

20 Which statements are correct for a healthy person?

- 1 Blood leaving a glomerulus has the same concentration of glucose as blood entering a glomerulus.
- 2 There is no glucose in the fluid leaving a nephron.
- 3 A nephron reabsorbs all of the water and some of the ions filtered out of the blood by a glomerulus.

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

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14 Which row names the blood vessel containing the highest blood urea concentration and the blood vessel containing the lowest blood urea concentration?

	highest blood urea concentration	lowest blood urea concentration
A	hepatic artery	hepatic vein
B	hepatic vein	renal vein
C	hepatic portal vein	renal artery
D	renal vein	hepatic portal vein

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19 What shows the pathway of urea from where it is produced to where it is excreted?

- A** kidney → renal artery → heart → lungs → heart → renal vein → bladder
- B** kidney → renal vein → heart → lungs → heart → renal artery → bladder
- C** liver → hepatic artery → heart → lungs → heart → renal artery → kidney
- D** liver → hepatic vein → heart → lungs → heart → renal artery → kidney

3 Fig. 3.1 is a diagram of the nitrogen cycle.

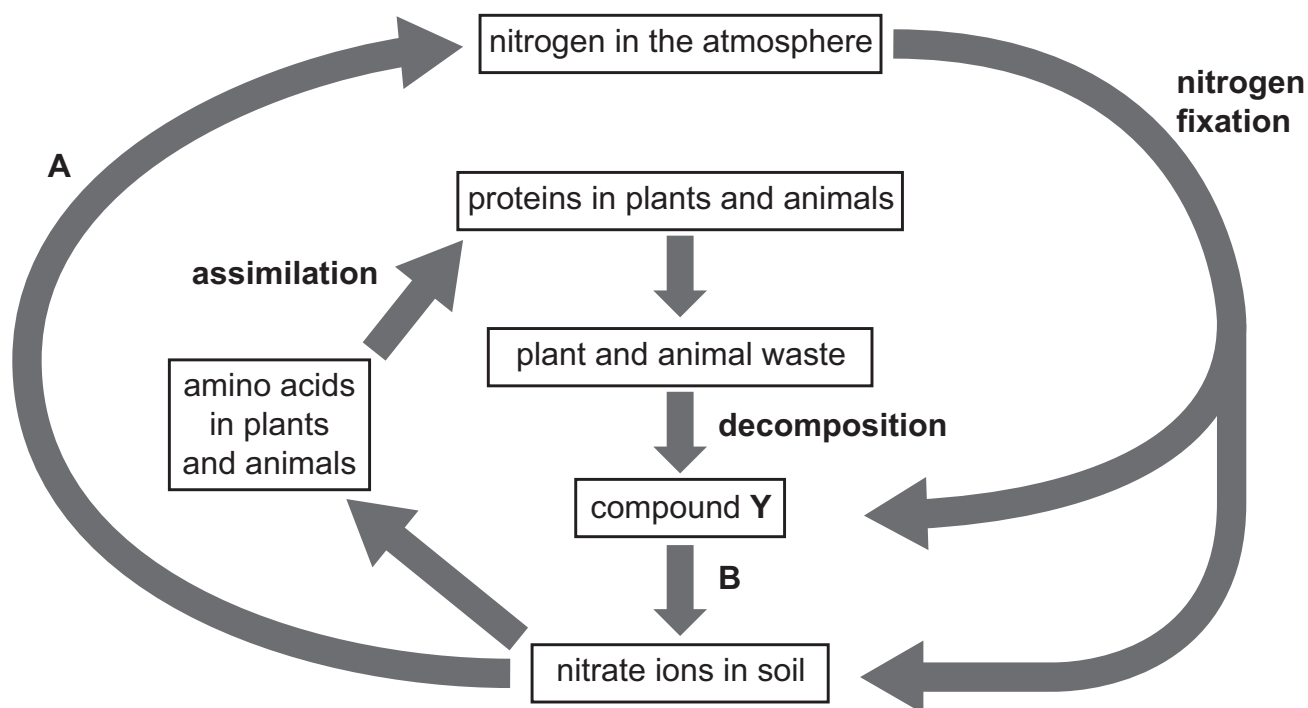


Fig. 3.1

(a) (i) State the names of processes **A** and **B** in Fig. 3.1.

A

B [2]

(ii) State **two** ways that nitrogen fixation can occur.

1

2 [2]

(iii) State the name of compound **Y** in Fig. 3.1.

..... [1]

(iv) State the name of an organ in animals, where assimilation **and** deamination of amino acids occurs.

..... [1]

(v) Describe the process of deamination.

.....

.....

.....

.....

..... [2]

(b) Complete the sentences about pollution of the air by writing the appropriate words or phrases in the spaces provided.

Methane is a pollutant gas that contributes to the enhanced
and climate change. Methane is released into the atmosphere from cattle and from the
farming of crops.

..... is a gas that is absorbed by trees in the process
of This gas is released into the atmosphere by the
..... of fossil fuels, where it also contributes to climate change. [5]

(c) Explain the process of eutrophication in aquatic ecosystems.

