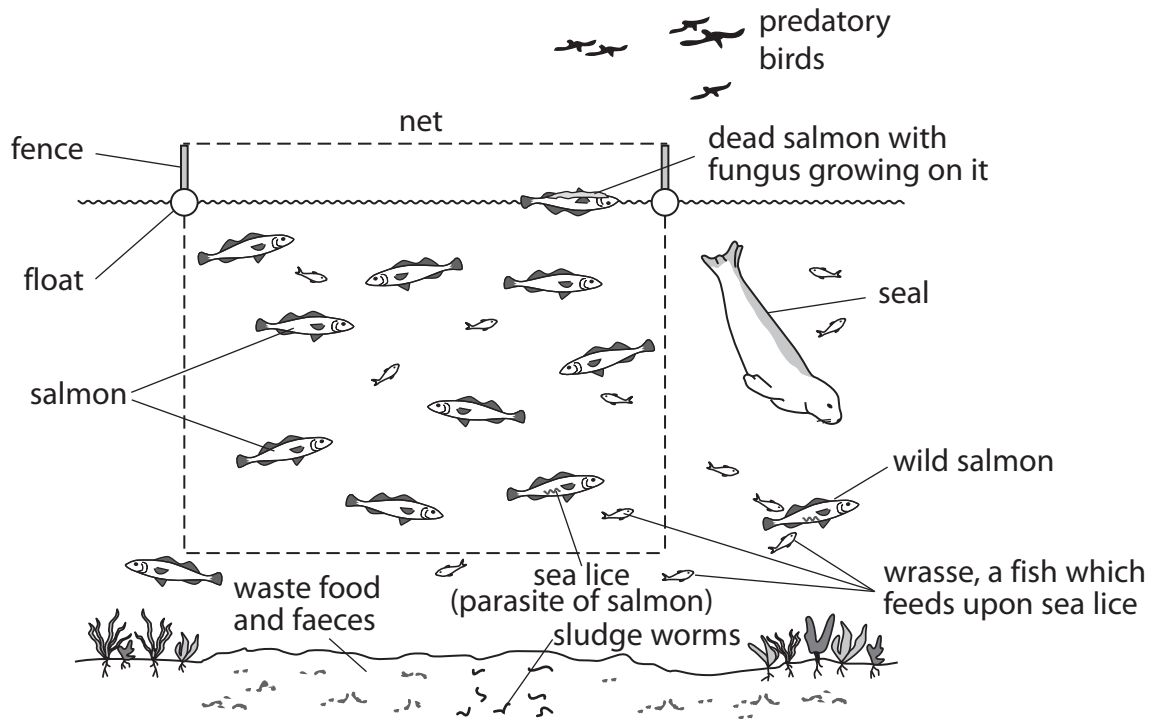


Questions are for both separate science and combined science students unless indicated in the question

1 The diagram shows a salmon fish farm in the sea.



(a) Suggest three ways in which the net protects the salmon. **(separate only)**

(3)

- 1.....
- 2.....
- 3.....

(b) Waste food and faeces can collect in the mud beneath the fish farm.

Suggest how this could affect the growth of the salmon. **(separate only)**

(3)

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(c) Suggest what should be done with the dead salmon with fungus growing on it.
(separate only)

(2)

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(d) Give the example of biological control shown in the diagram of the fish farm. **(separate only)**

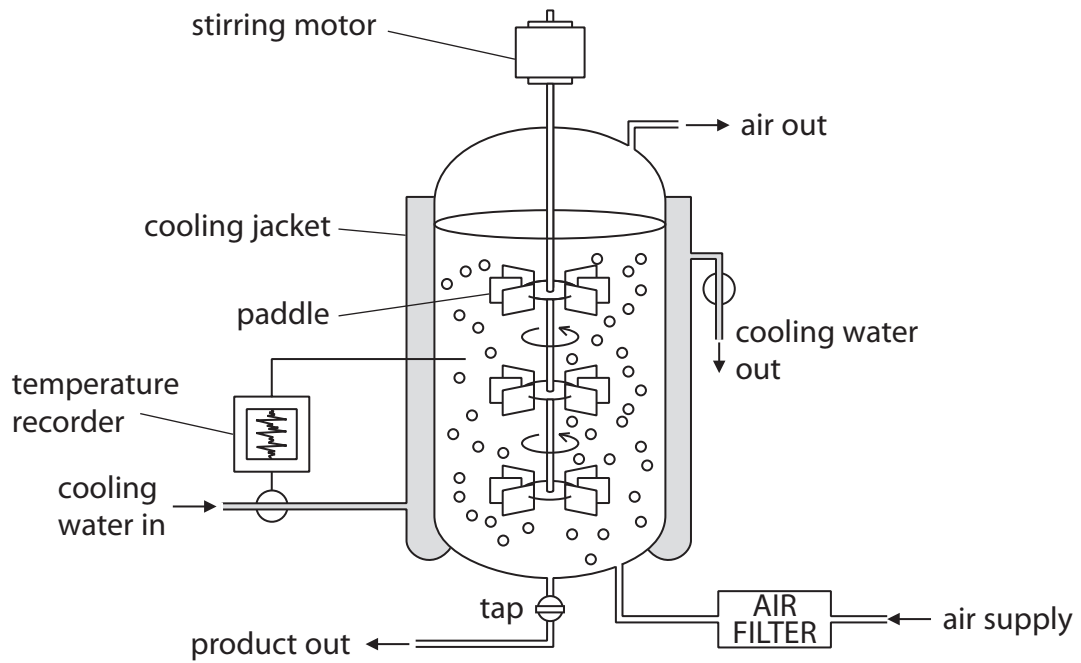
(1)

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(Total for Question = 9 marks)

2 The diagram shows a fermenter used to grow microorganisms.



(a) Explain how temperature is controlled in the fermenter.

