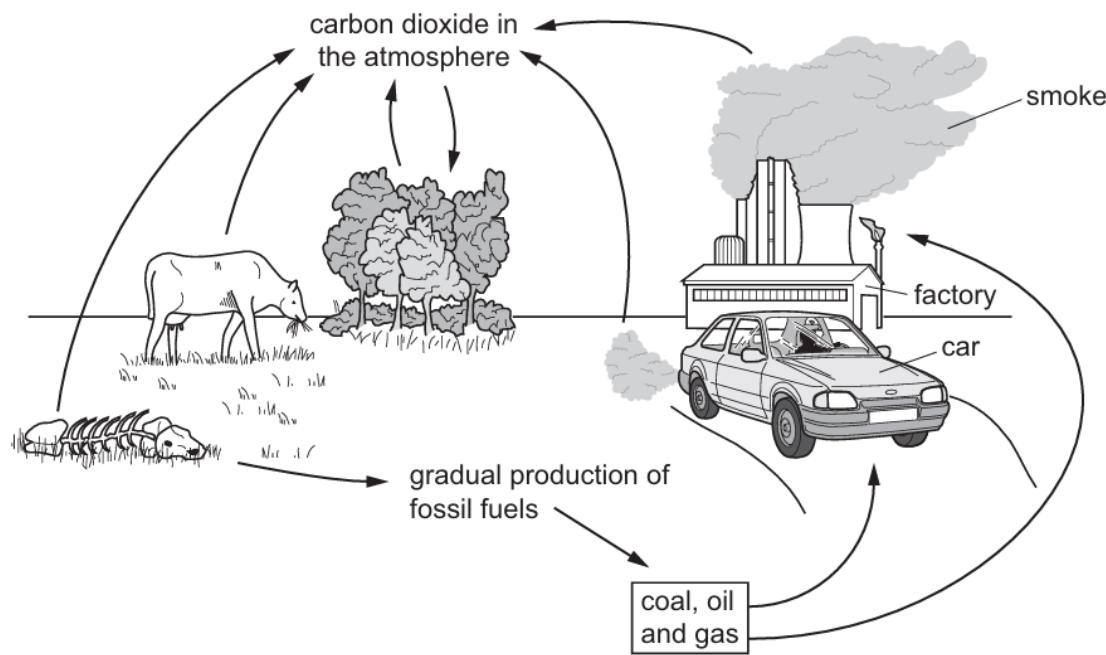
4 Which process releases carbon dioxide into the atmosphere?

- A** decomposition
- B** fossilisation
- C** photosynthesis
- D** transpiration

5 Which process releases carbon dioxide into the atmosphere?

- A** decomposition
- B** fossilisation
- C** photosynthesis
- D** transpiration

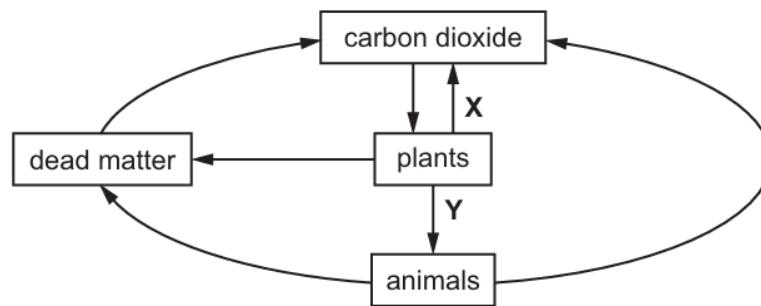
6 The diagram represents the carbon cycle.



Which process produces the carbon dioxide from the factory and the car?

- A combustion
- B condensation
- C decomposition
- D precipitation

7 The diagram shows part of the carbon cycle.



What do arrows **X** and **Y** represent?