[6]

[Total:19]

- 6 (a) An athlete monitored their heart rate and breathing rate before, during and after vigorous exercise.

Fig. 6.1 shows the results.

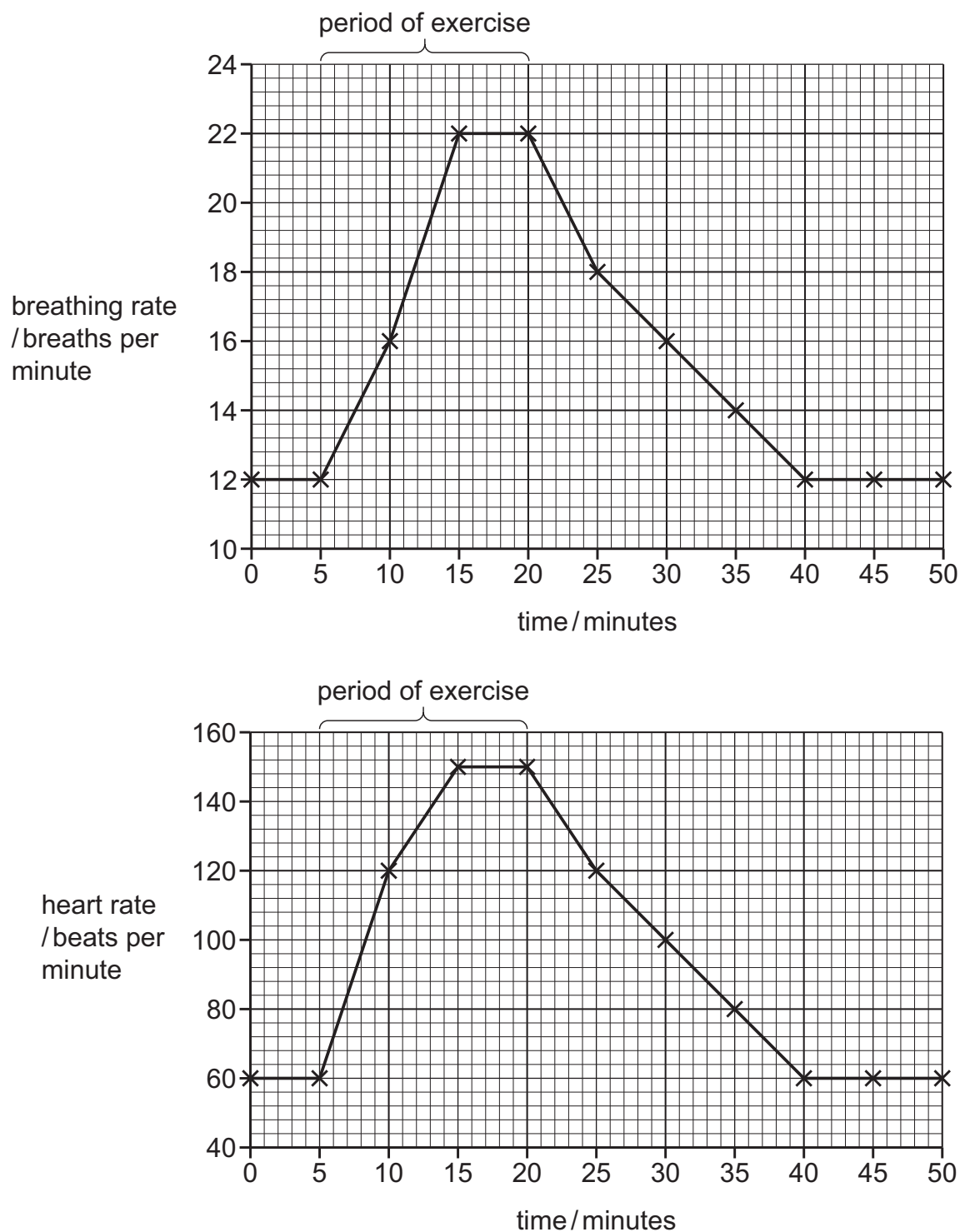


Fig. 6.1

Complete the sentences to describe **and** explain the results shown in Fig. 6.1.

After exercise, it takes minutes for the athlete's breathing rate to return to its resting rate.

The heart rate decreases by beats per minute between 20 and 40 minutes.

The heart rate and breathing rate do not immediately return to their resting rates because anaerobic respiration has occurred.

Lactic acid has built up in causing an oxygen

The heart rate remains high to transport lactic acid to the

The breathing rate remains high to supply for the respiration of lactic acid.

[7]

(b) The carbon dioxide produced during exercise is excreted. Urea is another substance that is excreted.

(i) State the name of the organ that produces urea.

..... [1]

(ii) State the name of the organ that excretes urea.

..... [1]

(c) State the balanced chemical equation for anaerobic respiration in yeast.

..... [2]

(d) State **one** food product that is made using anaerobic respiration in yeast.

..... [1]

[Total: 12]