

Due: _____ *Garrison 7th edition*

1. Which of these is the most dense?
 - a) seawater
 - b) granite
 - c) basalt
 - d) air
 - e) mantle

2. Continental crust is composed primarily of _____, whereas oceanic crust is composed primarily of _____.
 - a) basalt, a light colored rock rich in aluminum ... granite, a dark colored rock rich in magnesium and iron
 - b) basalt, a dark colored rock rich in magnesium and iron ... granite, a light colored rock rich in aluminum
 - c) granite, a dark colored rock rich in magnesium and iron ... basalt, a light colored rock rich in aluminum
 - d) granite, a light colored rock rich in aluminum ... basalt, a dark colored rock rich in magnesium and iron
 - e) granite, a light colored rock rich in magnesium and iron ... basalt, a dark colored rock rich in aluminum

3. Going from the middle of the earth to the outside, the layers of the earth include:
 - a) core, lower mantle, asthenosphere, lithosphere.
 - b) core, lower mantle, lithosphere, asthenosphere.
 - c) core, lithosphere, asthenosphere, crust.
 - d) core, asthenosphere, lower mantle, lithosphere.
 - e) core, lithosphere, asthenosphere, lower mantle.

4. A P wave is a _____ whereas an S wave is a _____.
 - a) compressional wave that can move through a liquid ... side-to-side wave that cannot move through a liquid.
 - b) compressional wave that cannot move through a liquid ... side-to-side wave that can move through a liquid.
 - c) side-to-side wave that can move through a liquid ... compressional wave that cannot move through a liquid.
 - d) side-to-side wave that cannot move through a liquid ... compressional wave that can move through a liquid.

5. An example of an object in buoyant (or isostatic) equilibrium would be
 - a) an ice cube floating in a glass of water.
 - b) a continent "floating" on heavier material below.
 - c) a table standing on a concrete floor.
 - d) a cat sitting on a fence.
 - e) (a) and (b) above.

6. Uniformitarianism is
 - a) a religion that says we are all equal (uniform) in God's eyes.
 - b) a principle of geology that says all geological features were formed by processes just like those acting today.
 - c) a principle of geology that says that sedimentary rock laid down during a particular geological era will have the same characteristics throughout the world.
 - d) a principle of geology that says most geological features can be explained by a single great flood.

7. Land-based evidence for continental drift can be seen in
 - a) the similarity of fossils on different continents.
 - b) shape of the continents.
 - c) evidence of tropical plants in Antarctic fossils.
 - d) all of the above.
 - e) a) and b) only.

8. Alfred Wegener's theory of continental drift was widely rejected in his lifetime primarily because
 - a) it was believed that earth was solid from the center out to the exterior.
 - b) it conflicted with religious beliefs of how the earth was formed.
 - c) most geologists thought the mantle was rigid, not deformable, because otherwise it would not be able to support the weight of the mountains.
 - d) there was absolutely no evidence of it, other than the way the continental shapes seemed to fit together.

9. What mechanism did Harry Hess and Robert Dietz offer in 1960 to explain continental drift?
- The continents float on a layer of fluid rock sandwiched between continental rock and the underlying lithospheric material.
 - The continents plow through the oceanic crust much as a ship plows through the sea.
 - The connection between the continental rock and the underlying material is weak, and vibration from earthquakes cause the continents to move.
 - seafloor is produced at midocean ridges, and the spreading of this material pushes continents away from each other.
10. What idea did John Tuzo Wilson propose that integrated continental drift and seafloor spreading?
- Earth's crust is composed of tens of thousands of tiny platelets that move past each other.
 - Earth's crust is composed of about a dozen huge plates that float on the asthenosphere.
 - The continents plow through the oceanic crust much as a ship plows through the sea.
 - At times in the past the polarity of Earth's magnetic field has reversed itself.
11. What was Pangaea?
- The land where Atlantis stood, before it was flooded 5000 years ago.
 - The ocean around the island of Atlantis, into which Atlantis sank isostatically 10,000 years ago.
 - The land where Atlantis stood, before it broke up and was flooded 10,000 years ago.
 - A supercontinent that once contained most or all of Earth's landmass.
12. Oceanographers believe that Pangaea started to break up about
- 10 thousand years ago.
 - 10million years ago.
 - 210 million years ago.
 - 750 million years ago.
 - 2 billion years ago.
13. The youngest seafloor (both sediments and underlying basalt) is found
- nearest the continental slopes.
 - near the rift valleys of the mid-ocean ridges
 - beneath the deep-sea trenches.
 - evenly distributed over the ocean basins.
 - underlying the continental shelves.
14. The magnetic striping of the seafloor is considered evidence of seafloor spreading and
- subduction down the rift valleys.
 - spreading centers in the trenches.
 - changes in Earth's axis of rotation.
 - periodic reversals in the polarity of the earth's magnetic field.
 - periodic collapses of the earth's gravitational field.
15. The mid-ocean ridges are recognized as
- subduction zones.
 - transform or lateral plate boundaries.
 - divergent plate boundaries.
 - convergent plate boundaries.

