

Student: _____

1. The primary energy sources that make the Earth an active body include all but which of the following?
 - A. The Earth's internal heat
 - B. The Sun
 - C. Gravity
 - D. The impact of extraterrestrial bodies
 - E. Photosynthesis
2. The outward flow of Earth's internal energy over geologic time has produced our _____.
 - A. continents
 - B. oceans
 - C. atmosphere
 - D. all of these are correct
 - E. none of these are correct
3. The outward flow of Earth's internal energy over short time spans results in which of the following natural hazards?
 - A. Magnetic storms
 - B. Volcanic eruptions
 - C. Mass movement
 - D. All of these are correct
 - E. None of these are correct
4. The inner rocky planets include all but which of the following?
 - A. Mercury
 - B. Jupiter
 - C. Venus
 - D. Earth
 - E. Mars
5. The recognition of the Earth's great age was made by _____ upon observation of the features of the Scottish landscape.
 - A. Isaac Newton
 - B. Albert Einstein
 - C. William Wallace
 - D. James Hutton
 - E. William McDougal
6. What is the meaning of Will Durant's (1885-1981) expression: "Civilization exists by geologic consents, subject to change without notice."?
 - A. Geologic consents are predictable in time and space.
 - B. Geologic processes are usually very quick, so there's no time for humans to respond.
 - C. We still don't completely understand geologic processes.
 - D. Geologic processes never send us a signal or precursor.
7. A Nebula is:
 - A. a rotating cloud of small solid particles
 - B. a rotating disk composed from helium and hydrogen
 - C. a rotating cloud of atmospheric gases (nitrogen and oxygen)
 - D. a rotating cloud of heterogeneous materials, ice, gas and other solids
 - E. none of the choices are correct

8. The main source of Earth's meteorites nowadays is/are:
- A. meteorites from Jupiter's atmosphere
 - B. rocky materials from Venus's surface
 - C. the Asteroid belt
 - D. rocky materials from Mars's surface
 - E. none of these are correct
9. The decay product of parent material such as Carbon-14, is:
- A. Lead- 206
 - B. Argon- 40
 - C. Carbon- 12
 - D. Nitrogen-14
 - E. Uranium- 238
10. When describing the layers of the Earth based on differentiation due to density, the inner core is a 2,450-km diameter _____ mass with temperatures up to 4,300°C.
- A. gaseous
 - B. liquid
 - C. solid
11. When describing the layers of the Earth based on differentiation due to density, the layer surrounding the core is the rocky _____ nearly 2,900 kilometres thick.
- A. mantle
 - B. crust
 - C. chondrule
12. When describing the layers of the Earth based on differentiation due to strength, which best describes the sequence of layers from the centre to the surface?
- A. Core, lithosphere, asthenosphere, mesosphere
 - B. Core, asthenosphere, mesosphere, lithosphere
 - C. Core, mesosphere, lithosphere, asthenosphere
 - D. Core, mesosphere, asthenosphere, lithosphere
13. Many materials, like glacier ice and rocks, can _____.
- A. fracture
 - B. undergo ductile flow, changing their shape permanently
 - C. undergo small recoverable elastic deformation
 - D. all of these are correct
 - E. none of these are correct
14. As radioactive atoms decay, energy is _____.
- A. absorbed
 - B. released
 - C. neither absorbed nor released
 - D. may be absorbed or released, depending on which isotope is involved in the decay
15. Which of the following is true?
- A. Nuclear energy from the sun is from fission whereas energy from radioactive isotopes decaying within the earth is from fusion.
 - B. Nuclear energy from the sun is from fusion whereas energy from radioactive isotopes decaying within the earth is from fission.
 - C. Nuclear energy from both places is from fusion.
 - D. Nuclear energy from both places is from fission.

