

1. **Answer:** C

Explanation: Both atmosphere and soil are reservoirs of nitrogen.

2. **Answer:** A

Explanation: Nitrogen has two abiotic reservoirs: the atmosphere and the soil. Almost 80% of the atmosphere is nitrogen gas (N_2) but this cannot be absorbed by plants. Nitrogen fixation is required to convert it into compounds that can be used by plants. Since this process is performed by bacteria, they are important to the cycle.

3. **Answer:** C

Explanation: Decomposers break down carbon compounds in detritus that eventually return to the atmosphere as carbon dioxide. This is why the burning of fossil fuels must be regulated as the carbon they store is released back as carbon dioxide in the atmosphere and can lead to an increase in global temperatures.

4. **Answer:** B

Explanation: The weathering of rock adds inorganic phosphate (PO_4^{3-}) to the soil. Plants assimilate the dissolved phosphate ions and build them into organic compounds.

5. **Answer:** D

Explanation: Nitrogen fixation is required to convert the nitrogen gas into compounds that can be used by plants. Nitrogen has two abiotic reservoirs: the atmosphere and the soil. Almost 80% of the atmosphere is nitrogen gas (N_2) but this cannot be absorbed by plants. Nitrogen fixation is required to convert it into compounds that can be used by plants. Since this process is



Biogeochemical Cycles

Answer Key

performed by bacteria, they are important to the cycle. Some bacteria live symbiotically in the roots of certain plants, most notably legumes, while others are free-living in soil or water.



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