- A** decay and respiration
- B** feeding and photosynthesis
- C** photosynthesis and respiration
- D** respiration and feeding

8 Which organisms remove carbon dioxide from the atmosphere?

- A** consumers
- B** decomposers
- C** herbivores
- D** producers

9 Which process is part of the carbon cycle?

- A** combustion
- B** evaporation
- C** precipitation
- D** transpiration

10 What process uses the principal source of energy input to biological systems?

- A** ingestion
- B** decomposition
- C** photosynthesis
- D** respiration

11 Which process releases carbon dioxide into the air and which process removes carbon dioxide from the air?

	releases carbon dioxide into the air	removes carbon dioxide from the air
A	decay	photosynthesis
B	decay	respiration
C	photosynthesis	combustion
D	photosynthesis	decay

Paper 2

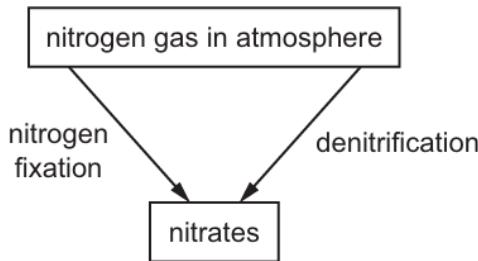
Questions are applicable for both core and extended candidates unless indicated in the question

12 Which organisms remove nitrate ions from soil? **(extended only)**

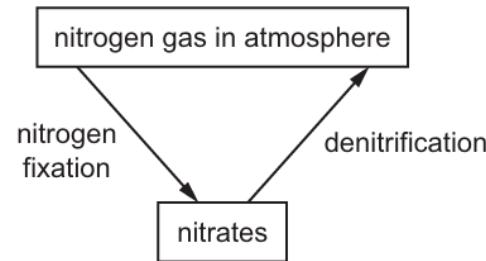
- A denitrifying bacteria and nitrogen-fixing bacteria in root nodules
- B denitrifying bacteria and plants
- C nitrifying bacteria and plants
- D nitrogen-fixing bacteria in root nodules

