**Plant and Animal life in Biomes.**

**Describe how plant and animal life adapt to soil and climatic conditions in a biome.**

Biomes are regions based on the climate, soils, vegetations and animals that are present in the area. In this answer the way in which plants and animals have adapted to soil and climate conditions in the tropical rainforest biome will be discussd. The tropical rainforest in located on the equator and has a hot (30 degrees) wet (2500-6000 mm) and humid (88%) climate. In a biome, plants and animals have adapted to the soil and climate in that region. Adaption means that the animals and plants have evolved body structures and ways of living that enable them to survive and reproduce in a competitive environment. The plants and animals that are best adapted to their biome will reproduce and pass on their genes to future generations.

**Plant adaptations to climates and soils in the tropical rainforest biome.**

In the tropical rainforest the climate is wet and humid all year round. Heavy convectional rain fall each day with roughly 6000 millimetres each year. Temperatures are high (30 degrees) and this combined with heavy rain leads to high humidity-88%.

Plants have adapted to the wet and humid conditions. Many plants have leaves designed to shed water from their surface very quickly. This prevents the branches becoming weighed down with water and breaking. Such designs include elongated leaves with deep grooves on the leaf surface to channel water to the tips. Leaves also have very pointed ends to allow water pour off the leaf easily called drip tips. Leaf surfaces are also very smooth and hairless to allow water flow easily over the leaf surface. A typical plant with these adaption is the palm oil tree.

If plants did not have these adaptation to their leaves, the plant would be weighed down with water and prone to fungal attack in the warm and humid conditions. Leaves are also large in order to capture as much light as possible in the dark understorey layer. Many tree species have saplings that have large leaves when they start to grow in the understorey but which then produce smaller leaves when they reach the light of the canopy. The emergent layer of trees is also an adaption as tall trees grow and compete for light in the forest.

The bark of the rainforest trees is exceptionally thin-just 1 millimetres. This prevents the trees overheating in the warm conditions. The bark is also very smooth to prevent parasites attaching themselves to the tree.

Plants in the rainforest have adapted to grow successfully in the infertile latosol soil of the rainforest. They have adapted by growing very fast and having shallow root systems. Becasue of the wet, warm humid conditions, dead organic matter is converted to humus very quickly by fungi and bacteria, hence the nutrient cycle is very quick. If plants did not grow fast they would not be able to use the nutrients in the soil before they are leached out of it by heavy rains. Root systems are shallow because 90% of nutrients in the rainforest soil are in the upper O horizon so there is no need for plants to have deep roots. However, to help support their great weight and height, the tallest trees have structures called buttress roots and stilt roots to support them (EX Mahogany).

Carnivorous plants like the Pitcher Plant and Venus Fly Trap adapt to the poor quality soil by obtaining their nutrient by luring insects which they absorb for food. The Venus Fly Trap lures its prey by its bright colours and its sweet smell lures insects onto its inner surface and triggers tiny hairs that trap the animal. This is a perfect example of how plants have overcome the problem of poor latosol soil.

**Animals adaptations to climate and soil in the tropical rainforest biome.**

The climate and soil of the tropical region has produced a biome of dense forest which is dark and humid. The forest is layered with the highest trees reaching up to 70 metres while the canopy below is a zone of dense branches connected with vines called lianas which link the canopy zone of shrub trees and bushes. The forest floor is covered with the dead leaves and branches that fall from above.

The animals that live in this biome have adapted to survive in the different forest layers. Each layer has different animals some of which live their entire lives without touching the ground. Most animals have evolved excellent camoulfage in order to survive. Frogs such as the Giant Leaf frog have adapted to the leafy environment on the trees and ground by having green skin and a body with an irregularly shaped outline which makes them look like a leaf. This makes it hard for predators to see them. The Leaf Frog can move from branch to branch with its sticky pads on its hands. Because of the high humidity 88% these frog lay their eggs on leaves instead of ponds. The leaf frog also has large red eyes to look like poisonous berries. Other animals such as the jaguar have spotted coats so that they cannot be easily seen in the shady conditions and they are good climbers so that they can wait in the tree branches before pouncing.

The brazilian tree sloth lives its life completely in the canopy and eats leaves. It has adapted to this life by moving very slowly as not to attract predators and having a very slow metabolism which enables it to survive on the low energy content of the leaves it eats. The fur of the tree sloth is camouflaged to look green because it lets moss and linchen grow on it. They have large green eyes to see in the shady conditions and their paws have long hooked claws to allow them hang easily from the trees. It also has an extra vertebra in its neck to allow it to turn its head 270 degrees. It also gives birth in the trees to protect its young from ground predators.

Other animals have also adapted to life in the trees. Animals that live in the canopy are usually able to fly or jump from tree to tree. The spider monkey has a prehensile tail that can curl around branches and give extra support as the animal moves among the trees. Some animals such as the Sugar Glider have flaps of skin between their front and back legs that help them glide as tey jump from tree to tree.

Overall it is evident that animals and plants have adapted to living it the rainforest