

QUESTIONSHEET 1

- (a) make their own food;
by photosynthesis; 2
- (b) (i) 1 of:
hawk;
thrush; 1
- (ii) caterpillars/ thrush; 1
- (c) energy; 1
- (d) (i) bacteria;
fungi; 2
- (ii) warmth;
damp; 2
- TOTAL 9**

QUESTIONSHEET 2

- (a) Buttercups; 1
- (b) $\frac{10}{40} \times 100$;
= 25%; 2
- (c) Any two of:
Weedkiller breaks down in soil/becomes ineffective/
new seeds blown onto ground/
some daisies resistant and reproduce; 2
- TOTAL 5**

QUESTIONSHEET 3

- | | | |
|-----|---|---|
| (a) | D; | 1 |
| (b) | G; | 1 |
| (c) | C; | 1 |
| (d) | D and E; | 1 |
| (e) | G; | 1 |
| (f) | Allows plant to photosynthesise/make food;
before trees come into leaf and block sunlight; | 2 |

TOTAL 7**QUESTIONSHEET 4**

- | | | |
|-----|---|---|
| (a) | X; | 1 |
| (b) | Y; | 1 |
| (c) | Y; | 1 |
| (d) | (i) B; | 1 |
| | (ii) Most pests killed by insecticide/fewer plants affected by pests; | 1 |
| (e) | Any two of:
Cost/
effect on other organisms/livestock/
toxicity/
ease of use/application/
persistence of insecticide in soil;; | 2 |

TOTAL 7

QUESTIONSHEET 5

(a)	Sunlight;	1
(b)	(i) Cabbages;	1
	(ii) Any one of: Rabbits/ Aphids/ Snails;	1
	(iii) Any one of: Frogs/ ladybirds/ hawk;	1
(c)	Any one of: Cabbages → Aphids → Ladybirds → Blue tits → Hawk Cabbages → Snails → Frogs → Snake → Hawk;	1
(d)	Blue tit population will decrease; ladybirds decrease in number as no aphids to feed on, therefore less food/ladybirds for blue tits;	2
TOTAL		7

QUESTIONSHEET 6

(a)	(i) May;	1
	(ii) Increasing light intensity/daylight enables more photosynthesis; thus more reproduction/higher temperatures enable faster reproduction rate; fewer Daphnia to eat algae;	3
(b)	Increase in March and April; reaches a peak in May; falls rapidly in June;	3
(c)	Large amount of food/algae available; allows Daphnia to reproduce rapidly; grows and reproduces more quickly as temperatures rise;	3
(d)	Less food/algae available;	1
TOTAL		11

QUESTIONSHEET 7

(a)	1;	1
(b)	4;	1
(c)	Any two of: loss due to respiration/ excretion/ defaecation/ not all biomass eaten/ death and decay;;	2
(d)	(i) Increase; less animals feeding on them;	2
	(ii) Decrease; less animals/prey to eat/less food available;	2
		TOTAL 8

QUESTIONSHEET 8

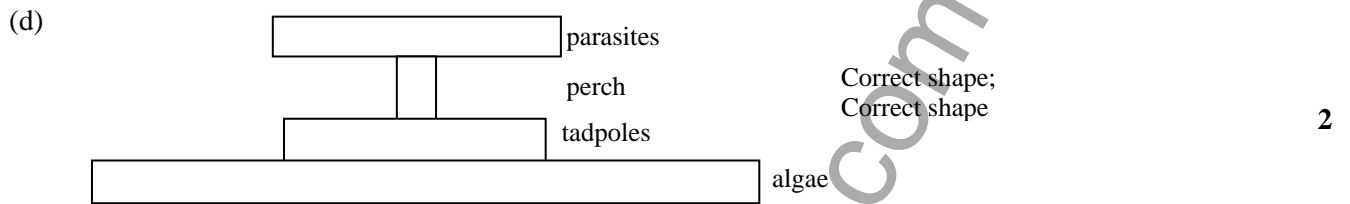
(a)	(i) 20;	1
	(ii) 10;	1
(b)	High level of air pollution/presence of industrial estate causing high level of air pollution; prevailing wind may be West to East (carrying pollutants);	2
(c)	12 km West of town centre;	1
(d)	Highest level of air pollution in town centre; due to exhaust gases/burning of fossil fuels/other valid pollutant;	2
		TOTAL 7

