Lesson 10 Test Bank – Plate Tectonics

Multiple Choice Questions

1. What is our primary method for studying Earth’s interior?
   1. Deep drilling projects
   2. Satellite imaging
   3. Seismic wave data
   4. Volcanic gas analysis

Correct Answer: C

1. Which seismic wave travels through both solids and liquids?
   1. P-waves
   2. S-waves
   3. Surface waves
   4. L-waves

Correct Answer: A

1. Along the Mid-ocean ridge
   * 1. earthquakes occur
     2. sea floor spreading occurs
     3. volcanism occurs
     4. all the above occurs

Correct Answer: D

1. Subduction zones are mostly likely found where
   * 1. ocean crust collides with ocean crust
     2. ocean crust collides with continental crust
     3. continental crust collides with continental crust
     4. where continental crust divergence takes place

Correct Answer: B

1. Which of the following boundaries characterize the San Andreas Fault?
   * 1. Spreading
     2. Convergent
     3. Transform
     4. None of the above

Correct Answer: C

1. Volcanism on the Hawaiian Islands is due to which of the following plate boundaries?
   * 1. Spreading
     2. Convergent
     3. Transform
     4. None of the above

Correct Answer: D

1. The "Ring of Fire" is due to
   * 1. ocean crust colliding with ocean crust
     2. ocean crust colliding with continental crust
     3. continental crust colliding with continental crust
     4. where continental crust divergence takes place

Correct Answer: B

1. What is the lithosphere composed of?
   1. Crust and mantle
   2. Upper mantle and core
   3. Crust and upper mantle
   4. Inner and outer core

Correct Answer: C

1. Which layer of the Earth is semi-fluid and allows plate movement?
   1. Inner core
   2. Mantle
   3. Lithosphere
   4. Asthenosphere

Correct Answer: D

1. Which layer is liquid and composed of iron and nickel?
   1. Inner core
   2. Outer core
   3. Mesosphere
   4. Crust

Correct Answer: B

1. What is the Moho discontinuity?
   1. The boundary between core and mantle
   2. The source of magnetic stripes
   3. The boundary between crust and mantle
   4. The center of the inner core

Correct Answer: C

1. Who proposed the theory of continental drift?
   1. Charles Lyell
   2. Alfred Wegener
   3. Isaac Newton
   4. James Hutton

Correct Answer: B

1. What was the name of the proposed supercontinent?
   1. Laurasia
   2. Gondwana
   3. Pangea
   4. Panthalassa

Correct Answer: C

1. What type of evidence supports continental drift?
   1. Fossils and magnetic stripes
   2. Meteorite patterns
   3. Deep ocean trenches
   4. Climate data only

Correct Answer: A

1. Which process creates new oceanic crust?
   1. Subduction
   2. Seafloor spreading
   3. Folding
   4. Transform faulting

Correct Answer: B

1. At what boundary do plates move apart?
   1. Convergent
   2. Transform
   3. Divergent
   4. Plate zone

Correct Answer: C

1. What landform is commonly found at a divergent boundary on land?
   1. Ocean trench
   2. Island arc
   3. Great Rift Valley
   4. Folded mountain belt

Correct Answer: C

1. Which boundary involves plates sliding past one another?
   1. Convergent
   2. Divergent
   3. Transform
   4. Complex

Correct Answer: C

1. Which feature is associated with transform boundaries?
   1. Deep-sea trenches
   2. Mountain ranges
   3. Earthquakes
   4. Shield volcanoes

Correct Answer: C

1. What happens at a subduction zone?
   1. Two plates separate
   2. An oceanic plate moves under a continental plate
   3. Crust is created
   4. A hotspot forms

Correct Answer: B

1. What is formed from magma generated at subduction zones?
   1. Mid-ocean ridges
   2. Mountain glaciers
   3. Volcanic arcs
   4. Continental shelves

Correct Answer: C

1. What is the tectonic setting of the San Andreas Fault?
   1. Convergent boundary
   2. Transform boundary
   3. Divergent boundary
   4. Subduction zone

Correct Answer: B

1. Where do most shallow earthquakes occur?
   1. Subduction zones
   2. Divergent boundaries
   3. Hotspots
   4. Continental interiors

Correct Answer: B

1. What causes tsunamis most frequently?
   1. Meteor strikes
   2. Undersea earthquakes
   3. Volcanic gas explosions
   4. Glacial melting