16. The law of gravity states that two bodies attract each other with a force directly proportional to the product of their masses and inversely proportional to the _____ of the distance between them.
- A. first power
 - B. square
 - C. cube
 - D. square root
17. When large glacial ice mass is added onto land, land _____ and rock at depth flows _____ in the asthenosphere.
- A. lifts, inward
 - B. lifts, outward
 - C. sinks, inward
 - D. sinks, outward
 - E. nothing will happen since land and rocks are rigid
18. Which of the following natural hazards is not the direct result of the process of plate tectonics?
- A. Earthquakes
 - B. Volcanic eruptions
 - C. Flooding
 - D. Mountain building
19. Which of the following is not a basic tenet of plate tectonics?
- A. Melted asthenosphere flows upward as magma and cools to form new ocean floor lithosphere.
 - B. The new lithosphere slowly moves laterally away from the zones of oceanic crust formation on top of the underlying asthenosphere.
 - C. When the leading edge of a moving slab of oceanic lithosphere collides with another slab, the denser slab turns downward and is pulled by gravity back into the asthenosphere (subduction), while the less-dense, more buoyant slab overrides it.
 - D. The slab pulled into the asthenosphere begins the process of melting and moves into the liquid core.
 - E. The slab pulled into the asthenosphere begins the process of reabsorption into the mantle.
20. The time needed for a typical atom in an oceanic plate to complete a plate-tectonic cycle is _____.
- A. about a hundred thousand years
 - B. about a million years
 - C. about 10 million years
 - D. in excess of 250 million years
 - E. about 4 billion years
21. Which of the following are incorrectly matched?
- A. Transform plate boundary-Shear
 - B. Convergent zone-Compression
 - C. Divergent zone-Tension
 - D. Hot spot-Shear
 - E. Continental rift zone-Tension
22. The active triple junction in _____ Africa is geologically young, forming about 25 million years ago.
- A. southwestern
 - B. southeastern
 - C. western
 - D. northeastern
 - E. southern
23. The three basic classes of collisions include all but which of the following?
- A. Oceanic plate versus oceanic plate
 - B. Mantle versus lithospheric plate
 - C. Continental plate versus continental plate
 - D. Oceanic plate versus continental plate

24. The grandest continental convergent zone in the modern world is the ongoing collision of _____.
- A. the Africa plate by the Arabia plate
 - B. the Somalia plate by the Africa plate
 - C. the Asia plate by the India plate
 - D. the North American plate by the Pacific plate
 - E. the Africa plate by the South American plate
25. At which of the following locations does subduction occur?
- A. Along collision zones between continental and oceanic plates
 - B. Along collision zones between two continental plates
 - C. Above mantle hot spots
 - D. At sea floor spreading zones
 - E. At rift zones
26. When oceanic lithosphere collides with another oceanic plate, the _____ in the process of subduction.
- A. older, colder plate goes beneath the younger, warmer plate
 - B. younger, warmer plate goes beneath the older, colder plate
 - C. plates both disappear downward
 - D. plates pile up, forming mid-ocean ridges
27. The Himalayas are located at which of the following tectonic plate boundaries?
- A. Divergent
 - B. Subduction
 - C. Transform
 - D. Convergent
 - E. A hot spot
28. The Hawaiian Islands are located _____.
- A. above the midoceanic ridge
 - B. above a hot spot in the mesosphere
 - C. above a midoceanic trench
 - D. above a midoceanic subduction zone
 - E. above a rift zone
29. All of the continents were once combined into a single supercontinent called _____.
- A. Laurasia
 - B. Gondwanaland
 - C. Tethys
 - D. Panthalassa
 - E. Pangaea
30. Which of the following is attributed to the Canadian geophysicist J. Tuzo Wilson?
- A. Theory of continental drift
 - B. Theory for hot spot volcanoes
 - C. Discovery for slab-pull mechanism
 - D. Discovery of magnetic reversal of the poles
 - E. Sea floor spreading hypothesis
31. After lava cools below the _____ point, about 550°C, atoms in iron-bearing minerals become magnetized in the direction of the Earth's magnetic field at that time and place.
- A. magnetization
 - B. critical
 - C. triple
 - D. Curie
 - E. solidus

