

# Physical Geology

## Test 4

Spring, 2006

**Please enter your answer in the space next to the number. The last questions are from slides that we will look at together later in the test.**

1. \_\_\_\_\_(T/F) Atolls owe their existence to the sudden sinking of oceanic crust.
2. \_\_\_\_\_(T/F) Because of its many shallow adjacent seas and wide continental shelves, the Atlantic is the shallowest of the oceans.
3. \_\_\_\_\_(T/F) The adjustments that follow a major earthquake often generate smaller earthquakes called foreshocks.
4. \_\_\_\_\_(T/F) The farther an earthquake recording station is from an earthquake, the greater the difference in arrival times of the P and S waves.
5. \_\_\_\_\_(T/F) The primary driving force for plate movement comes from the unequal distribution of gravity within Earth.
6. \_\_\_\_\_(T/F) To explain continental drift, Wegener proposed that the continents broke through the oceanic crust, much like ice breakers cut through ice.
7. \_\_\_\_\_(T/F) Most mountain building is associated with the margins of tectonic plates.
8. \_\_\_\_\_(T/F) Joints are fractures in rock along which appreciable displacement has occurred.
9. \_\_\_\_\_(T/F) To assume that rock layers that are inclined have been moved into that position by crustal disturbances is to apply a principle of relative dating known as cross-cutting relationships.
10. \_\_\_\_\_(T/F) An unconformity is a break in the rock record during which deposition ceased, erosion removed previously formed rocks, and then deposition resumed.
11. \_\_\_\_\_(T/F) Evidence indicates that some dinosaurs, unlike their present-day reptile relatives, were warm blooded.
12. \_\_\_\_\_(T/F) During the Mesozoic, reptiles made one of the most spectacular adaptive radiations in all of Earth history.
13. \_\_\_\_\_Harry Hess recognized that the hypothesis of midoceanic spreading center could indicate that the Earth is getting bigger. Instead, the discovery of which of the following (the deepest locations in the ocean) helped lead to the idea of subduction zones where oceanic crust is destroyed? (a) deep-ocean trenches (b) guyots (c) oceanic hot spots (d) transform faults

14. \_\_\_\_\_ While Harry Hess was a ship captain in World War II, he used his fathometer to map the sea bottom. One of his observations was submerged flat-topped seamounts that he called guyots. What was his interpretation of why they had flat tops? (a) an angular unconformity (b) coral reefs had grown on top (c) the Law of Original Horizontality (d) ocean waves had eroded them and then they subsided
15. \_\_\_\_\_ Which of the following locations is a divergent plate boundary? (a) deep-ocean trench (b) Himalayan Mountains (c) mid-oceanic ridge (d) subduction zone (e) transform fault
16. \_\_\_\_\_ Graded bedding results from turbidites because (a) coarse-grained sediments settle out of moving water sooner than fine-grained sediments (b) fine-grained sediments required higher velocity to be transported (c) sand is easier to erode than mud (d) only fine-grained deposits are found on the ocean bottom
17. \_\_\_\_\_ Most of the destruction from the 1906 San Francisco earthquake was due to (a) collapse of buildings (b) fire (c) landslides (d) liquefaction (e) a tsunami
18. \_\_\_\_\_ Which of the following is least likely to kill people as a result of an earthquake? (a) collapse of buildings (b) fire (c) heart attacks (d) pyroclastic flows (e) tsunamis
19. \_\_\_\_\_ Most earthquakes occur at plate boundaries. Yet the New Madrid, MO, earthquake occurred in the central U.S. This earthquake occurred because of (a) a meteor impact (b) movement on a fault extending toward the Gulf of Mexico, buried under sediment (c) movement on a subduction zone (d) overloading of the land surface by construction in St. Louis
20. \_\_\_\_\_ Deep earthquakes are most likely at which of the following locations? (a) continental rifts (b) midoceanic spreading centers (c) subduction zones (d) transform faults
21. \_\_\_\_\_ Meteorites are made of the same elements that we believed form the core of the Earth. These elements are (a) carbon and oxygen (b) hydrogen and helium (c) iron and nickel (d) silicon and oxygen
22. \_\_\_\_\_ Earthquakes help us determine the physical properties of the interior of the Earth because they (a) create new land (b) destroy buildings that cover over important geologic evidence (c) generate multiple energy waves that penetrate throughout the interior (d) are very rare, so they give us insight into unusual events
23. \_\_\_\_\_ The primary source of heat within the interior of the Earth is (a) friction (b) petroleum (c) radioactivity (d) solar energy
24. \_\_\_\_\_ Which of the following is not near nor surrounded by subduction zones? (a) the Andes (b) the Atlantic Ocean (c) Mt. St. Helens (d) the Pacific Ocean
25. \_\_\_\_\_ The oldest oceanic crust is located at (a) continental hot spots (b) deep-sea trenches (c) ocean ridge crests (d) oceanic hot spots
26. \_\_\_\_\_ Coal forms in swamps. There are coal deposits in Antarctica. The best explanation for this is that (a) Antarctica was once closer to the equator (b) in ancient times, swamp plants grew in cold climates (c) the entire Earth was much hotter when the swamps formed (d) geologist mistook obsidian for coal
27. \_\_\_\_\_ At which of the following locations are you least likely to see evidence of crustal uplift? (a) the Andes (b) southern Louisiana (c) California (d) Nepal (e) Oregon