13 Which diagram shows part of the nitrogen cycle? **(extended only)**

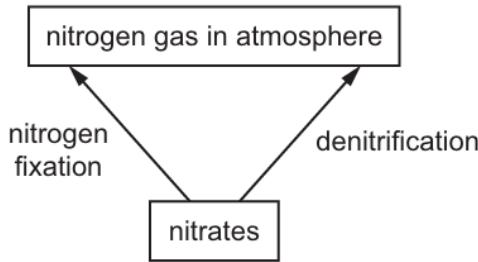
A



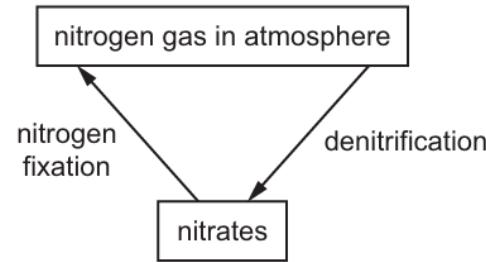
B



C



D



14 Which process in the nitrogen cycle removes nitrogen gas from the atmosphere? **(extended only)**

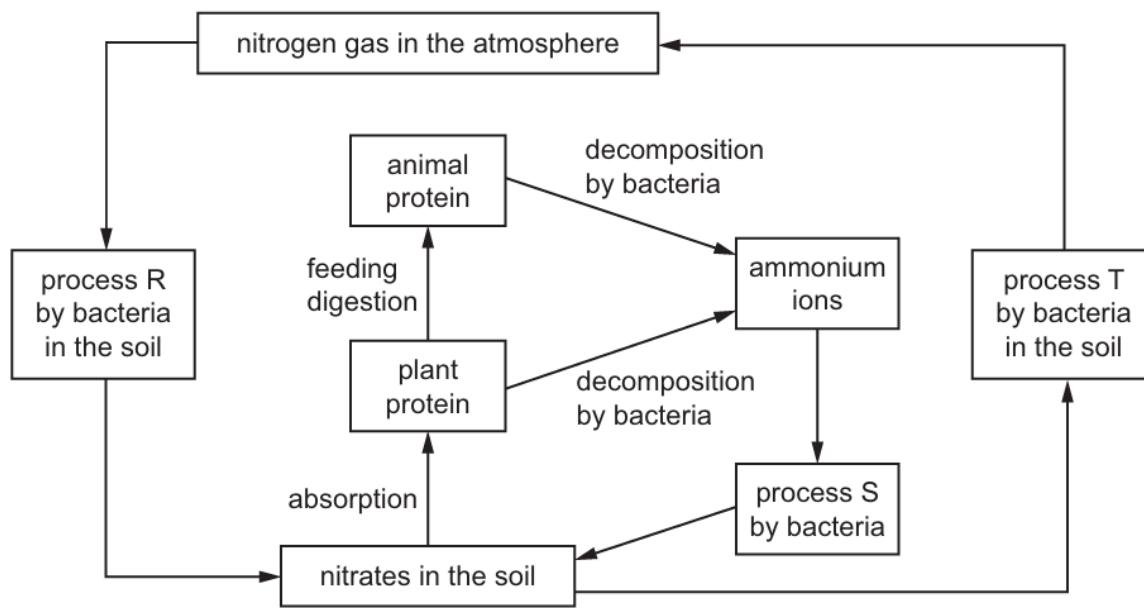
- A decomposition
- B denitrification
- C nitrification
- D nitrogen fixation

15 Acidic soils encourage the increase of anaerobic bacteria that cause denitrification.

How do acidic conditions affect the nitrogen cycle? **(extended only)**

- A Ammonia will **not** enter the nitrogen cycle.
- B More nitrogen gas will be released from the soil.
- C The concentration of nitrates in the soil will increase.
- D The plants growing in the soil will produce more proteins.

16 The diagram shows part of the nitrogen cycle.



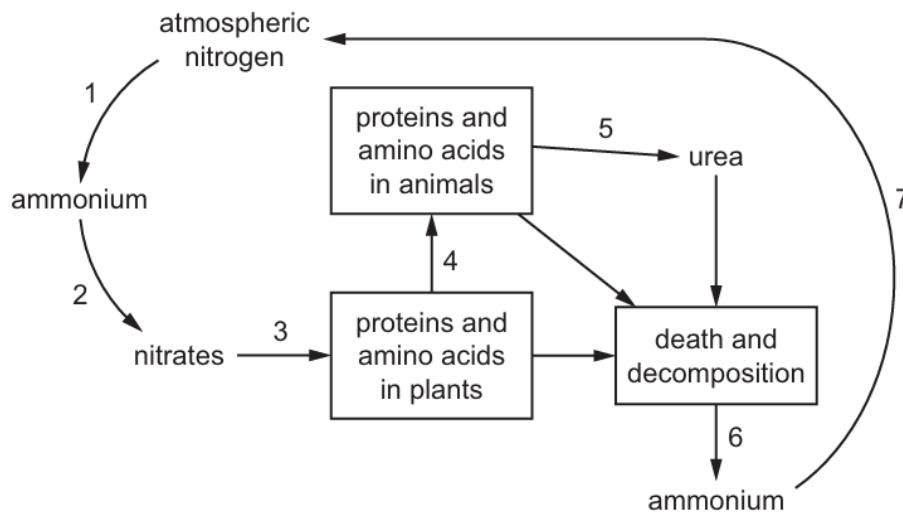
Which row shows the correct processes for R, S and T? **(extended only)**

	denitrification	nitrogen fixation	nitrification
A	R	S	T
B	T	S	R
C	T	R	S
D	S	R	T

17 During the nitrogen cycle, which process releases nitrogen gas into the air? **(extended only)**

- A** decomposition
- B** denitrification
- C** nitrification
- D** nitrogen fixation

