

Completely Darken the Appropriate Letter on the Scantron that Best Answers the Question (2 pts each)

- 1. People live in dangerous areas for what reasons?**
 - a. for the views
 - b. because of cheap land
 - c. because the land is fertile
 - d. or proximity to recreational opportunities
 - e. for all of these reasons
- 2. Before people understood plate tectonics, what evidence led some scientists to believe in continental drift?**
 - a. rocks on the ocean floor are oldest in the center, becoming progressively younger toward each continent.
 - b. rocks on the continents can be traced through the ocean floor to the other side.
 - c. Anthropologists have found human carvings in Africa that match those in Brazil.
 - d. glaciers near the mouth of the Amazon River in Brazil carried distinctive rocks into South Africa, demonstrating that those countries were once connected.
 - e. sequences of rock formations match around the Atlantic Ocean in South America and Africa.
- 3. Which type or types of earthquake waves move only near the surface of the Earth?**
 - a. all earthquake waves
 - b. P waves
 - c. surface waves
 - d. S waves
 - e. waves from faults that break near-surface rocks
- 4. If you are home at night after a large earthquake, you should NOT do which of the following?**
 - a. shut off lines for natural gas
 - b. shut off electricity at the main junction box
 - c. light candles to find your way around
 - d. extinguish any flames
 - e. stand outside
- 5. Why do ships in the open ocean NOT notice passage of a tsunami wave?**
 - a. The wave goes by so fast that it is gone before anyone notices.
 - b. The long time between wave crests dictates that the wave flanks have almost no slope.
 - c. Ships are carried on the crest of the wave, so they don't feel any up or down motion.
 - d. Although the wave crests are several hundred meters high, the time between them is several hours, so no one notices.
 - e. The wave hits the ship so hard and fast that no one survives to tell about it.
- 6. Why don't many coastal communities try to educate visitors and new residents about natural hazards in their areas? They view such information as _____.**
 - a. bad for business
 - b. too difficult for most people to understand
 - c. a national security issue
 - d. information an insurance company might use to their advantage
 - e. classified information to be used only by the Federal Emergency Management Agency
- 7. When is a large event such as a major earthquake not a disaster?**
 - a. when it happens in a far away country that we don't care about
 - b. when it happens to less than 10,000 people
 - c. when it happens to less than 1,000 people
 - d. when it happens in an area without any people
 - e. when it happens in a third-world country in which more than 20 percent of the population subsists on less than \$2 per day
- 8. Who is most commonly to blame when people incur a significant loss from a natural disaster?**
 - a. the U.S. Army Corps of Engineers for not building protective structures
 - b. the federal government for not doing something about it
 - c. the people themselves for choosing to live there
 - d. the local county government for permitting them to build there
 - e. the realtor for selling them the property

- 9. Which of the following is an example of the domino effect?**
- a landslide caused by a sudden precipitation event
 - an increase in the cost of gasoline that causes people to drive less
 - global warming that causes more rapid melting of Arctic sea ice that results in further sea ice melting and consequently sea-level rise
 - when a feature looks the same across a wide range of scales
 - an earthquake that occurs in a developing nation that causes health, social, and economic problems
- 10. Which of these natural hazards causes the LEAST number of fatalities in the U. S. annually?**
- volcanoes
 - heat and drought
 - lightning
 - winter weather
 - tornadoes
- 11. What direction is the Pacific Plate currently moving, based on the chain of Hawaiian Islands with only the easternmost island active?**
- to the northeast
 - to the northwest
 - to the southeast
 - to the southwest
 - It is not moving; the chain of islands is not related to the active one.
- 12. Areas of cities that are subjected to significant natural hazards should be used for:**
- office buildings because they can withstand the effects of the hazard
 - inexpensive single-family houses
 - parks and golf courses
 - shopping malls
 - factories and industrial complexes
- 13. Which of the following is true?**
- The mantle is liquid
 - The lithosphere is denser than the mantle.
 - The asthenosphere is the more rigid equivalent of the mantle.
 - The asthenosphere is the more plastic part of the mantle.
 - The mantle is everywhere more rigid than the crust.
- 14. Which of the following is true?**
- Oceanic rift zones are found only in the center of the oceans.
 - Rift zones are found only in the ocean basins.
 - Rift zones are areas where oceanic crust is formed.
 - Rift zones are the oldest parts of the oceanic crust.
 - Rift zones mark the boundaries between oceanic and continental crust.
- 15. Which of the following is true?**
- Earth's oceanic crust is thicker than Earth's continental crust.
 - Earth's crust is thicker than the mantle.
 - Earth's lithosphere includes the upper part of the asthenosphere.
 - Earth's lithosphere includes oceanic and continental crust.
 - Earth's lithosphere includes Earth's oceanic and continental crust and part of the mantle.
- 16. The San Andreas Fault is _____.**
- a normal fault
 - the subduction zone bordering the Pacific Plate
 - a rift zone running the length of California
 - a reverse fault
 - a transform fault
- 17. Along which type(s) of lithospheric plate boundary are basalt-flow eruptions abundant?**
- oceanic rift zones
 - continental rift zones
 - continental collision zones
 - transform faults
 - mantle plumes