16. Which of the following is true?
- a) Divergent plate boundaries are places where oceanic crust is produced, and transform plate boundaries are places where oceanic crust is destroyed.
 - b) Divergent plate boundaries are places where oceanic crust is produced, and convergent plate boundaries are places where oceanic crust is destroyed.
 - c) Transform plate boundaries are places where oceanic crust is produced, and divergent plate boundaries are places where oceanic crust is destroyed.
 - d) Transform plate boundaries are places where oceanic crust is produced, and convergent plate boundaries are places where oceanic crust is destroyed.
 - e) Convergent plate boundaries are places where oceanic crust is produced, and divergent plate boundaries are places where oceanic crust is destroyed.
17. California's San Andreas Fault is a prime example of
- a) a convergent plate boundary.
 - b) a divergent plate boundary.
 - c) a transform plate boundary.
 - d) a binary plate boundary.
18. Which of the following is an example of a divergent plate boundary?
- a) The Himalaya Mountains.
 - b) The Marianas Trench.
 - c) The Red Sea.
 - d) The San Andreas Fault.
 - e) The Sierra Nevada Mountains.
19. If two oceanic plates collide and one is much older and cooler (therefore denser) than the other, which will probably happen?
- a) A trench will form.
 - b) Continental mountains will form.
 - c) Large earthquakes will occur.
 - d) (a) and (c)
 - e) (b) and (c)
20. The mechanism driving plate tectonics is believed to be
- a) magnetism.
 - b) heat from the sun.
 - c) the pull of the sun and moon.
 - d) deep water currents pulling on the ocean basins.
 - e) convection cells in the upper mantle and the tug of the descending plates.
21. A mantle plume is
- a) a place where the mantle rises through the crust and forms a volcano.
 - b) a column of superheated mantle that originates at the core-mantle boundary and can lift an entire continent.
 - c) a place where oceanic crust plunges down into the mantle.
 - d) a place where lava emerges from a mantle volcano (a low flat volcano formed from very liquid lava).
22. Island arcs are formed
- a) as parts of continents that shear off due to seafloor spreading.
 - b) when water and light material are subducted under an oceanic plate, then rise up through the crust to form volcanoes.
 - c) when water and light material are subducted under a continental plate, then rise up through the crust to form volcanoes.
 - d) when two continents collide and eject huge amounts relatively light continental crust material.

23. The direction of the Hawaiian Island chain indicates that the Pacific plate is moving ____ over a hot spot.
- a) due north
 - b) northwest
 - c) southwest
 - d) southeast
 - e) due east
24. California is composed largely of
- a) a series of terranes composed of various oceanic and continental rocks.
 - b) old volcanoes.
 - c) pure continental crust.
 - d) pure oceanic crust.
 - e) iron from the core of the earth.
25. Sketch a cross section of the layers of Earth (core, etc.) based on physical properties. What is the composition of each layer?
26. Sketch a cross-section of a mid-ocean ridge divergence zone.
27. Sketch a cross-section of a convergence zone between 2 oceanic plates.
28. Sketch a cross-section of a convergence zone between an oceanic plate and a continental plate.
29. Explain to your grandmother the theory of plate tectonics using pictures, words, maps, and globes (if needed). Include in your explanation
- a) the general idea of plate tectonics.
 - b) the evidence for it, both indirect and direct.
 - c) the mechanism by which it happens.
 - d) the various types of plate boundaries, including what happens at each one, and mentioning examples of where you would go to see each one.
- 30) Explain to your grandmother how the Hawaiian Islands were formed and why they decrease in size going from the southeast to the northwest.