

## Mark schemes

1.

(a)  $(140 + 240 + 380 + 450 = )$  1210

1

(b) the local people decided to farm cattle

1

a company starts growing plants for biofuels

1

(c) carbon dioxide

*in this order only*

1

photosynthesis

1

(d) animals and birds migrate because there is less food

1

more habitats are destroyed

1

(e) any **one** from:

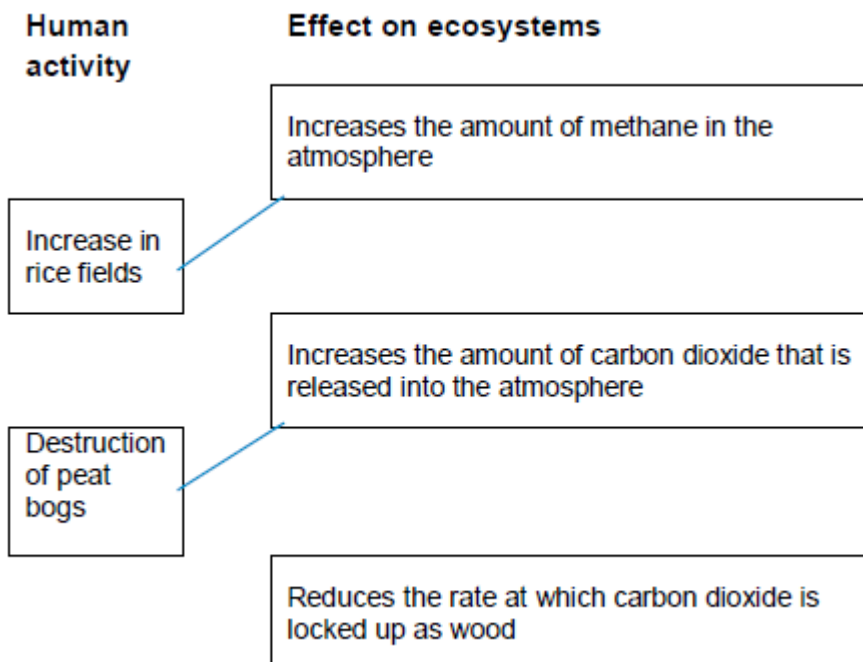
- breeding programmes (for endangered species)
- regeneration (programmes)
- reintroduction of field margins / hedgerows
- awareness raising with politicians / public
- recycling

1

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2.

(a)



*extra lines from left cancels mark*

2

- (b) (i) any **two** from:
- (to provide land) for farming / agriculture
  - (to provide land) for quarrying
  - (to provide land) for building
  - to provide wood for building materials
  - to provide fuel
  - to provide paper

2

- (ii) any **two** from:
- changes in earth's climate, ie droughts, flooding, hurricanes  
*ignore temperature rise*  
*allow ice caps melt*
  - rise in sea levels
  - reduce biodiversity
  - change in migration patterns
  - may change distribution of species  
*ignore acid rain **and** the ozone layer **and** forest fires*

2

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**3.**

- (a) any **one** from:
- increased pollution
  - dumping waste  
*allow described consequence e.g. vermin*  
*accept (increased) landfill*  
*accept (increased) fly tipping.*

1

- (b) (i) (mass of SO<sub>2</sub>) decreases

1

and then levels off / plateaus

1

- (ii) 2008

*clear evidence of calculating 700 (000) = 1 mark*

2

- (iii) any **one** from:
- acid rain
  - erosion of statues / buildings
  - destruction of habitats
  - reduction in biodiversity
  - damage to lichen
  - breathing problems  
*ignore reference to ozone layer*  
*allow damage to plants.*

1

- (c) Carbon dioxide being absorbed in oceans and lakes

Photosynthesis by trees

1

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4.

- (a) (i) correct bar heights

*three correct 2 marks*

*two correct 1 mark*

*one or none correct 0 marks*

*ignore width*

2

- (ii) (Stream Y)

has many sludge worms / bloodworms

**or**

has no mayflies / caddis or few shrimp

*allow 1 mark if invertebrate not named but correct association given*

1

which indicate medium or high pollution

1

- (b) (i) suspended solids increase (as a result of sewage overflow)

1

then decrease downstream / return to original levels

1

oxygen levels decrease (after sewage overflow)

1

and then rise again

1

- (ii) any **three** from:

- mayflies decrease (to zero) near overflow  
*accept 'have died out'*
- because oxygen is low **or** mayflies have high oxygen demand
- mayflies repopulate / increase as oxygen increases again
- can't be sure if dissolved oxygen or suspended solids is the cause

3

- (c) they respire / respiration

*aerobic respiration gains 2 marks*

1

this requires / uses up the oxygen

1

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5.

- (a) decrease in photosynthesis (as fewer trees) causes less removal of  $\text{CO}_2$   
*accept forest cleared for livestock which respire and give out  $\text{CO}_2$*   
*ignore 'Carbon sink'*

1

burning / combustion releases  $\text{CO}_2$

1

decay of wood (by microorganisms) releases  $\text{CO}_2$

1

- (b) any **two** from:

- loss of habitat / shelter
- loss of food source
- smaller populations more vulnerable / less likely to survive
- fewer plant species due to clearing

2

- (c) (i) removing carbon dioxide from the air

1

- (ii) any **one** from:

- growth of plants (to trap  $\text{CO}_2$  in photosynthesis)  
*allow afforestation*
- CCS (carbon capture and storage)
- separate / store  $\text{CO}_2$  from waste gases in industry
- make new peat bogs
- absorbed / dissolved in oceans / lakes / ponds
- used as calcium carbonate to form shells / bones

1

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6.

- (a) (i) 76.0 / 76

*correct answer with or without working gains 2 marks*

*allow 76.04 for 2 marks*

*allow 76.04 with extra decimal places eg 76.042 for 1 mark*

$$\frac{465}{611.5} \text{ for 1 mark}$$

2

(ii) mass of fish declines (until 2008)

*ignore use of numbers*

*allow number of fish decline (until 2008)*

1

(due to an) increase in fishing / overfishing

1

and then rises (until 2010)

1

(which could be due to) quotas / net restrictions working

*allow any reasonable suggestion, such as countries swapping  
quotas or restrictions on fishing during breeding seasons*

*ignore less fishing*

*if no other marks awarded allow 1 mark for a decrease in mass **and**  
an increase in mass if answer relates to sustainable fishing*

1

(iii) (this is due to) public awareness / demand

*allow legislation / rules*

1

(b) fishing quotas / bans

1

(small) net / mesh size

*if size of net is stated then it must be smaller*

*if size of mesh is stated then it must be larger*

1

(c) (fish) cannot move freely / as much

1

(therefore) less energy loss from the fish

*do **not** allow 'no energy is lost'*

*ignore references to less heat loss through controlling body  
temperature*

*ignore references to respiration*

1

(there is) more food available / better quality food / fed more often

*accept 'high-protein food (for making cells)'*

1

(so) there is more energy for growth **or** (more food) is converted to biomass

1

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