- 18. What is a transform fault characterized by?**
- lithospheric plates sliding past each other
 - the movement of one plate over another
 - the movement of plates away from each other
 - the movement of one plate down against another
 - earthquakes but no plate movement
- 19. The magnetic stripes of the seafloor are considered evidence of seafloor spreading and:**
- subduction in the rift valleys
 - spreading centers in the trenches
 - changes in the Earth's axis of rotation
 - periodic reversals in the polarity of Earth's magnetic field
 - periodic collapses of Earth's gravitational field
- 20. Why do the Hawaiian Islands form a chain of volcanoes?**
- The mantle below flows slowly to the east, creating new volcanoes as it goes.
 - The Hawaiian Islands are not part of a chain. They are over a stationary hotspot in the lithosphere.
 - The crack in the lithosphere is progressively splitting eastward, permitting magma to rise along a line.
 - The top of the basalt plume in the deep mantle is dragged eastward by moving lithosphere.
 - The lithosphere carrying Hawaii slowly moves over a hotspot feeding basalt magma to the overlying volcano.
- 21. How is the distance to the source of an earthquake determined?**
- by calling many seismograph operators to see who felt it most strongly
 - by subtracting the travel times of P and S waves
 - by measuring the frequency of the P waves as they arrive at a seismograph
 - by measuring the height of the S waves recorded on a seismograph
 - by adding the travel times of the L waves and the Raleigh waves
- 22. Natural disasters generally involve which of the following?**
- events with a single clear-cut cause
 - events that involve overlapping natural causes
 - events wholly caused by the activities of man
 - events that are unaffected by the activities of man
 - events that always involve interaction between closely related processes
- 23. What does the Richter Magnitude Scale depend on?**
- the amount of energy released by an earthquake
 - the frequency of P waves recorded on a seismograph
 - the intensity of shaking during the earthquake
 - the amount of destruction by the earthquake
 - the distance to the earthquake focus
- 24. What kind of material is subject to liquefaction during an earthquake?**
- bedrock with no water
 - soils that are not saturated with water
 - swelling clay saturated with water
 - loose sand grains with water between the grains
 - bedrock saturated with water
- 25. What does the Mercalli Intensity Scale depend on?**
- human perception to how much damage occurred in an area
 - the intensity of shaking of the seismograph
 - the amplitude of movement of the seismograph needle
 - the strength of rocks broken along the fault
 - the frequency of the earthquake waves as they reach the seismograph
- 26. Which types of earthquake waves do the most damage?**
- compressional waves
 - shear waves
 - body waves
 - P waves
 - surface waves

- 27. Which earthquake wave arrives first?**
- P waves
 - S waves
 - L waves
 - shear waves
 - surface waves
- 28. Which earthquake waves arrive from the source last?**
- P waves
 - S waves
 - Long and Raleigh waves
 - shear waves
 - body waves
- 29. Why are surface waves the most destructive type of earthquake waves to buildings?**
- They are compressional waves.
 - They are shear waves.
 - They first compress the material and then pull it apart.
 - They move with the highest velocities.
 - They have larger amplitudes of shaking.
- 30. Which waves have the lowest frequencies?**
- P waves
 - S waves
 - surface waves
 - compressional waves
 - shear waves
- 31. What is a seismic gap?**
- a part of an active fault that has not had recent earthquakes
 - a long time between earthquakes on a fault
 - a pronounced crevice along a fault
 - a gaping crack created by fault movement
 - an earthquake that causes no vibration of the ground
- 32. What is the nature of the western boundary of the North American Plate?**
- only a subduction zone
 - partly a subduction zone and partly transform faults
 - only strike-slip faults
 - only transform faults
 - partly strike-slip faults and partly transform faults
- 33. The New Madrid (1811-12), Boston (1755), Charleston (1886), and Mineral Springs (2012) earthquakes are examples of:**
- microearthquakes
 - convergent margin earthquakes
 - spreading center earthquakes
 - intraplate earthquakes
 - none of the above
- 34. The costs of catastrophic events continue to increase primarily because _____.**
- more people are moving into more hazardous areas
 - not enough people pay for insurance in hazardous areas to even out the costs
 - insurance companies are not making enough profit to satisfy their shareholders
 - insurance companies are refusing to insure most natural hazard losses
 - natural hazards are becoming more difficult to understand
- 35. Where in North America, east of the San Andreas Fault, is the area that has seen earthquakes as large as the largest recorded on the San Andreas Fault in historic time?**
- at the west edge of the Basin and Range
 - at the east edge of the Basin and Range
 - near Yellowstone Park
 - at the east edge of the Rocky Mountains near Denver
 - in southeastern Missouri and adjacent Tennessee

