

# Answers to end-of-chapter questions

## Chapter 22: Humans and the environment

- 1 a i** make amino acids / make proteins; [1]  
**ii** soil may be short of nitrates;  
crop will not grow well if short of nitrates /  
yields will be small; [2]
- b** nitrates will encourage growth of, plants /  
algae;  
which will block out light deeper in the water;  
plants eventually die;  
bacteria feed on the dead plants;  
bacteria respire aerobically;  
use up oxygen from the water;  
animals will, leave / die, because they do not  
have enough oxygen; [max 5]
- 2 a i** pollination; [1]  
**ii** eat leaves / suck sap / eat grain / spread  
viruses; [1]
- b** insects have become resistant to the insecticide;  
reference to natural selection / selection  
pressure;  
variation within the insect population;  
one or more individuals happened to be able to  
survive the insecticide;  
so these reproduced;  
and passed on their genes to their  
offspring; [max 5]
- c** grow a mixture of crops instead of just one  
type;  
grow different crops in the field each year;  
encourage predators of the pests to live in the  
field (by providing suitable conditions for  
them);  
remove pest insects by hand;  
cover the crop to prevent insect pests  
getting access to it; [max 3]
- 3 a** photosynthesis by aquatic plants;  
dissolving from the air; [2]
- b** bacteria feed on the sewage;  
so their populations increase;  
bacteria respire;  
aerobically;  
use up oxygen from the water; [max 4]
- c i** increasing quantities of untreated sewage  
running into the river;  
build-up of nutrients in the water;  
so larger bacteria populations used up  
more oxygen; [max 2]  
**ii** sewage treated before entering the river;  
fewer nutrients for bacteria;  
so fewer bacteria / less use of oxygen  
by bacteria; [max 2]
- d** they would die / leave the river; [1]
- e** cause unpleasant smells;  
introduce pathogens to the water that could  
cause disease in humans;  
e.g. cholera bacterium;  
e.g. polio virus;  
other example of water-borne disease-  
causing organism; [max 2]