QUESTIONSHEET 9

(a) Any two of:
Tadpoles/
Daphnia/
Water snails;; 2

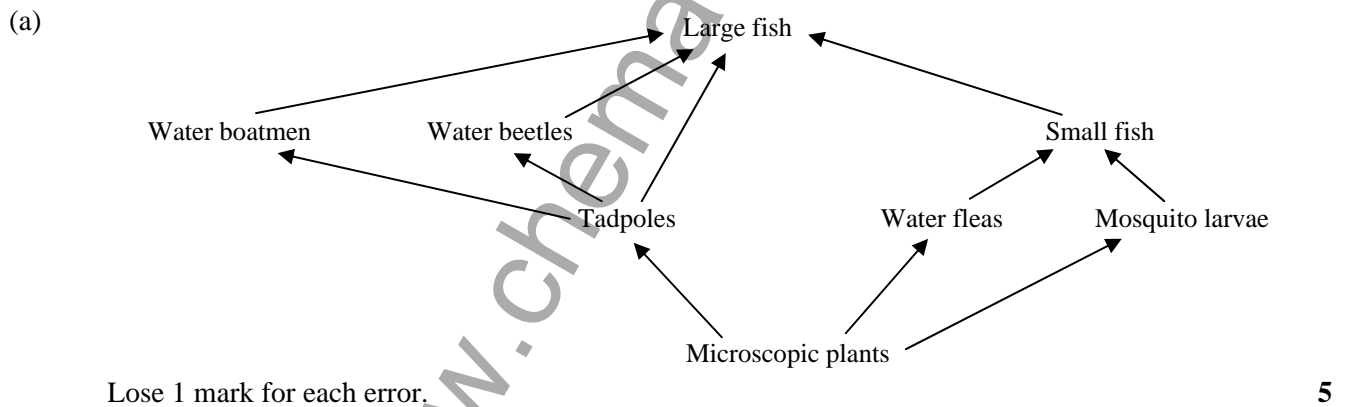
(b) 3; 1

(c) 4; 1



TOTAL 6

QUESTIONSHEET 10



(b)(i) Decrease in population of water beetles; 1

(ii) No food for water beetles;
more water beetles eaten by large fish; 2

TOTAL 8

QUESTIONSHEET 11

- (a) Owl; 1
- (b) (i) Falls;
increases rapidly;
reaches a peak in 1992; 3
- (ii) Ant two of:
many owls so more eaten/
not enough food to support a large population
/disease;; 2
- (c) Fewer mice available for food; 1
- (d) (i) Increase; 1
- (ii) No predator to control population; 1
- TOTAL 9**

QUESTIONSHEET 12

- (a) C; 1
- (b) steady increase;
from 4 to 5 tonnes per hectare/by 25%; 2
- (c) increase to 3.5 tonnes per hectare;
then falls to 2.5 tonnes per hectare; 2
- (d) A = 4.7 and D = 2.0;
difference = 2.7 tonnes per hectare; 2
- TOTAL 7**

QUESTIONSHEET 13

- | | | |
|--------------|--|----------|
| (a) | Damp at 20°C; | 1 |
| (b) | Dry at 45°C; | 1 |
| (c) | Dry at 20°C; | 1 |
| (d) | $\frac{17.6}{50} \times 100; = 35.2\%$; | 2 |
| (e) | (i) Decomposition/decay/rotting; | 1 |
| | (ii) Bacteria;
Fungi; | 2 |
| TOTAL | | 8 |

QUESTIONSHEET 14

- | | | |
|--------------|---|----------|
| (a) | Axis labelled correctly; (year on X axis, CO ₂ (ppm) on Y axis)
suitable scale;
accurate plotting;
points joined with ruled line; | 4 |
| (b) | 1950 to 2000; | 1 |
| (c) | $\frac{80}{100} \times 750$;
= 600 million tonnes; (units essential) | 2 |
| TOTAL | | 7 |

