Nova’s Autumnal Observations

Learning objective: To understand the seasonal changes in plants and animals during autumn, linking these to the Earth's orbit and daylight hours.

Read the passage carefully and answer the questions using evidence from the text. Ensure your answers are written in full sentences.

As the Earth tilts away from the Sun, Nova the owl watches the forest transform. During autumn, daylight hours decrease, signalling a change for our deciduous trees. These trees rely on chlorophyll, the pigment that makes leaves green and allows them to perform photosynthesis. As sunlight fades, trees stop producing this pigment, revealing hidden oranges, yellows, and deep reds. Eventually, the trees shed their leaves to conserve energy, entering a period of dormancy to survive the harsh winter months. Meanwhile, many creatures are busy preparing. Some small mammals begin to hibernate, lowering their body temperatures to save energy, while migratory birds embark on long journeys to warmer climates where food is more plentiful. The cooling temperatures and shorter days are not just a change in weather; they are a vital biological trigger. For many organisms, this transition is essential for survival, ensuring they are protected when the frost finally arrives. Nova notes that these patterns repeat every year, a rhythmic cycle of nature that requires every living thing to adapt to the shifting balance of light and darkness.

Word bank: deciduous · chlorophyll · photosynthesis · dormancy · equinox · migratory

1. Identify two reasons mentioned in the text why deciduous trees shed their leaves. (2 marks)

2. What is the primary function of chlorophyll in a leaf, according to the passage? (2 marks)

3. Explain why birds might choose to migrate during the autumn months rather than staying in the forest. (2 marks)

4. Based on the text, what might happen to a tree if it did not enter a period of dormancy during the winter? (2 marks)

5. Justify why the author describes the transition of seasons as a 'rhythmic cycle'. Use evidence from the text to support your opinion. (3 marks)

Draw: Draw a diagram showing a deciduous tree in two stages: one side in late summer with green leaves, and the other side in late autumn with bare branches and fallen, colourful leaves on the ground.

Extension challenge: Compare and contrast how a hibernating mammal and a migratory bird survive the winter. If the Earth did not tilt on its axis, explain why you think these seasonal changes might not happen.