

Human Influences on Ecosystems

Question Paper 3

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Human Influences on Ecosystems
Paper Type	(Extended) Theory Paper
Booklet	Question Paper 3

Time Allowed: 58 minutes

Score: /48


Percentage: /100

- 1 Some information about pollutants, their sources and their effects on the environment are shown in Table 1.1.

Table 1.1

pollutant	source	effect on the environment
heavy metals in chemical waste		disrupts functioning of plants, causes brain damage
phosphate		eutrophication of streams, rivers and lakes
sulfur dioxide		damage to trees, e.g. death of leaves
ionising radiation		
DDT	pesticide sprays	accumulates in tissues of animals

- (a) Complete Table 1.1. [5]
- (b) Explain what happens in streams, lakes and rivers when eutrophication occurs.


CHEMISTRY ONLINE
TUITION

[5]

(c) Sulfur dioxide dissolves in rain water to form acid rain.

Describe **two** measures that can be taken to reduce the effects of acid rain.

1

.....

2

.....

[2]

[Total: 12]



The diagram illustrates the water cycle. On the left, a cloud is raining (precipitation). In the center, a cloud has two upward arrows pointing to it from the ground (evaporation). On the right, a cloud has three upward arrows pointing away from it (condensation). Below the clouds, a landscape shows a hill with trees on the left, a body of water in the middle, and a city with buildings on the right. A thick black arrow points from the city towards the left, passing under the ground and into the body of water. Another thick black arrow points from the body of water towards the left, following the slope of the hill. A third thick black arrow points from the city towards the right, following the slope of the hill. The letters 'D' and 'E' are placed near the city buildings.

(a) Water is a large component of the cells in the leaves of trees, as labelled **D** on Fig. 3.1.

..... [4]

[4]

(c) Explain how water enters the roots of the trees from the soil.

.....

.....

.....

.....

.....

..... [3]

(d) Fig. 3.1 shows a sewage treatment works, labelled E.

Describe **three** processes used in the treatment of sewage.

1

.....

2

.....

3

..... [3]

(e) Herbicides are used by farmers to control weeds.

Explain the environmental damage that may be caused by herbicides.

.....

.....

.....

.....

.....

..... [3]

[Total: 17]

3 Sulfur dioxide (SO₂) can cause acid rain.

(a) Name **one** other pollutant that can cause acid rain.

.....[1]

(b) Describe the effects of acid rain on the environment.

.....
.....
.....
.....
.....
.....
.....
.....[3]

(c) State **three** methods to reduce atmospheric SO₂ pollution.

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

.....[3]

- Their results are shown in Fig. 2.1.



- CHEMISTRY ONLINE
— TUTOR —
- [3]

- (ii) Suggest why the concentration of sulfur in the plant tissues was calculated as a **percentage** of the **dry mass** of the plant tissue.

.....

.....

.....

.....

.....[2]

[Total: 12]



- 4 Sewage treatment works use bacteria to digest the waste matter. Waste matter contains complex organic compounds, such as starch, cellulose, protein and fat.

Fig. 3.1 shows a diagram of a sewage works with an aerobic digestion tank.

The sewage works discharges clean water into a river. Downstream from the sewage works, water is removed to be used as drinking water for a nearby village.

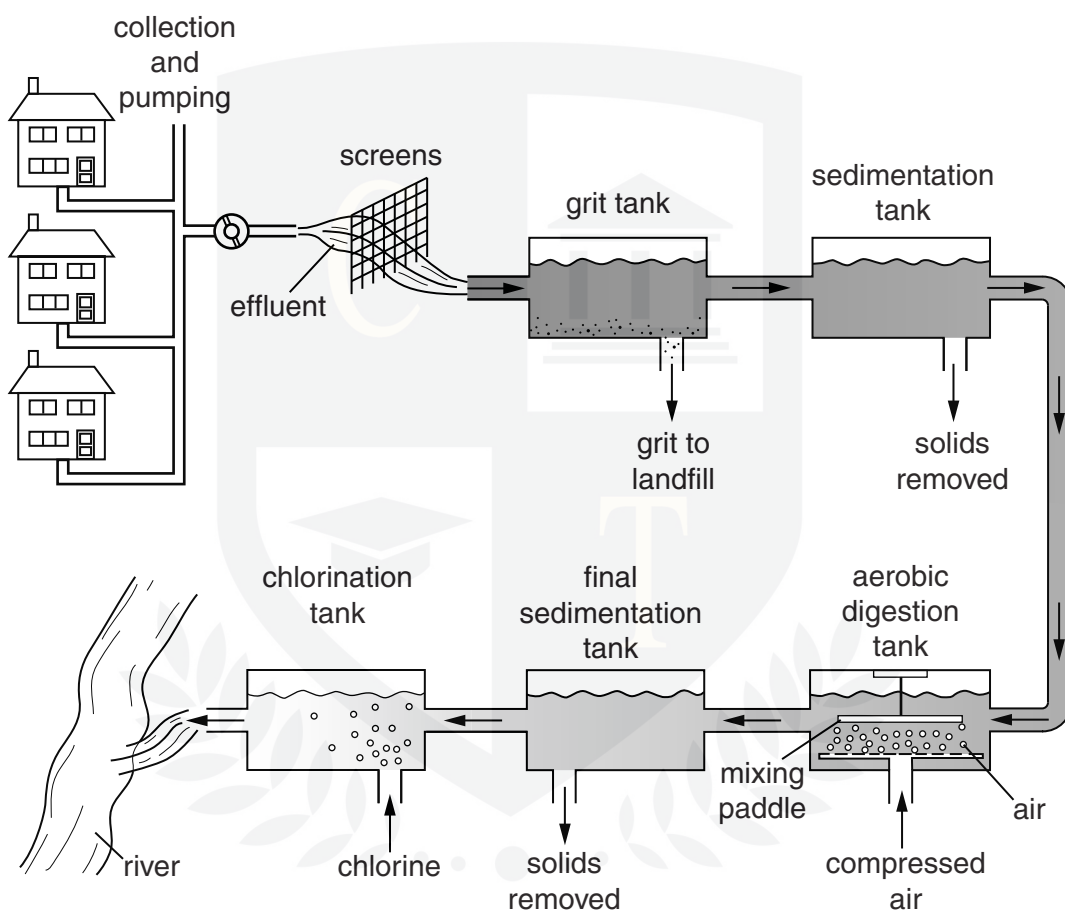



Fig. 3.1

The logo of the University of Cambridge, featuring a shield with a cross and four lions, and the motto 'HILARY' and 'WINTER' on banners. The shield is surrounded by a blue border with the text 'UNIVERSITY OF CAMBRIDGE' at the top and 'FUND. 1209' at the bottom.

CHEMISTRY ONLINE [2]

CHEMISTRY ONLINE
— TUITION —