D4.3 Climate change

What the Cell · DP Biology · worksheet · SL statements D4.3.1–8

Name _____ **Date** _____ **Total** _____ / 36

About 35 minutes, or one section at a time. The number of marks shows how many separate points to make.

Section A: Recall

7 marks

1 **State** two human sources each of carbon dioxide and of methane. D4.3.1 **[2]**

2 **Define** tipping point. D4.3.3 **[1]**

3 **State** the type of ice that emperor penguins breed on. D4.3.4 **[1]**

4 **List** three approaches to carbon sequestration. D4.3.8 **[3]**

Section B: Understanding

13 marks

5 **Explain** how thawing permafrost is an example of positive feedback. D4.3.2 **[3]**

6 **Explain** how warmer surface water can reduce the productivity of an ocean. D4.3.5 **[3]**

7 **Explain** why species living near the tops of mountains are at particular risk. D4.3.6 **[2]**

8 **Distinguish** between ocean acidification and coral bleaching. D4.3.7 **[3]**

Acidification	Bleaching

9 **Explain** why restoring a peat wetland helps to store carbon. D4.3.8 **[2]**

Section C: Working with data

10 marks

All data in this section are invented for practice. The patterns are realistic.

10 D4.3.6

The mean elevation of three bird species on one mountain was recorded in two surveys, 40 years apart.

Species	First survey / m	Second survey / m
A	1200	1420
B	1800	2010
C (top of mountain)	2600	Not found

a **Calculate** the mean rate of upslope movement of species A, in metres per decade. **[1]**

b **Explain** the results for species A and B. **[2]**

c **Suggest** two explanations for the result for species C. **[2]**

11 D4.3.7

The rate of calcification in a coral was measured at different values of pH.

pH	8.2	8.0	7.8	7.6
Relative calcification / %	100	85	62	38

a **Describe** the relationship. **[1]**

b **Explain** how a rise in atmospheric carbon dioxide could produce these effects in the sea. **[3]**

c **Suggest** one effect of lower calcification on other reef species. **[1]**

Section D: Longer answer

6 marks

12 **Discuss** the effects of climate change on polar and marine ecosystems. D4.3.4, D4.3.5, D4.3.7 **[6]**