**4.7.1 Adaptations, Interdependence and Competition – Year 10 Biology Self Study**

**Facts**

* To survive and reproduce, organisms need materials from their surroundings and other living organisms there
* Habitat – the place in which a species or individual lives.
* Community – all the plants and animals living in an ecosystem e.g. garden.
* Biodiversity – The variety of living things in an ecosystem.
* Ecosystem – the interaction of living organisms with the non-living parts of the environment. This can be natural (e.g. lakes) or artificial (e.g. fish farms).
* Interdependence – where species rely on each other to survive for food, shelter, pollination, seed dispersal etc.
* Biotic factor – factors that are living e.g. pathogens
* Abiotic factor – a factor that is non-living e.g. mineral ion content
* Plants compete for light, space, water and mineral ions.
* Animals compete for food, mates and territory.
* A stable community is one where all the species and environmental factors are in balance, so population sizes remain fairly constant
* Adaptation – a feature that allows an organism to survive in the conditions they normally live
* Some organisms live in environments that are very extreme, such as: high temperature, pressure, salt concentration. These are known as extremophiles.
* Bacteria living in deep sea vents are an example of extremophiles.

**Task 1: Watch free Science lessons (if you can) and do a mind map of the information**

* GCSE Science Biology (9-1) Competition and Interdependence
* GCSE Science Biology (9-1) Biotic and Abiotic Factors
* GCSE Science Biology (9-1) Adaptations

**Task 2: Answer these Questions:**

1. What is an ecosystem?
2. What do plants compete for?
3. What is meant by interdependence? Why is it important?
4. What is the difference between abiotic and biotic?
5. What is a community? Give some examples.
6. What is meant by biodiversity?
7. What is an extremophile?
8. What is an adaptation?
9. What do plants compete for?
10. What do animals compete for?

**Task 3**: What do the following organisms will need to survive and why? What will these organisms be competing for? You could complete this as a mind map or a detailed list.

*daisy plant, tiger, oak tree, bee, bacteria, earthworm, elephant*

**Task 4:** Draw a table with the headings “biotic” and “abiotic”. Write the below in the appropriate column.

*Availability of food, Oxygen levels for aquatic animals, Light intensity, Temperature, Carbon dioxide level (plants), New pathogens, Soil pH and mineral content, New predators, Outcompeting by another species, Moisture levels, Wind intensity and direction*

**Task 5: For these words, research what they mean and make a definition list**

*Thermophile, Xerophile, Osmophile, Halophile, Acidophile, Alkalophile, Thermoacidophile, Cryophile, Radioresistant, Metallotolerant*

**Answer these about the above**

Where would you find these extremophiles?

What adaptations would they have?

**Task 6: Adaptations List**

Write a list of different adaptations of animals and plants **and** explain why they are helpful

e.g. thick fur – provides insulation to keep organisms warm

**Task 7: Researching Adaptations**

Select two different organisms that live in different climates e.g. polar bear & dessert fox.

Research the different adaptations they have. You might want to find some videos to help, there are plenty available.

Make two posters OR two mind maps outlining their key adaptations.

You must **explain** the adaptations you have written about.

**Task 8: Exam Q**

Extended Response Exam Question [6 marks]

Some animals are adapted to survive in very cold conditions such as the Arctic.

Explain how the adaptations of Arctic animals help them to survive in cold conditions.