28. \_\_\_\_\_ In the essay and presentation on evolution and antibiotic-resistant bacteria, which of the following points was *not* made? (a) Mutation is a common part of reproduction. (b) Use of antibiotics has resulted in more people dying from diseases. (c) Variation in resistance to antibiotics results from random mutations. (d) You should take **all** your prescription, not just enough to feel better.
29. \_\_\_\_\_ A sedimentary rock is made of gravel-sized sediment. Which part is oldest? (a) the entire rock (b) the natural cement that holds the rock together (c) the pieces of gravel (d) the tree root growing through the rock
30. \_\_\_\_\_ Which of the following rocks are the oldest? (a) the glacial sediments under Des Moines (b) the limestones under Dubuque (c) the limestones under the Dubuque airport (d) the stream deposits along Catfish Creek
31. \_\_\_\_\_ Plants are responsible for dramatically altering the composition of the entire planet's atmosphere by (a) converting nitrogen to ammonia (b) increasing the amount of rainfall (c) releasing oxygen (d) slowing erosion
32. \_\_\_\_\_ The beginning of which era is marked by the appearance of the first life-forms with hard parts? (a) Cenozoic (b) Mesozoic (c) Paleozoic (d) Precambrian
33. \_\_\_\_\_ In the essay and discussion of the role of UNO in investigating the extinction of dinosaurs, I emphasized the importance of finding gypsum encased in glass because (a) the gypsum and glass do not come from the area but must have been transported by meteorite (b) gypsum is easily transported by water (c) the gypsum had sharp edges, indicating fracturing with little transport, and the glass indicated rapid cooling of liquid rock (d) we only put important things in glass cases
34. \_\_\_\_\_ Which of the following is used for determine absolute age? (a) angular unconformities (b) cross-cutting relationships (c) fossil succession (d) original horizontality (e) radioisotopic dating
35. \_\_\_\_\_ The planets closest to the sun are different from those farthest because (a) the inner planets have more helium (b) the outer planets have rings (c) the outer planets have stronger gravitational attraction (d) the solar wind blew the lighter elements outward
36. \_\_\_\_\_ The presence of cyanobacteria led to the formation of stromatolites, which look like big mushroom-shaped rocks. This provides important evidence for (a) the development of antibiotic resistance (b) life during Precambrian time (c) the toxic properties of some types of mushrooms (d) the way in which the dinosaurs became extinct

**Extra Credit:** What are up to four types of evidence supporting plate tectonics?

**The following questions refer to the slides that we will watch together.**

37. \_\_\_\_\_ In the slide shown, the points X and Y represent (a) the brainwaves of a geology student (b) foreshocks to an earthquake (c) P and S waves from a single earthquake (d) precursor events
38. \_\_\_\_\_ The point X in the figure shown represents (a) the Bermuda Triangle (b) the epicenter of an earthquake (c) the focus of an earthquake (d) the island of Tonga where a magnitude 8 earthquake just hit
39. \_\_\_\_\_ Which of the following is *not* true about the slide shown? (a) the red line is the San Andreas fault (b) the risk of an earthquake is greatest at Parkfield (c) the plates are sliding by each other the fastest at Parkfield (d) the plates are sliding by each other the smoothest between Santa Cruz and Parkfield
40. \_\_\_\_\_ Of the locations we've talked about this semester, the slide shown shows movement most like that which created (a) the Gulf of Mexico (b) the Himalayas (c) Hawaii (d) Iowa (e) Japan
41. \_\_\_\_\_ The colored stripes in the slide shown represent all of the following *except* (a) difference in the orientation of minerals containing iron (b) paleomagnetic reversals (c) reversals in Earth's gravitational attraction (d) reversals in Earth's north and south poles
42. \_\_\_\_\_ The blue, yellow, and red dots inside the oval on the slide indicate (a) the depth of mountain lakes in the Andes (b) the depth of penetration of roots due to differing climate (c) the location of earthquakes at a subduction zone (d) the level of thinking among students in schools in the coastal area of South America
43. \_\_\_\_\_ The structure in the red oval is (a) an anticline (b) a dome (c) a place where oil accumulates (d) a syncline
44. \_\_\_\_\_ This figure helps understand the formation of which of the following mountain chains? (a) Andes (b) Appalachians (c) Cascades (d) Himalayas (e) Urals
45. \_\_\_\_\_ In the figure shown, the age of the rocks that are being mined are (a) Pleistocene (b) Cenozoic (c) Mesozoic (d) Paleozoic (e) Precambrian (f) Extra Credit: Name the age of the rocks more specifically.
46. \_\_\_\_\_ The mountains outlined by the red oval are (a) due to a continent-continent plate collision (b) due to an oceanic-oceanic plate collision (c) volcanoes at a hot spot (d) volcanoes at a subduction zone
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48. \_\_\_\_\_ The feature outlined by the red oval is (a) an angular unconformity (b) due to deposition on the slopes of a volcano (c) an example of fossil succession (d) formed by a igneous intrusion
49. \_\_\_\_\_ The fossil shown is from (a) the Cenozoic (b) the Mesozoic (c) the Paleozoic (d) the Precambrian
50. \_\_\_\_\_ The Chicxulub Crater is the location of (a) an atoll formed by a subsiding guyot (b) a meteor impact that ended the Age of Dinosaurs (c) natural hot springs popular as a spring-break destination (d) volcanic eruptions due to a subduction zone