- 36. The best-known successful prediction of a major earthquake was where and when?**
- Fargo, North Dakota, in 1957
 - Haicheng, China, in 1975
 - Los Angeles in 1994
 - Hokkaido, Japan, in 1998
 - Banda Aceh, Sumatra, in 2004
- 37. Which of the following is probably associated with a failed rift system:**
- the Red Sea
 - the Gulf of Aden
 - the Alpine Fault in New Zealand
 - the Haicheng Fault in China
 - the New Madrid Fault in Missouri
- 38. Which of the following would be the safest place to be in an earthquake?**
- in bed
 - in a brick building
 - in a building with concrete walls
 - in a frame (wood) house
 - in a building with stone walls
- 39. The double-deck freeway at the east edge of San Francisco Bay collapsed in the 1989 Loma Prieta earthquake. Why?**
- It was too tall for its height.
 - It lacked steel reinforcing bars.
 - Strong shaking lasted for more than the 30 minutes it was designed for.
 - It was built across soft mud.
 - Water from San Francisco Bay rotted the foundation material, weakening it.
- 40. What is ineffective in reducing the possibility of earthquake's damage to a building?**
- using base isolation pads between the building and its foundation
 - using diagonal bracing in the walls
 - adding sheets of plywood to the walls
 - anchoring the building to its foundation
 - loading the ground floor with heavy weights to prevent it from moving so much
- 41. Which of the following submarine faults CANNOT cause tsunami waves?**
- strike-slip faults
 - normal faults
 - subduction-zone faults
 - thrust faults
 - breakaway faults of major landslides
- 42. As it enters a bay, the height of a tsunami wave _____.**
- rises because more water from each wave is forced into less space
 - rises primarily because the bay widens
 - rises because of thermal expansion in the warm water of the bay
 - drops because the wave must spread out and slow as it approaches the shore
 - drops because as the wave breaks it rushes ahead as a fast-moving swash
- 43. What is the average speed of tsunami waves in the deep ocean?**
- 7–8 km/hour
 - 70–80 km/hour
 - 700–800 km/hour
 - the speed of an Olympic sprinter
 - the speed of light
- 44. Tsunami waves nearing the open coast _____.**
- slow down because they don't want to hit the coast too fast
 - slow down because they finally begin to run out energy
 - slow down because they drag more on the shallower bottom than in the deep ocean
 - speed up because the shallowing water forces the leading edge to squirt out ahead
 - speed up because the wave launches forward as it breaks
- 45. What kind of natural hazards are NOT normally insurable?**
- earthquakes
 - volcanoes
 - landslides
 - floods

46. How are tsunami waves in the Atlantic Ocean likely to be generated?

- a. by sudden rise of the Mid-Atlantic Ridge
- b. by collapse of the flank of an oceanic island volcano
- c. by a huge iceberg suddenly grounding on the coast of Newfoundland
- d. a subduction-zone earthquake along the plate boundary just off eastern North America
- e. a large-magnitude earthquake on a transform fault on the ocean floor

47. What is often the first indication of the arrival of a tsunami at the coast?

- a. a giant 100-meter-high wave looming on the horizon
- b. a sudden rise in sea level to a crest within about 20 seconds
- c. a rapid drop in sea level
- d. sea turtles running up the beach
- e. people running down to the beach to see the action

48. If you are at the beach and feel a large earthquake, what should you do, and when should you do it?

- a. Wait until the commotion dies down, and turn on the TV to find out where it happened.
- b. Immediately call the nearest civil defense office to find out where it happened.
- c. Carefully scan the horizon to see if a tsunami wave formed. If you see one, run inland.
- d. Immediately run up slope as far as possible.
- e. Immediately get into the nearest house for protection.

49. About how high are the largest earthquake-caused tsunami waves in bays?

- a. about 3 meters
- b. about 30 meters
- c. about 300 meters
- d. about 3000 meters
- e. about 30,000 meters

50. Which is the most dangerous location for a tsunami hazard?

- a. a straight stretch of coast directly exposed to the open sea
- b. a rocky point protruding into the ocean in deep water
- c. a bay with a nice sandy beach at its end
- d. a small boat in the deep ocean
- e. a large boat 300 kilometers offshore