Question Number	Answer	Acceptable answers	Mark
1(a)(i)	8-10 (hours)	accept any value between 8 and 10	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	(85/100) x 500 (1) Or (500/100) x 85 (1) 425 (plants)	award two marks for correct bald answer	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(a)(iii)	plant can flower all year round/flowering not limited to one period of the year/plant can flower for longer/flower at any time.	ignore references to growing accept pollination for flowering	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(iv)	**C** photoperiodism		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	less likely to be eaten (by animals / herbivores)	accept kills pests/reduces damage done by pests reject predators	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	An explanation linking **two** of the following: the bamboo **mutated** to produce cyanide (1) or bamboo plants that produced cyanide survived to reproduce/ increase in numbers/increase in size (1) **and** **mutation** in greater bamboo lemur allowed them to tolerate cyanide (1) or greater bamboo lemurs get more food so survive to breed/reproduce (more) (1)	accept some bamboo plants have the {**gene/allele**} to produce cyanide ignore bamboo plants not eaten accept lemurs have {**gene/allele**} to tolerate cyanide ignore {adapted to tolerate/resistant to} cyanide accept lemurs have less **competition** for food	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(c)(i)	**A** aggression		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(c)(ii)	An explanation linking two of the following: sounds can be heard over a long distance /heard in the dark (1) do not need to have visual contact/allows communication with more animals (1) or more different types of sound (1) more {emotions/ behaviour/ information} can be conveyed (1)	accept quicker communication method accept doesn't require good vision	**(2)**

(Total for question 1 = 11 marks)

Question number	Answer	Additional guidance	Mark
2(a)(i)	29 ÷ 500 = 0.058 (1) 0.058 × 100 = 5.8 (1)	award full marks for correct numerical answer without working	**(2)**

Question number	Answer	Mark
2(a)(ii)	An explanation that combines identification via a judgment (1 mark) to reach a conclusion via justification/reasoning (1 mark): • compost B (1) as it has the highest percentage water retained • and there is a higher amount of water loss in the plants due to higher temperatures causing a {larger rate of evaporation of water/higher transpiration rates} (1)	**(2)**

Question number	Answer	Additional Guidance	Mark
2(a)(iii)	Use the same starting mass of compost (1)	accept any other relevant improvement	**(1)**

Question number	Answer	Additional guidance	Mark
2(b)(i)	An explanation that combines identification – application of knowledge (1 mark) and reasoning/justification – application of understanding (1 mark): • by reducing the water content it reduces the number of microorganisms that can reproduce (1) • because there is a reduction of microorganisms this reduces the decay process/preserves the food (1)	accept bacteria/pathogens for microorganisms	**(2)**

Question number	Answer	Mark
2(b)(ii)	to kill unwanted micro-organisms	**(1)**

(Total for question 2 = 8 marks)

Question number	Answer	Additional guidance	Mark
3(a)(i)	25 × 25 = 625 (1) 1 ÷ 625 = 0.0016 (1)	award full marks for correct numerical answer without working	**(2)**

Question number	Answer	Mark
3(a)(ii)	An answer that combines points of interpretation/evaluation to provide a logical description: • as light intensity decreases the rate of photosynthesis also decreases (1) • after 20 cm away when light intensity appears to have little effect on the rate of photosynthesis (1)	**(2)**

Question number	Answer	Mark
3(a)(iii)	use a light meter/lux meter	**(1)**

Question number	Answer	Additional guidance	Mark
3(a)(iv)	An explanation that combines identification – improvement of the experimental procedure (1 mark) and justification/reasoning which must be linked to the improvement (1 mark): • collect the gas/oxygen produced in a graduated gas syringe (1) • to reduce the errors generated when counting bubbles which maybe of different sizes (1)	accept alternative gas collection method with measuring cylinder and beehive shelf accept leave the apparatus for a longer amount of time	**(2)**

Question number	Answer	Mark
3(b)	An explanation that combines identification via a judgment (1 mark) to reach a conclusion via justification/reasoning (1 mark): • the volume of gas produced would decrease to below four bubbles (1) • because light is needed for photosynthesis (1)	**(2)**

(Total for question 3 = 9 marks)