QUESTIONSHEET 15

- | | | |
|--------------|---|----------|
| (a) | Causes rapid increase in the numbers of bacteria; | 1 |
| (b) | (i) Numbers of fish decrease; | 1 |
| | (ii) Bacteria use up oxygen so less available to fish;
fish die since they cannot respire; | 2 |
| (c) | Decayed by bacteria/ used as food source;
becomes diluted in water; | 2 |
| TOTAL | | 6 |

QUESTIONSHEET 16

(a)	Carbon dioxide;	1
(b)	(i) photosynthesis;	1
	(ii) respiration;	1
	(iii) fossilisation;	1
	(iv) combustion;	1
(c)	$\frac{0.6}{4.8} \times 100$; = 12.5%;	2
(d)	Carbon dioxide absorbed by plants; for use in photosynthesis; carbon compounds/sugar/starch/carbohydrates formed; plants eaten by animals or plants die; carbon becomes part of tissue of animal; animals die and dead organisms broken down releasing carbon;	6
TOTAL		13

QUESTIONSHEET 17

(a)	Nitrate;	1
(b)	(i) 4;	
	(ii) 5;	
	(iii) 1;	
	(iv) 2;	4
(c)	Apply fertiliser/manure;	1
(d)	Animals die; are decayed by micro-organisms; which release nitrogen gas into the atmosphere; ref denitrification; under waterlogged/anaerobic conditions;	4
TOTAL		10

QUESTIONSHEET 18

- (a) 150kJ; 1
- (b) 15kJ; 1
- (c) $\frac{150}{1500} \times 100$; = 10% 2
- (d) Waste products/excretion;
respiration; 2
- (e) Energy is lost at each stage of food chain;
in long food chain virtually no energy would reach top consumer; 2
- TOTAL 8**

QUESTIONSHEET 19

- (a) (i) Any two of:
Some light energy does not strike plants;
some light energy is reflected into space;
some light energy is wrong wavelength;
some light energy does not strike chlorophyll molecule; 2
- (ii) Any two points of strategies and linked explanation;
- Keep buildings where animals are housed warm;
Less energy wasted in maintaining constant body temperature;
- Restrict animals' movement;
less energy used in movement;
- Use animals bred for rapid growth rate;
less time for energy wastage; 4
- Ignore references to shorter food chains (not pertinent to this question)

TOTAL 6

QUESTIONSHEET 20

- | | | | |
|-----|------|--|---|
| (a) | (i) | Idea of natural predator/ climatic factor;
causes periodic changes in number of pests; | 2 |
| | (ii) | Yes (during time period X);
numbers of pests often above the level at which economic damage occurs; | 2 |
| (b) | (i) | Rapid;
and very large decrease in number of pests; | 2 |
| | (ii) | Use of chemical control/insecticide/pesticide; | 1 |
| (c) | | Introduction of a new predator/parasite/biological control;
biological control reduces pest numbers but does not eradicate pest/
unlikely to be chemical control as numbers decrease and fluctuate cyclically; | 2 |

TOTAL 9**QUESTIONSHEET 21**

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|-----|-------|---|---|
| (a) | | Any two of:
carbon dioxide;
methane;
nitrous oxides;
CFCs; | 2 |
| (b) | (i) | Rise in temperature of Earth's climate; | 1 |
| | (ii) | Melting of polar ice/ thermal expansion of water; | 1 |
| | (iii) | Any two of:
Loss of land for crops/agriculture;
loss of human habitation;
coastal cities flooded;
major changes in distribution of human population/animals and plants;
famine/starvation in some areas;
some species become extinct; | 2 |
| (c) | (i) | Any four of:
Short sub-tropical period;
followed by temperate period;
followed by boreal period;
then short periglacial period; | 4 |
| | (ii) | Any one of:
No initial tropical period/initial temperature climate;
two boreal periods/longer boreal period/ no temperate period;
shorter periglacial period/ two periglacial periods instead of one; | 1 |
| | (iii) | Any three of:
Greenhouse effect ceases/reduces after 65 000 years/eq;
greenhouse gases no longer being emitted;
fossil fuels have run out;
some CO ₂ has been "recycled"/absorbs by plants;
some CO ₂ has been absorbed by oceans; | 3 |

TOTAL 14