Question number	Answer	Notes	Marks
1 (a) (i)	plastic;		1
(ii)	1. repeated / ten trays / lots of plants / several trays / eq;		
	2. c culates average / mean;		
	3. discard anomalies / check for anomalies / concordant results / eq;	Allow outliers	Max 2
(iii)	1. carbon dioxide;	Ignore light / time / wind / oxygen	
	2. emperature / heat;		
	3. water / humidity / moisture;		
	4. soil pe / soil mass / amount of soil / minerals / ions / fertiliser / soil pH;	4. Ig re nutrients	Max 3

(b)	1. light; 2. revents growth of other plants / less competition from other plants / fewer weeds / prevents photosynthesis of other plants; OR 3. absorbs heat / warmer soil / insulates / eq; 4. affects enzymes / affects reactions / affects respiration / affects movement of molecules; OR 5. plastic prevents <u>evaporation</u>; 6. soil retains water / more water for the plants to use; OR 7. prevent pest access; 8. less plant damage / eq;	Only allow maximum of two reasons and two explanations Ignore attracts heat Ignore photosynthesis Ignore microorganisms	Max 4

Question number	Answer	Notes	Marks
2(a) (i)	0.52 / 0.5 / 0.521;;	Allow one mark for correct use of 8863 as numerator (ie not if in list) Ignore 0.52135	2
(ii)	light misses plant / light misses chloroplast / light not absorbed / light reflected / eq;	Ignore reference to heat / energy / respiration / rays	1
(b)	1. respiration; 2. not digested / cellulose / egested / faeces; 3. not eaten / eq;	Ignore growth / active transport / heat loss / movement / heat loss by consumer / excretion	2 max

Total 5 marks

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>3(a)</td><td>
<table>
<tr><th>area</th><th>Increase in biomass in g per m^2 per year</th></tr>
<tr><td>A</td><td>125</td></tr>
<tr><td>B</td><td>110</td></tr>
<tr><td>C</td><td>?</td></tr>
</table>

85;;
</td><td>Allow one mark for 1700 in working</td><td>2</td></tr>
</table>

(b)(i)	1. (more) (sun)light; 2. water / rainfall; 3. photosynthesis; ONCE 4. warmer/ higher temperature; 5. enzymes; 6. (more) mineral ions / named mineral ion / eq; 7. <u>use of named</u> mineral ion;	Ignore carbon dioxide / oxygen / pollution Mp 6 ignore growth nitrate for amino acids = Mp 5 and Mp 6 Mp 5 ignore nutrients / fertiliser	4 max
(ii)	1. fewer herbivores / less grazing / fewer plants eaten / fewer consumers / fewer pests / eq; 2. fewer weeds / fewer different plants / less competition from other plants; 3. less disease / less infection; 4. more nitrogen fixing / nitrifying bacteria;	Mp 1 ignore predator	2 max
(c)	0.079 / 0.08 / 0.0791;	Ignore 0.0790625 Allow one mark for 2530 in working	2

Total 10 marks

Question number	Answer	Notes	Marks
4(a)	goshawks / bird of prey / named bird of prey;		1
(b)	1. small(er) SA:VOL; 2. less heat loss / retain heat / keep warm; 3. more fat / food reserves; 4. (for) respiration / energy / insulation;	1. allow larger VOL:SA 4. must be linked to Mp3	2
(c)	1. more food / seeds / eq; 2. warmer / not cold / eq;	ignore in good condition ignore lack of predators	2
(d) (i)	(place/area/environment) where organisms/plants/animals/population/community live / eq;		1
(ii)	number / how many / all / amount OF <u>same</u> / <u>a</u> / <u>one</u> / <u>the</u> <u>species</u>;	allow number of red/grey squirrels ignore number of squirrels ignore number of species	1
(e)	5.3(03)%;;	one mark for 2 640 000 in working	2
(f)	1. better competitors / outcompete / eq; 2. more resistant to disease; 3. better camouflage / description of camouflage / eq; 4. fewer predators / not eaten by goshawks / eq; 5. fecundity / reproduce more / eq;		2

(g)	1. study area with red AND study area with grey squirrels; 2. count / record / compare number of woodland birds; 3. same area / type / sample of woodland / eq; 4. eference to time; 5. idea of repeating;	2. monitor = 0 allow count / record with any method	3
(h)	1. trap / shoot / poison / kill / hunt grey squirrels / eq; 2. (captive) breeding of red squirrels / cloning / zoos / selective breeding; 3. provide more food / pine cones / seeds; 4. set up nature reserves / fencing / move to place with no grey squirrels / eq; 5. biological control / shoot goshawk; 6. vaccination / antibiotic;	4. eg restrict human access	2

(Total for Question = 16 marks)

Question number	Answer	Marks
5 (a) (i)	20 / twenty;	1
(ii)	54 / 54.0; 10 + inside;	2
(b) (i)	in or out (of the box) / indoors or outdoors; time;	Max 1
(ii)	temperature;	1
(iii)	fair test / (increased) validity; ignore accurate / reliable (valid) comparison / eq; no other factor affected results / other factor/example affects results / only independent variable affected results / eq;	Max 2
(c)	leave thermometer in water; stir water; digital / electronic thermometer; measure to smaller temperature interval; reference to parallax / eq; measuring cylinder / eq; stopwatch / eq;	1

(d)	heat loss / cooling / eq; maintain body temperature / temperature constant / keep warm; energy used / less energy for growth / more food / eq; respiration; (more) movement;	Max 3

Total 11 Marks