Answers to examination-style questions

Answers	Marks	Examiner's tips

1 (a) correct use of Σ;
numerator = 380 and denominator = 132;
diversity index = 380/132;
2.87 to 2.9 gains;
(*do not allow 2.8 or denominator = 135*);

Marks: 2

Species	n	$n-1$	$N(n-1)$
A	10	9	90
B	1	0	0
C	1	0	0
D	7	6	42
E	0	0	0
F	1	0	0
Total	**20**		**132**

These calculations are easy as long as you use this table and have done a lot before. Do all the ones that you can find on old exam papers and make sure you know which data to use. N = the total number of all species and is worked out by adding up $10 + 1 + 1 + 7 + 0 + 1 = 20$, so the top line (numerator) becomes $20(20 - 1) = 380$.
The bottom line (denominator) is 132.

(b) more types of prey found on strawberries;

Marks: 1

2 deforestation removes many habitats/niches;
fewer species/fewer types of organisms;

Marks: 2

Do not just put 'fewer organisms' or 'less animals/plants'. Use precise biological terms.

3 (a) 4 (*reject 4.03*);

Marks: 1

You need to be able to convert a percentage to an actual number.
31 species = 100% and 13% of 61 = 4.03. But you cannot have 0.03 of a species so round down the figure to a whole number = 4.

(b) isolation (on islands);
variety of habitats/conditions different from origin/other islands;
differing pathways of natural selection;
leading to organisms too different to interbreed;

Marks: 3 max

Apply your knowledge of the adaptation and separation of species resulting in evolution.

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4 (a) correct use of Σ; 1.74 (*correct answer*);	**2**	Use the table shown in the answer box to Question 1 to calculate the index of diversity. Make sure you can explain the significance of the index as well as calculate it.
(b) more individuals and more different species/**A** is a biotically more harsh/more demanding environment;	**1**	
5 (a) $(282 \times 281)/25\,384 = 3.12$ (*accept 3.1/3.122*);	**2**	Use the table shown in the answer box for Question 1.
(b) decrease in total numbers (*reject population*) of butterflies; change in proportion of species/example(s); increase in diversity in logged forest/ calculation (4.01);	**2**	Use the table shown in the answer box for Question 1.