Teacher Answer Key

Case Study

1. They used seismic data and monitoring of ground deformation, which matched patterns expected from an upwelling of hot material.

2. Benefits include fertile soils and potential geothermal energy. Risks involve destructive lava flows and harmful gas emissions.

Multiple Choice

1. B

2. C

3. A

Matching

1-B, 2-D, 3-A, 4-E, 5-C

Fill-in-the-Blank

1) upper mantle, 2) Mantle, 3) mantle

Short Answer (Sample Responses)

Q1: Movements and heat in the mantle lead to plate shifts, causing both earthquakes at boundaries and volcanic eruptions where magma reaches the surface.

Q2: They rely on seismic wave data, rock samples from volcanic eruptions, and laboratory simulations of mantle conditions.

Q3: Composition of the magma, amount of trapped gases, and the presence of water can all escalate explosive potential in an eruption.