18 The diagram shows part of the nitrogen cycle.

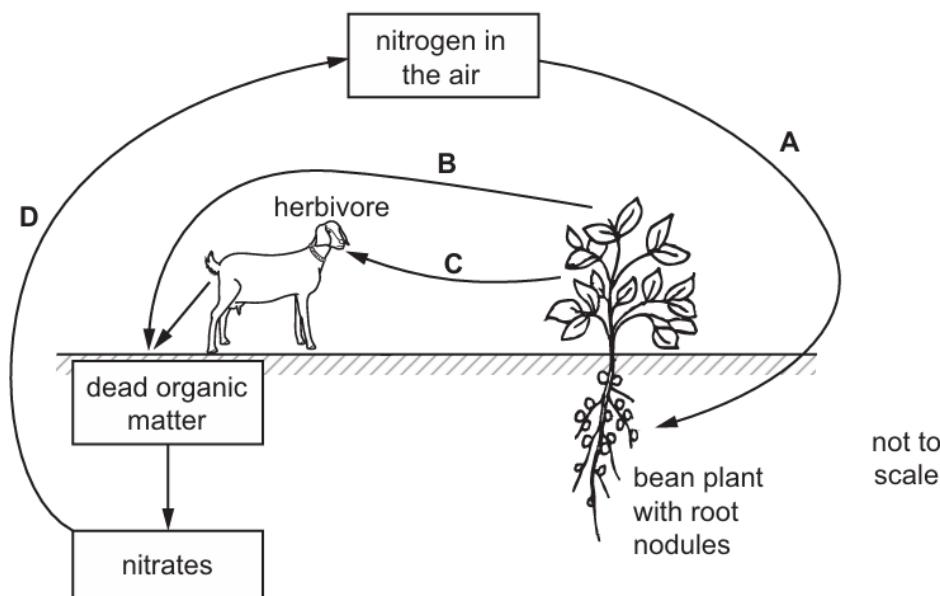


Which processes are carried out by bacteria? **(extended only)**

- A** 1, 2, 3 and 4
- B** 1, 2, 4 and 5
- C** 1, 2, 5 and 6
- D** 1, 2, 6 and 7

19 The diagram shows some of the stages in the nitrogen cycle.

Which arrow represents the process of nitrogen fixation? **(extended only)**



20 Bacteria are active in the nitrogen cycle. **(extended only)**

Which process in the nitrogen cycle is carried out by nitrifying bacteria?

- A the conversion of nitrogen gas to ammonia
- B the conversion of nitrogen gas to nitrates
- C the conversion of ammonia to nitrates
- D the conversion of nitrates to nitrogen

21 Which process in the nitrogen cycle is involved in the breakdown of amino acids in living organisms? **(extended only)**

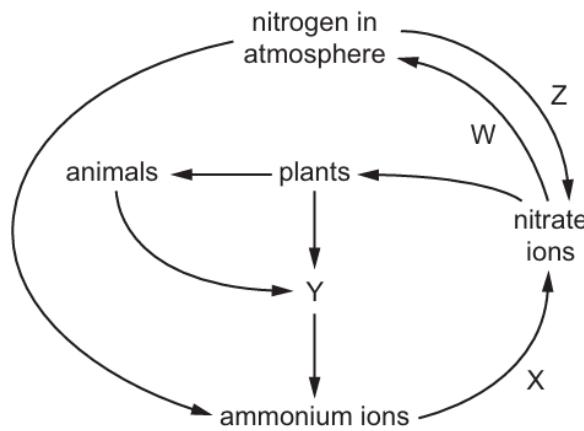
- A deamination
- B decomposition
- C denitrification
- D digestion

22 Decomposers play an important role in the carbon cycle. They release carbon dioxide.

Which process is responsible for this?

- A feeding
- B fossilisation
- C photosynthesis
- D respiration

23 The diagram shows part of the nitrogen cycle.



Which row correctly identifies the bacteria involved in processes W, X, Y and Z? (extended only)

	W	X	Y	Z
A	denitrifying	decomposer	nitrifying	nitrogen-fixing
B	denitrifying	nitrifying	decomposer	nitrogen-fixing
C	nitrifying	decomposer	nitrogen-fixing	denitrifying
D	nitrogen-fixing	nitrifying	decomposer	denitrifying