

Question number	Answer	Notes	Marks
1 (a)	1. total decreased; 2. igh <u>and</u> middle altitude decreased; 3. low altitude increased;		3
(b) (i)	1. less growth / lower yield / smaller plants / eq; 2. enzymes / reactions / kinetic energy / collisions / less photosynthesis / less respiration / eq;	allow converse for lower	2
(ii)	1. (sun)light; 2. minerals / named mineral; 3. carbon dioxide; 4. water / rain;	ignore sun weather soil pH humidity oxygen nutrients fertiliser	Max 2
(c)	1. weigh / use a balance / eq; 2. repeat / several quadrats / calculate average; 3. random / eq; 4. scale / multiply / eq;	ignore measure mass / counting plants	Max 3

(Total for Question = 10 marks)

Question number	Answer	Notes	Marks
2 (a)	broad bean → aphid → lacewing / larvae ; ;	arrows correct; aphid in middle; ignore sun before bean and organisms beyond lacewing one for pyramid	2
(b) (i)	1. all aphids eaten / numbers fall to zero / remove all pest / eq; 2. lacewings remain / lacewings reproduce more / eq;	allow converse for hoverfly	2
(ii)	quicker / faster / shorter period of time to reduce aphid numbers / eq;		1
(c) (i)	1. disease / eq; 2. plant availability / food ; 3. ompetition;	ignore reproduction / ignore predators	2
(ii)	1. temperature / cold / heat; 2. humidity / water / rain / snow / drought; 3. (sun)light; 4. pesticide / insecticide / pollution;	ignore wind / weather / climate change / sun  ignore fertiliser / herbicide / O <sub>2</sub> /CO <sub>2</sub>	2

(Total for Question = 9 marks)

Question number	Answer	Notes	Marks												
3 (a)	<table border="1"> <thead> <tr> <th>Sentence</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>the number of animals is</td> <td>(8)</td> </tr> <tr> <td>the number of producers is</td> <td>1;</td> </tr> <tr> <td>the number of herbivores is</td> <td>4;</td> </tr> <tr> <td>the number of secondary consumers is</td> <td>4;</td> </tr> <tr> <td>the number of food chains is</td> <td>6;</td> </tr> </tbody> </table>	Sentence	Number	the number of animals is	(8)	the number of producers is	1;	the number of herbivores is	4;	the number of secondary consumers is	4;	the number of food chains is	6;		4
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3 (b) (i)	decrease / eq;	allow have a negative effect	1
(ii)	number of <u>same species</u> / number of <u>a species</u> / number of <u>one species</u> / eq;	allow amount / how many as eq to number	1
(c)	carbohydrate / glucose; protein / amino acids; fat / fatty acids / glycerol / cholesterol/ lipid; mineral / ions / salt / named mineral / named ion / named salt; vitamin / named vitamin; water;	ignore other blood components such as haemoglobin, rbc, platelets, oxygen and sugar etc	2
		<b>Total</b>	<b>8</b>

Question number	Answer	Notes	Marks
4 (a)	S scale linear + use of at least half grid; L lines on bars neat; A axes correct way; A axes labelled energy + kJ per m <sup>2</sup> per year and A,B,C,D / eq; P bars at correct height;	L lost if points plotted allow yr or y for year allow kJ m <sup>-2</sup> yr <sup>-1</sup>	5
(b)	temperature / heat; (sun)light / light intensity; wavelength / colour; water / rain; minerals / ions / salts / named mineral / nutrients;	ignore humidity	3
(c) (i)	(less) pests / disease control / pesticides / eq; biological control / predators; fertiliser / fertile soil / crop rotation / legumes / eq; irrigation / watered; replanting / several plantings per year; GM / species of plant / different strains / eq; weed removal;	ignore pollution / CO <sub>2</sub> levels or other abiotic factors ignore glasshouse / polythene	2
(ii)	man / human / you / farmer; desired characteristic / named feature / eq; breed / produce offspring / eq; many generations / eq;		4
(d)	several / use more than one / sample / repeat / eq; <u>random</u> ; weigh / method of weighing / scales / eq; remove animals / consumers / soil; multiply to total area / scaling;	allow if implicit ignore count / measure biomass ignore average	Max 4
		<b>Total</b>	

Question number	Answer	Notes	Marks
5	<p>C indoors / outdoors / eq;</p> <p>O same species / size / age / breed / gender / eq;</p> <p>R repeats / groups / lots / some chickens / eq;</p> <p>M1 mass / length / eq ;</p> <p>M2 time period <u>stated</u>;</p> <p>S1 one variable controlled;</p> <p>S2 another variable controlled;</p>	<p>eg. 2 inside and 2 outside</p> <p>allow if at start or at end</p> <p>at least one day</p> <p>eg. mass of food / same food / area / water / light / eq</p> <p>ignore temperature ignore environment</p>	Max 6

**Total 6 marks**