

Question number	Answer	Notes	Marks
1(a) (i)	A combustion / burning / eq; B respiration; C photosynthesis; D death / decay / decomposition / rotting / eq; E respiration;		5
(ii)	C;		1
(b)	1. global warming / earth warms / atmosphere heats up / temperature rises / traps heat / eq; 2. ice caps melt / eq; 3. flooding / rise in sea level; 4. climate change / extreme weather / hurricanes / drought / eq; 5. <u>habitat</u> destruction / desertification / eq; 6. extinction / disruption of food chains / loss of species; 7. migration / distribution of organisms / distribution of pests / spread of disease / affects plant growth;	Mp6 ignore death of organisms	4 max

(c)	<ol style="list-style-type: none"><li>1. burn less fossil fuels / drive less cars / use hybrid cars / use public transport / cycling / low energy light bulbs / eq;</li><li>2. plant more trees / reduce deforestation;</li><li>3. use renewable energy / wind / solar / wave / nuclear / eq;</li><li>4. reduce cattle farming / fewer paddy fields / less aerosols / eq;</li></ol>	Ignore catalytic converters	2 max
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Total 12 marks

Question number	Answer	Notes	Marks								
2 (a) (i)	(-)10.62 / (-)10.6;; allow one mark for 9.76 or 1.16 in working however used	ignore minus sign ignore additional decimal places	2								
(ii)	idea of <u>less</u> oxygen /eq; (less) respiration / energy; low yield / less growth / smaller fish / eq;	ignore idea of high oxygen needed for growth ignore death ignore number	Max 2								
(b)	<table border="1" data-bbox="472 624 1093 1342"> <thead> <tr> <th data-bbox="472 624 721 737">Method</th> <th data-bbox="721 624 1093 737">method increases fish production</th> </tr> </thead> <tbody> <tr> <td data-bbox="472 737 721 913">adding antibiotics to the water</td> <td data-bbox="721 737 1093 913">control disease / kill bacteria / parasites / pathogens / eq;</td> </tr> <tr> <td data-bbox="472 913 721 1127">using nets to cover tanks</td> <td data-bbox="721 913 1093 1127">protect fish being eaten by predators / named predator / prevent escape;</td> </tr> <tr> <td data-bbox="472 1127 721 1342">feeding small quantities of food frequently</td> <td data-bbox="721 1127 1093 1342">all eaten / no waste / no decay / less eutrophication / less bacterial growth / eq;</td> </tr> </tbody> </table>	Method	method increases fish production	adding antibiotics to the water	control disease / kill bacteria / parasites / pathogens / eq;	using nets to cover tanks	protect fish being eaten by predators / named predator / prevent escape;	feeding small quantities of food frequently	all eaten / no waste / no decay / less eutrophication / less bacterial growth / eq;	ignore competition ignore ref to energy / nutrients ignore overfeeding ignore pollution	3
Method	method increases fish production										
adding antibiotics to the water	control disease / kill bacteria / parasites / pathogens / eq;										
using nets to cover tanks	protect fish being eaten by predators / named predator / prevent escape;										
feeding small quantities of food frequently	all eaten / no waste / no decay / less eutrophication / less bacterial growth / eq;										

(c)	digested / broken down; amino acids / (poly)peptides; stomach; protease / named protease enzyme (ONCE); HCl / acid / low pH / eq; small intestine / duodenum / ileum; bile / neutralise /alkaline / eq; <u>optimum</u> pH (ONCE)	ignore pepsinogen / trypsinogen  accept name of enzyme if in incorrect part of gut	Max 5
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**Total 12 marks**

Question number	Answer	Marks
3 (a) (i)	oxygen; respiration / energy; active uptake;	Max 2
(ii)	no light / keep dark; roots; (no) photosynthesis; (growth) water plants / algae;	Max 2
(b) (i)	any answer in the range 105 to 125; any answer in the range 80 to 95;	2
(ii)	repeat / eq;	1
(iii)	temperature; light; carbon dioxide; humidity; volume of solution / liquid; Ignore water ion concentration;	Max 2
(c)	(nitrates) soluble / dissolve; rain / water / run off; <u>leaching</u> / <u>leached</u> ; algal growth / plant growth / algal bloom / eq; block light / sun / eq; plants die / less photosynthesis / eq; less oxygen / anoxic / eq; bacteria / fungi; decomposers / decomposition / rot / decay / eq; respiration; fish / animals die; <u>eutrophication</u> ;	Max 6