32. If sea-floor spreading occurs at a constant rate, the widths of magnetized seafloor stripes have _____ ratios as the lengths of time between successive reversals of the Earth's magnetic field.
- A. opposite
 - B. critical
 - C. triple
 - D. two to one
 - E. the same
33. The oldest rocks on the ocean floors are about _____ years in age because time needed to complete the tectonic cycle is more than _____.
- A. 50,000; 60,000
 - B. 1 million; 2 million
 - C. 200 million; 250 million
 - D. 2 billion; 2.5 billion
 - E. 4.5 billion; 4.57 billion
34. As an observer moves away from the oceanic ridges, the seafloor volcanic rocks and islands _____.
- A. become progressively older
 - B. become progressively younger
 - C. do not change significantly in age
35. The hotspot-melting-through-lithosphere process forms lines of extinct volcanoes on the ocean floor, from youngest to oldest, _____.
- A. with random ages along the lines
 - B. in a direction pointing toward the sun
 - C. pointing at 90 degrees to the direction of plate movement
 - D. pointing in the opposite direction of plate movement
 - E. pointing in the direction of plate movement
36. Moving progressively away from the ridges, the ocean water depths increase systematically with seafloor age due to all but which of the following?
- A. Cooling and contraction of the oceanic crust with a resultant increase in density
 - B. Isostatic down warping due to the weight of sediments deposited on the sea floor
 - C. Erosion of the older ocean floor by deep ocean currents
37. The majority of the Earth's greatest earthquakes between 1900-2013 were caused by the _____.
- A. subduction of the Nazca plate
 - B. convergence of the India into the Arabian plates
 - C. divergence of the Somali and the India plates
 - D. subduction of the Pacific plate
 - E. divergence of the Australian and the Nazca plates
38. The greatest earthquakes in the world occur _____.
- A. where plates collide with each other
 - B. where plates separate from one another
 - C. where plates slide past each other
 - D. in the interiors of individual plates
39. Hot spots account of the eruption of approximately _____ of all magma.
- A. 10%
 - B. 25%
 - C. 50%
 - D. 80%

40. Velocity of the plates depends on _____.
A. atmospheric pressure
B. hydrostatic pressure (thickness of the oceanic water)
C. the properties of the mesosphere
D. the properties of the asthenosphere
E. combined atmospheric pressure and hydrostatic pressure
41. The stages in a model of a new developing sea are:
A. centering, doming, rifting, and spreading.
B. hot spot, shield volcano, oceanic spreading, and trench developing.
C. plate subduction, doming, rifting, and spreading.
D. centering, doming, rifting, and continental erosion.
E. none of the choices are correct.
42. The father(s) of plate Tectonics is(are) _____ and the proof for the concept comes from _____.
A. Marie Curie; parallel bands of magnetized rocks
B. Alfred Hesse; chemical composition of continental rocks
C. Claire Simson; water depth in oceans
D. Tuzo Wilson; alternating polarities of seafloor rocks
E. Patrick Abbott and Susan Wilson; parallel bands of magnetized rocks
43. When the oceanic plate subducts beneath Japan, a portion of the oceanic plate in the mesosphere generates earthquakes only at (in):
A. the periphery of the subducting oceanic plate
B. the interior of the subducting oceanic plate
C. both periphery and interior of the subducting oceanic plate
D. the mesosphere, due to the rigidity of this zone
E. none of the choices are correct
44. When you look at the list of Earth's Greatest Earthquakes (1900-2013) the dominant cause of earthquakes is(are):
A. collision of the plates
B. spreading of the plates
C. worldwide rifting
D. hot spots
E. subduction
45. Why are continent-continent collision zones not associated with volcanism?
A. They are not located at the plate boundaries.
B. They are relatively distant from the liquid outer core, which is a magma source.
C. There is sliding between continents, which act as a lid
D. The continental rock stacks into extra-thick masses, which act as a barrier to rising magma
E. None of the choices are correct
46. The two main constituents of the Sun are the lightweight elements hydrogen (H) and helium (He).
True False
47. The next four planets outward beyond Earth are Jupiter, Saturn, Uranus, and Neptune.
True False
48. Iron forms about one-third of the Earth's mass, and although it is much denser than ordinary rock, it melts at a much lower temperature.
True False
49. The centre of the Earth is composed of a dense, iron-rich core measuring about 7,000 km in diameter.
True False