Correct Answer: B

1. Which region is especially prone to subduction-related tsunamis?
   1. Eastern U.S.
   2. Pacific Ring of Fire
   3. Sahara Desert
   4. Central Europe

Correct Answer: B

1. What boundary type is associated with the Ring of Fire?
   1. Divergent
   2. Transform
   3. Convergent
   4. Passive

Correct Answer: C

1. What feature forms at mid-ocean ridges?
   1. Shield volcanoes
   2. Fold mountains
   3. Deep-sea trenches
   4. Continental shelves

Correct Answer: A

1. What is a hot spot?
   1. A fault zone
   2. A rift valley
   3. An area of volcanic activity away from plate boundaries
   4. A tsunami generator

Correct Answer: C

1. Which U.S. state formed over a hot spot?
   1. California
   2. Florida
   3. Alaska
   4. Hawaii

Correct Answer: D

1. What type of volcano forms from effusive eruptions?
   1. Composite
   2. Caldera
   3. Shield
   4. Cinder cone

Correct Answer: C

1. Which volcano is steep and formed by explosive eruptions?
   1. Shield
   2. Cinder cone
   3. Lava dome
   4. Flood basalt

Correct Answer: B

1. What are the two main eruption types?
   1. Passive and active
   2. Shallow and deep
   3. Effusive and explosive
   4. Oceanic and continental

Correct Answer: C

1. What term describes stress applied to crustal rocks?
   1. Strain
   2. Tension
   3. Faulting
   4. Compression

Correct Answer: A

1. What type of deformation causes folding?
   1. Tension
   2. Shear
   3. Compression
   4. Extension

Correct Answer: C

1. What are anticlines?
   1. Downward folds
   2. Upward folds
   3. Cracks in rock
   4. Lava plateaus

Correct Answer: B

1. What do synclines form?
   1. Plateaus
   2. Domes
   3. Troughs
   4. Faults

Correct Answer: C

1. What is the axial plane of a fold?
   1. Top of the crust
   2. Line dividing the fold symmetrically
   3. Fault zone boundary
   4. Location of magma

Correct Answer: B

1. What happens to the crust during tension?
   1. Thickens
   2. Cracks and shortens
   3. Thins and stretches
   4. Forms folds

Correct Answer: C

1. What type of fault is caused by compression and causes the hanging wall to move up?
   1. Normal
   2. Reverse
   3. Transform
   4. Lateral

Correct Answer: B

1. What is a thrust fault?
   1. A deep-sea trench
   2. A vertical strike-slip
   3. A low-angle reverse fault
   4. A hot spot

Correct Answer: C

1. What region in the U.S. is known for potentially damaging intraplate earthquakes?
   1. Yellowstone
   2. San Andreas Fault
   3. New Madrid Seismic Zone
   4. Cascade Range
2. Correct Answer: C
3. Which process builds continental mountains like the Himalayas?
   1. Oceanic ridge spreading
   2. Subduction of oceanic crust
   3. Continental-continental collision
   4. Transform boundary motion

Correct Answer: C

1. The Himalayas are a result of which two plates colliding?
   1. African and Eurasian
   2. Indian and Eurasian
   3. Pacific and Australian
   4. North American and Caribbean

Correct Answer: B

1. Which of the following mountain ranges formed from oceanic-continental convergence?
   1. Himalayas
   2. Alps
   3. Andes
   4. Urals

Correct Answer: C

1. Which term best describes large-scale tectonic uplift of a region?
   1. Faulting
   2. Folding
   3. Orogeny
   4. Seafloor spreading

Correct Answer: C

1. What is isostasy?
   1. Ocean current movement
   2. Vertical motion of crust to reach gravitational balance
   3. Horizontal fault movement
   4. Plate movement due to lunar forces

Correct Answer: B

1. What happens to the crust in response to erosion and glacial melting?
   1. It collapses
   2. It shifts laterally
   3. It rebounds upward (isostatic adjustment)
   4. It permanently compresses

Correct Answer: C

Written Response Questions

1. How do seismic waves help scientists understand Earth's interior structure?

Correct Answer: By analyzing the speed and paths of P- and S-waves as they travel through Earth, scientists can infer the composition and physical state (solid or liquid) of internal layers like the core, mantle, and crust.

1. What is plate tectonics.

Correct Answer: Plate tectonics is the theory that the surface is broken into several tectonic plates that are moving and interacting with one another to produce relief features of the Earth.