(2)

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(b) Explain why temperature must be controlled in the fermenter.

(2)

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(c) Explain the purpose of the paddles in the fermenter.

(2)

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(d) Other than temperature, name **one** condition that needs to be controlled in a fermenter and state why it needs to be controlled.

(2)

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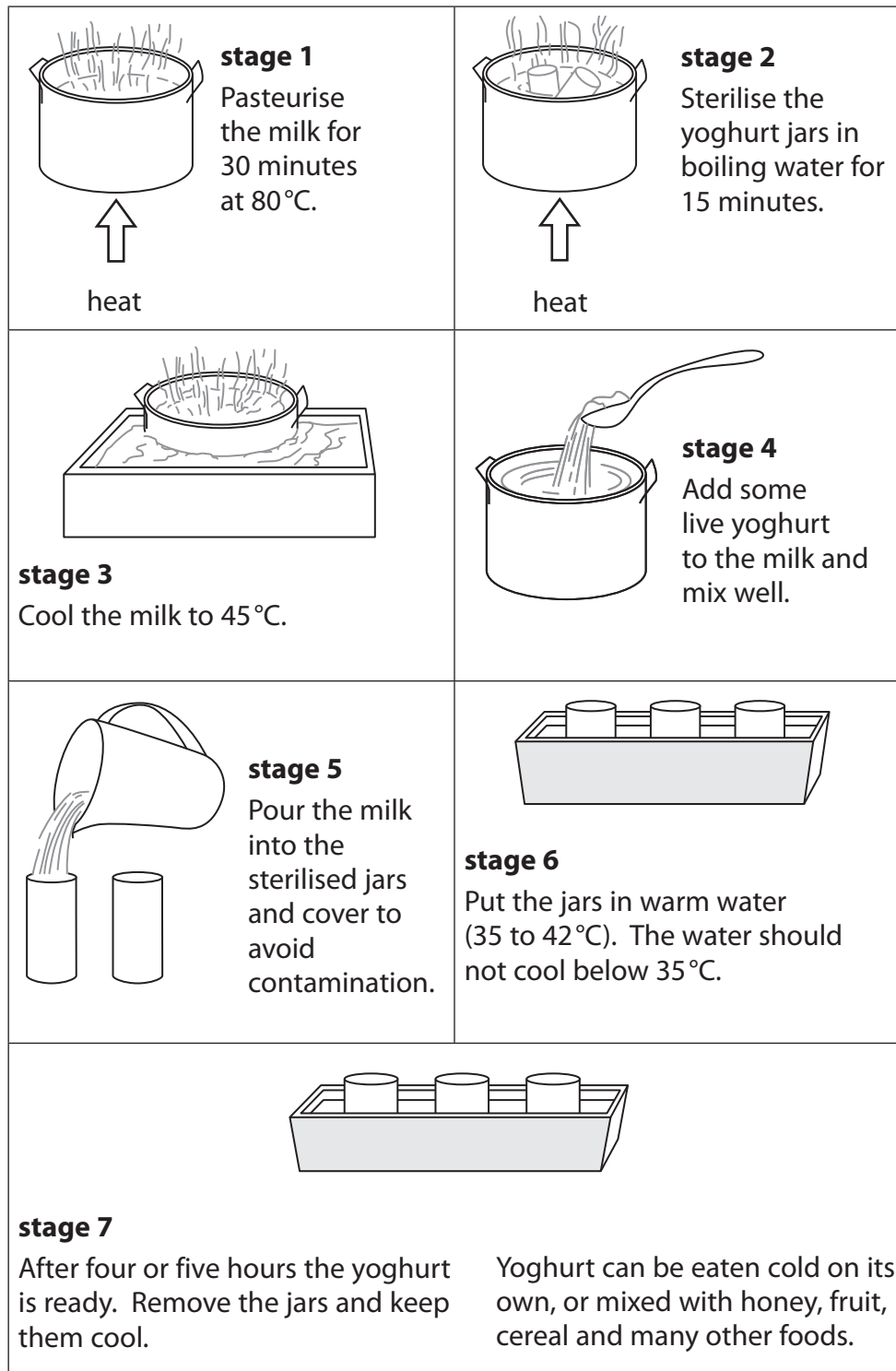
(e) Name a product that could be produced in this type of fermenter.

(1)

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(Total for Question = 9 marks)

3 A student wants to make yoghurt. The diagram shows what she did.



(a) Which two stages help to improve the production of yoghurt by killing bacteria that compete with *Lactobacillus*?

