Exam Papers Practice

4.4 Water Pollution

Question Paper

Course	SL IB Environmental Systems & Societies (ESS)
Section	4. Water & Aquatic Food Production Systems & Societies
Topic	4.4 Water Pollution
Difficulty	Medium

To be used by all students preparing for
SL IB Environmental Systems & Societies (ESS)
Students of other boards may also find this useful

Question 1a

When raw sewage is released into a waterway it can lead to eutrophication.

The statements below list some of the stages of the process of eutrophication.

i)
Number the statements to put the stages into the correct order.

Stage of Eutrophication	Order
Algal bloom prevents sunlight from reaching aquatic plants. Water oxygen levels fall	
Excessive nutrients from fertilisers run-off from the land into the water	
Algae also show rapid growth	
Death of organisms requiring dissolved oxygen in water	
Decomposition rate increases. Aerobic respiration of decomposers reduces dissolved oxygen further	
Aquatic plants flourish, growing rapidly	

[3]

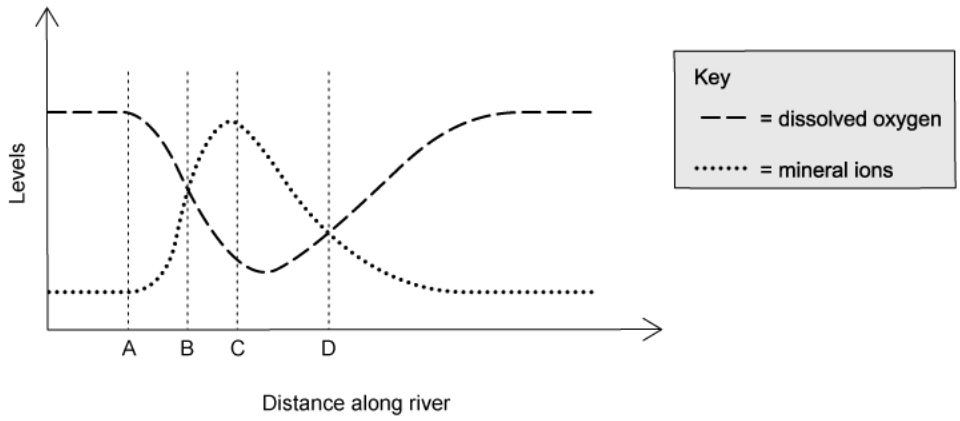
ii)
Explain one other potential consequence of the release of raw sewage into a water system.

[2]

[5 marks]

Question 1b

The levels of dissolved oxygen were measured in a river, the results were plotted on a graph, this is shown below.



i)

At which point (**A**, **B**, **C** or **D**) does raw sewage enter the river?

[1]

ii)

Explain your answer.

[3]

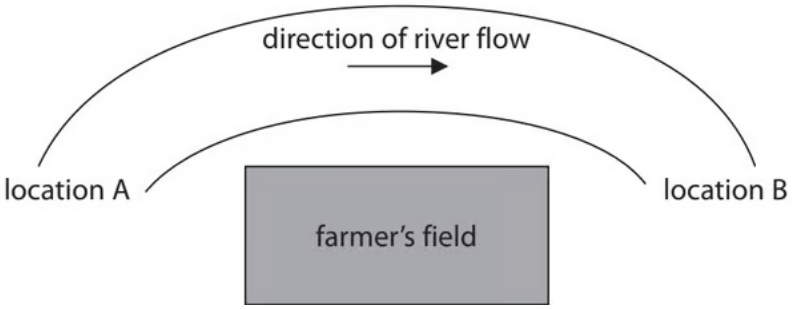
[4 marks]

Question 2a

Farmers may add chemical fertilisers to their soil to increase crop yield.

These fertilisers may leak into rivers.

A scientist measures the oxygen content of water in two different locations of the same river during the month of April.



In location A he finds that the mean dissolved oxygen was 6 mg per litre and at location B he finds that the mean dissolved oxygen was 3 mg per litre.

He concludes that the use of fertiliser in the field has affected the oxygen content of the river.

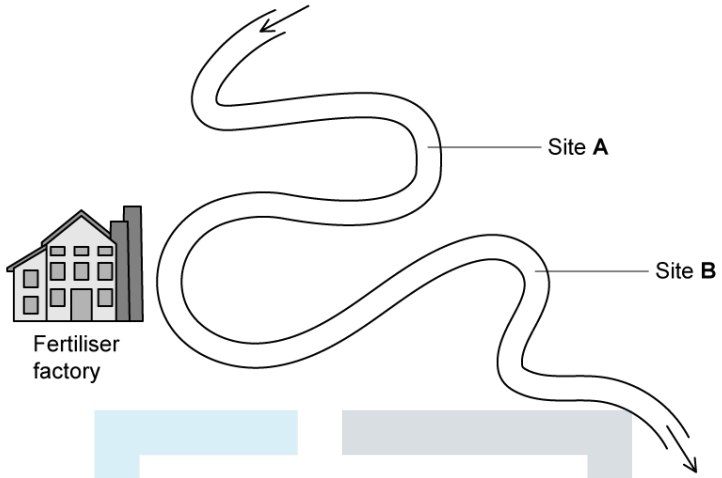
Discuss his conclusion.

[4 marks]

Question 2b

The diagram shows a river and the location of a fertiliser factory.

The arrows indicate the direction of the flow of the river.



A scientist recorded the nitrate concentrations of the water at site **A** and site **B**. Her results are shown in the table.

Site	Nitrate concentration / mg per dm^3			
	Sample 1	Sample 2	Sample 3	Mean
A	17	25	18	20
B	49	64	58	

i)

Calculate the mean nitrate concentration found at site **B.**

The scientist observed algae and some dead fish in the river at site **B**. These were not present at site **A**.

[2]

ii)

Give an explanation for these observations.

[4]

[6 marks]

Question 3

i)

Define the term *biochemical oxygen demand (BOD)*.

[2]

ii)

Describe how it is measured.

[3]

[5 marks]

Question 4a

Define the term *eutrophication*.

[1 mark]

Question 4b

Eutrophication is an example of positive feedback.

Explain how.

[3 marks]