1. What evidence was used to confirm the notion of continental drift?

Correct Answer: Similar configuration of continents, fossils, and geologic deposits widely separated from one another.

1. Differentiate between the lithosphere and asthenosphere.

Correct Answer: The lithosphere is the rigid outer layer composed of the crust and upper mantle, while the asthenosphere is a semi-fluid, deformable zone beneath it that enables tectonic plate movement.

1. What is the significance of the Moho discontinuity?

Correct Answer: The Moho is the boundary between Earth's crust and mantle, marked by a sudden change in seismic wave velocity, indicating a compositional shift from crustal rocks to denser mantle material.

1. Summarize Alfred Wegener’s evidence for continental drift.

Correct Answer: Wegener cited fossil similarities across continents, geological formations that align across ocean basins, matching mountain ranges, and evidence of past glaciation in now-tropical areas.

1. Where does sea flooring spreading occur? How have scienticts confirmed that sea floor spreading is taking place?

Correct Answer: Sea floor spreading occurs along the midocean ridge where new rock material is extruded onto the ocean floor. Magnetic stripes indicate similar polarity in rocks on either side of the ridge. The age of rocks increases away from the midocean ridge.

1. What drives the movement of tectonic plates?

Correct Answer: It is thought that convection currents in the mantle, the push of crustal rock as it is extruded along the midocean ridge, and the pull of slabs of crust at subduction zones are responsible for the movement of plates.

1. What is occurring along the midocean ridge?

Correct Answer: The midocean ridge is a primary site for sea floor spreading. As a result, earthquakes and volcanic activity is common.

1. What is a subduction zone, where do you find them, and what kinds of geological activity occurs there?

Correct Answer: A subduction zone is where crustal rocks are forced beneath the surface. Subduction is common where heavier, more dense ocean plates collide with lighter, less dense continental plates.

1. Compare and contrast the four main types of plate boundaries. Give examples of where they occur.

Correct Answer: A spreading boundary occurs where plates are moving away (diverging) from one another, like along the midocean ridge . Here, new crust is formed by accretion. A convergent boundary is found where subduction is active and the lithosphere is being "consumed". A transform boundary forms where plates are grinding past one another, like the San Andreas fault. A plate boundary zone is a broad belts in which boundaries are not well defined and the effects of plate interaction are unclear.

1. What is the "Ring of Fire"?

Correct Answer: The "Ring of Fire" is "ring" of volcanoes encircling most of the Pacific ocean.

1. Explain how subduction creates volcanic arcs.

Correct Answer: At convergent boundaries, an oceanic plate sinks beneath another plate. As it descends, it melts, forming magma that rises to create a chain of volcanoes parallel to the trench.

1. Why are earthquakes common along transform boundaries?

Correct Answer: Plates sliding past one another build up stress, which is released as energy during earthquakes when the stress overcomes friction.

1. How does folding occur and what is the result?

Correct Answer: Folding occurs by compression of rock material. An up-turn fold is called an anticline while a down-turn fold is a syncline.

1. Compare and contrast shield, composite, and cinder cone volcanoes.

Correct Answer: Shield volcanoes have broad, low-angled slopes and built layer on layer of fluid lava. Composite volcanoes are steep-sided cones built from alternating flows of lava and pyroclastics. Cinder cones are smaller cones built primarily from explosive eruptions of pyroclastics.

1. Where do volcanoes occur?

Correct Answer: In subduction zones, along the midocean ridge, and over hot spots.

1. What is the basic difference between eruptions from shield and composite volcanoes?

Correct Answer: Eruptions from shield volcanoes tend to be dominated by effusive eruptions of fluid lava. Composite volcanoes produces explosive eruptions from stickier magma.

1. What causes tsunamis, and why are they so destructive?

Correct Answer: Most tsunamis are triggered by undersea earthquakes that displace large volumes of water. Their long wavelengths and high speeds allow them to travel far and cause devastating coastal flooding.

1. How does the Ring of Fire relate to subduction zones?

Correct Answer: The Ring of Fire encircles the Pacific Ocean and is characterized by active subduction zones where oceanic plates dive beneath continental or other oceanic plates, generating frequent earthquakes and volcanoes.

1. Explain how the Hawaiian Islands formed.

Correct Answer: The Hawaiian islands were formed by volcanic activity over a hot spot. The youngest island in the chain lies toward the southeast as the Pacific Plate moves toward the northwest.

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