(2)

..... and

(b) Explain why the milk needed to be cooled to 45 °C in stage 3.

(2)

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(c) Explain what could happen to the production of yoghurt if the jars used in stage 5 had not been sterilised in stage 2.

(2)

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(d) Explain what would happen to the production of yoghurt if the water cooled below 35 °C in stage 6.

(2)

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(e) The student added fruit to her yoghurt to improve the taste.

Suggest how adding fruit to yoghurt also helps to maintain healthy skin.

(1)

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(Total for Question = 9 marks)

4 Some food products are made using microorganisms.

The table gives information about the production of two of these food products.

(a) Complete the table by giving the missing information.

(5)

Food product	Name of organism used	Group organism belongs to	Substrate used	Type of respiration	Chemical product
	<i>Saccharomyces</i> (yeast)	fungus	glucose		ethanol
yoghurt		bacteria		aerobic	

(b) Explain one precaution that should be taken when making yoghurt so that it is safe for humans to eat.

(2)

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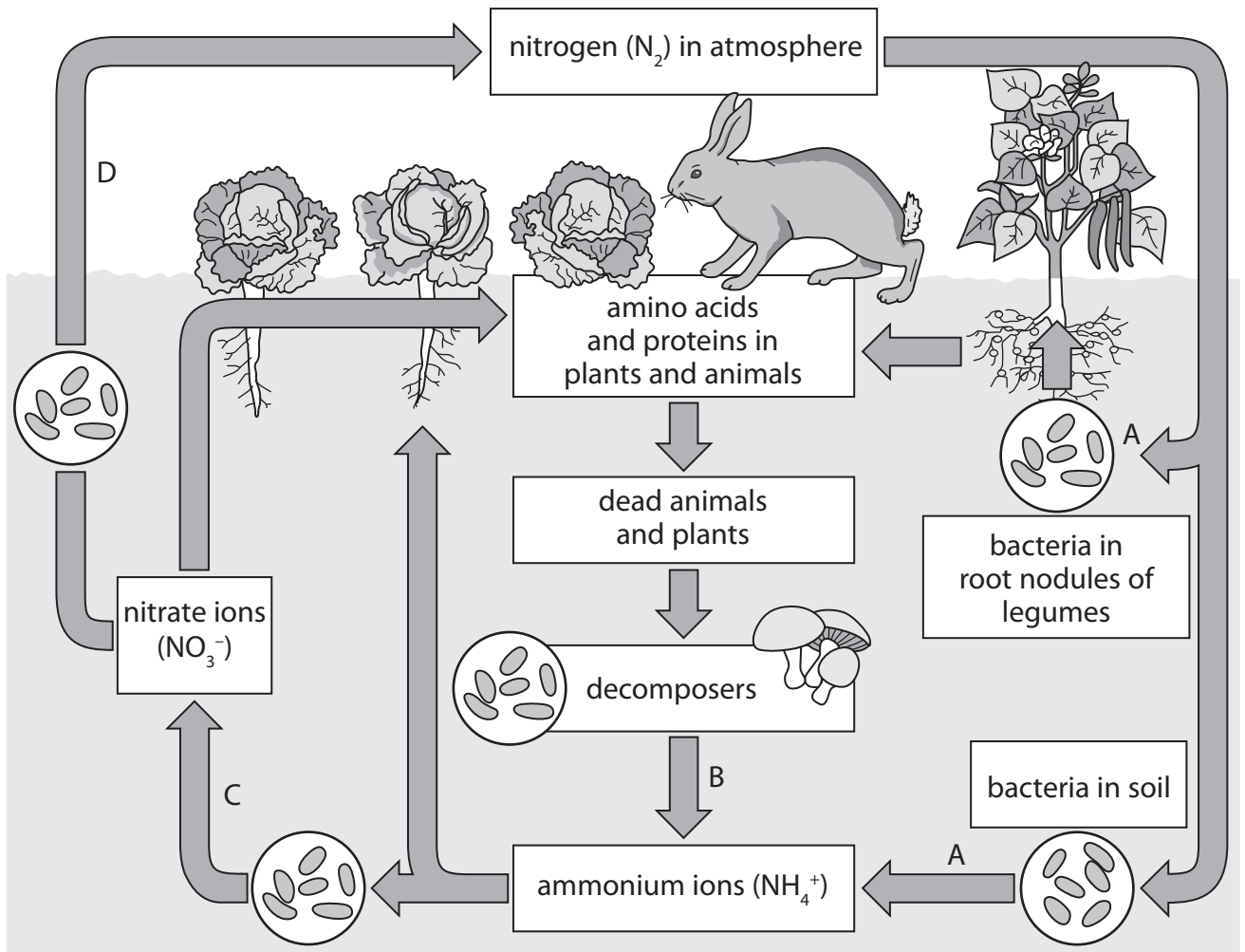
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(Total for Question = 7 marks)

5 The diagram shows the nitrogen cycle with four different stages labelled A, B, C and D.



(a) Name the processes A, B, C and D. **(separate only)**

(4)

- A
- B
- C
- D

