

4. Soil is a complex mixture of living organisms and organic material, along with minerals and other abiotic components. Soils help sustain life and support ecosystem functions.
- (a) **Describe** how TWO climate factors affect the rate of soil formation.
 - (b) As soils form, distinct layers known as horizons develop over time. One of these is the A horizon.
 - (i) **Identify** one specific biotic component of the A horizon.
 - (ii) **Identify** one abiotic component of the A horizon.

Resources such as soil and water can be degraded by human activities.

- (c) Nitrate levels exceeding the United States Environmental Protection Agency's primary drinking water standard have been found in the groundwater of areas with intensive agriculture.
 - (i) **Identify** one agricultural practice that can lead to elevated nitrate levels in groundwater.
 - (ii) **Describe** how the practice you identified in (c)(i) leads to elevated nitrate levels in groundwater.
- (d) Acid deposition has affected soil quality in many parts of the northeastern United States.
 - (i) **Explain** one way acid deposition onto soil can affect plant health.
 - (ii) **Describe** one method for remediating soil affected by acid deposition.
- (e) Climate change is causing far-reaching ecosystem changes, including soil degradation in many of the world's biomes. **Describe** TWO ways that climate change can degrade soil.

STOP

END OF EXAM