50. Wrapped around the core is a nearly 2,900-km-thick, rocky mantle comprising 83% of the Earth's volume.
True False
51. Floating atop the hot, buoyant rock of the mantle is a mosaic crust of more dense rocks.
True False
52. During the last glacial period the weight of the ice sheet caused the land around Hudson's Bay to sink more than a kilometre.
True False
53. The Earth is comprised, from core to atmosphere, of density-stratified layers.
True False
54. The Earth's layering can be described either as 1) separations based on differing densities due to varying chemical and mineral compositions, or 2) layers with different strengths.
True False
55. Both temperature and pressure decrease continuously from the Earth's surface to the core.
True False
56. Increasing temperature causes rock to expand in volume and become denser and more capable of flowing under pressure.
True False
57. Increasing pressure causes rock to decrease in volume and become denser and more rigid.
True False
58. The concept of isostasy applies a buoyancy principle to the low-density continents and mountain ranges that float on the less dense mantle below.
True False
59. The young Earth had a much larger number of radioactive isotopes but a much lower heat production from them than it does now.
True False
60. The oldest Earth rocks found to date are 4.03 billion years old in Northwest Territories of Canada.
True False
61. James Hutton revolutionized our understanding of the Earth by hypothesizing that the time required to shape the Earth was very great.
True False
62. Radioactive isotopes in rocks act as clocks that can be used to date the age of the igneous rock.
True False
63. Chondrules are small rounded stony meteorites approximately 10,000 years old.
True False
64. Rock is capable of flow only if increasing pressure and decreasing temperature are applied.
True False
65. The nuclear fusion in the Sun forms helium from splitting hydrogen atoms, this process also require some energy absorption.
True False
66. The breakup of Pangaea about 180 million years ago created two large continental masses, Laurasia and Gondwanaland.
True False

67. Pangaea covered 60% of the Earth's surface while Panthalassa covered the remaining 40%.
True False
68. The outer core is mostly liquid, and the viscous movements of convection currents within it are responsible for generating plate tectonics.
True False
69. The gigantic pieces of lithospheric plates diverging, sliding past, or colliding with each other are directly responsible for the vast majority of the earthquakes, volcanic eruptions, and mountains on Earth.
True False
70. When data from the Earth's magnetic field locked inside seafloor rocks became widely understood, skeptics around the world were convinced that seafloor spreading occurs and that the concept of plate tectonics is valid.
True False
71. The floor of the Atlantic Ocean is striped by parallel bands of magnetized rock that show alternating polarities in a pattern that is symmetrical and parallel to the mid-ocean spreading centre.
True False
72. Subducted slabs completely melt in the core and mix with the surrounding magma at the centre of the Earth.
True False
73. The greatest mountain ranges on Earth lie on the ocean bottoms and extend more than 65,000 kilometres.
True False
74. The deep ocean trenches are the tops of the subducting plates turning downward to re-enter the asthenosphere.
True False
75. The distribution of several fossils on opposite sides of the Atlantic Ocean and the continuity of geologic structure on different continents suggests that all the continents were once part of Pangaea.
True False
76. The map of earthquake epicentres can be viewed as a connect-the-dots puzzle.
True False
77. The oldest seafloor rocks are found nearest the mid-ocean ridges.
True False
78. Hot spots have active volcanoes above them on the Earth's surface and moving plates carry the volcanoes away from their hot-spot source.
True False
79. Above the oceanic ridges, the ocean is relatively deep compared to further away from the ridges.
True False
80. The rates of plate movement are comparable to those of human fingernail growth.
True False
81. The divergent or pull-apart motion at spreading centres causes rocks to fail in tension, yielding mainly smaller earthquakes that do not pose an especially great threat to humans.
True False
82. A slide-past motion occurs as rigid lithospheric plates fracture and move around the Earth in horizontal movements of transform faults, creating large earthquakes.
True False

83. The convergent motions that occur at subduction zones and in continent-continent collisions store immense amounts of energy that are released in Earth's largest earthquakes.
True False
84. When a continent is involved in a collision at a convergent plate boundary, it cannot subduct because its huge volume of low-density, high-buoyancy rocks cannot sink to great depth and cannot be pulled into the denser mantle rocks below.
True False
85. The fate of oceanic plates is destruction via subduction and reabsorption into the mantle, whereas continents float about on the asthenosphere in perpetuity.
True False
86. The precollision crusts of India and Asia were each about 35-km thick; after the collision, the combined crust has been thickened to as much as 100 km.
True False
87. A topographic and bathymetric map show the thickness of the ocean water above a trench and thickness of a mountain,
True False
88. Pascal Audet installed a seismic recording station in central Yukon because this is a seismically quiet area and earthquakes from distant areas such as the west coast of Costa Rica can be better studied.
True False
89. Japan and the Aleutian Islands of Alaska represent an island arc of volcanoes.
True False
90. The material of Tablelands Gros Morne National Park, Newfoundland was formed during oceanic plate versus oceanic plate collision.
True False
91. After the Indian plate with Euroasian plate collision, the huge mass of the Himalayas was formed and any further assault is stopped.
True False

2 Key

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46. TRUE
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91. FALSE

2 Summary

Category

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