G633: Ecology and Managing the Environment – Sample Assignment B

Unit Name: Ecology and Managing the Environment	**Unit Number:** G633
Assignment Title: Planned Investigation of an Ecosystem	**Assignment:** G633 Sample Assignment B
Date Set:	**Due Date:**
Assessment Objective(s): AO3(a), (b), (c), & (d) & AO2(c)	

Vocational Brief:

In order to manage ecosystems, scientists need to consider not only the organisms that make up the community of a particular area but also the physical environment in which the organisms exist. By carrying out this assignment you will learn about the techniques that ecologists use to study an ecosystem and develop an understanding of the relationships between the biological and physical components of an ecosystem. You should then be able to research how ecosystems are affected by change.

Task:

Plan and carry out an investigation of ONE ecosystem.

Produce a report that includes the evidence produced by Tasks 1 – 7 below.

You will need to specify in which ecosystem the investigation was carried out. Include a brief description of the location, its topography and aspect, and give a grid reference.

Task 1:
– AO3(a)

You will need to prepare a risk assessment for the work carried out during your planned investigation.

You should consider the following and any other relevant points you can think of, for a fieldwork exercise:

- potential hazards
- what could go wrong
- safety precautions
- what to do in case of accident
- assess the level of risk.

Task 2:
– AO3(a)

You will be using a range of techniques and equipment. You need to:

- explain why you used the chosen techniques and equipment
- explain the need to have repeated measurements
- work with an appropriate degree of accuracy.

[Max combined marks possible for tasks 1 and 2: 8]

Task 3:
– AO3(b)

You need to make and record relevant observation and measurements of physical factors within the ecosystem.

Depending on the ecosystem involved, these could include:

- temperature
- pH
- oxygen content
- salinity
- solutes
- pollutants
- organic matter
- microorganisms
- light intensity.

Task 4:
– AO3(b)

You need to make and record relevant observations about the distribution and frequency of organisms within the ecosystem using sampling techniques.

These could include:

- quadrats
- line transect
- belt transect
- frequency
- species density
- species cover.

[Max combined marks possible for tasks 3 and 4: 6]

Task 5:
– AO3(c)

You need to display the ecological data you have recorded in Tasks 2 and 3.

The display techniques could include:

- line graphs
- bar graphs
- histograms
- kite diagrams
- pictographs
- pie graphs
- rose diagrams
- scatter graphs.

[Max marks possible for this task: 4]

Task 6:
– AO3(d)

You need to consider the data you have collected about the ecosystem and in doing so:

- interpret the results
- draw conclusions relating your results to the occurrence and distribution of species.

[Max marks possible for this task: 8]

Task 7:
– AO2(c)

In order to carry out Task 6 fully, you are likely to carry out some calculations and perform some statistical tests.

Appropriate statistical processes could include:

- summarising data using descriptive statistics (mean, standard deviation)
- manipulating data (e.g. using Simpson's diversity index)
- testing the validity of trends or differences in data using comparative statistics (correlation coefficient, chi-squared test or t-test).

[Max marks possible for this task: 5]

Resources:

Class notes on:

- how to operate equipment available
- statistical tests.

Relevant paper and electronic-based material.