Investigating Oceanography 4th edition Sverdrup Test Bank

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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

1) Earth's inner core is liquid whereas its outer core is solid.
   - ◎ true
   - ◎ false

2) The refraction and shadow patterns of seismic P-waves and S-waves indicate the dimensions and properties of Earth's layers.
   - ◎ true
   - ◎ false

3) Shear waves do not pass through a solid-liquid boundary between Earth's layers. Compressional waves can pass this type of boundary.
   - ◎ true
   - ◎ false

4) Oceanic-type crust is more dense than continental-type crust.
   - ◎ true
   - ◎ false

5) The continental landmasses are less dense than the mantle and are buoyed up by depressing the underlying mantle.
   - ◎ true
   - ◎ false

6) The mid-ocean ridges and rises are spreading centers where new oceanic crust is created.
   - ◎ true
   - ◎ false

7) The thickness of deep-sea sediments increases with distance from a spreading center.
   - ◎ true
   - ◎ false

8) The largest lithospheric plate is the Pacific Plate.
   - ◎ true
   - ◎ false

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9) The edge of an active continental margin bordered by a deep-sea trench is wide and shallow with deep deposits of land-derived sediments.
   - ◎ true
   - ◎ false

10) Volcanic activity associated with subduction zones is more gentle and less explosive than volcanic activity associated with hot spots and mid-ocean ridges.
   - ◎ true
   - ◎ false

11) The steeper profile of the Mid-Atlantic Ridge compared to the East Pacific Rise indicates that the Mid-Atlantic Ridge is the faster spreading center.
   - ◎ true
   - ◎ false

12) The age of the seamounts from Hawaii to Midway Island increases in age from east to west.
   - ◎ true
   - ◎ false

13) The North Atlantic Ocean was the first modern ocean to open during the breakup of Pangaea.
   - ◎ true
   - ◎ false

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14) Isostatic columns of crustal material produce equal pressures deep within the mantle.
   - ◎ true
   - ◎ false

15) The San Andreas Fault is an example of a transform fault.
   - ◎ true
   - ◎ false

16) Epicenters are points on Earth's surface directly above a hot spot.
   - ◎ true
   - ◎ false

17) Deep earthquakes, (below 100 km, or 60 mi) are usually associated with oceanic ridges.
   - ◎ true
   - ◎ false

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18) The deep mantle below the asthenosphere is called the mesosphere.
- ◎ true
- ◎ false

19) P waves travel more quickly than S waves.
- ◎ true
- ◎ false

20) P waves travel only along the surface of the Earth.
- ◎ true
- ◎ false

21) S waves are able to travel through both solid and liquid.
- ◎ true
- ◎ false

22) Continental crust is generally thicker and less dense than oceanic crust.
- ◎ true
- ◎ false

23) The taller a mountain is, the deeper its root will extend into the asthenosphere.
- ◎ true
- ◎ false

24) Hess's 1960s theory of mantle convection and seafloor spreading was essentially correct.
- ◎ true
- ◎ false

25) The oldest oceanic crust is generally in the center of the ocean basin near the mid-ocean ridge or rise system.
- ◎ true
- ◎ false

26) Sediment thickness on the oceanic crust tends to be greatest in the center of ocean basins.
- ◎ true
- ◎ false

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27) Based on the current directions of plate motion, Japan and the West Coast of the United States. are getting closer.
- ◎ true
- ◎ false

28) Volcanic activity is common at transform plate boundaries.
- ◎ true
- ◎ false

29) The thickness of oceanic crust increases with age.
- ◎ true
- ◎ false

30) The deepest earthquakes occur in subduction zones at oceanic-oceanic plate convergent boundaries.
- ◎ true
- ◎ false

31) California is an example of a passive continental margin.
- ◎ true
- ◎ false

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32) Deposits of sediments are usually thicker along passive continental margins.
- ◎ true
- ◎ false

33) Spreading at mid-ocean ridges tends to occur in increments rather than continuously.
- ◎ true
- ◎ false

34) Seismic surface waves travel at about the same speed as ocean waves.
- ◎ true
- ◎ false

35) Over 170 reversals of Earth's magnetic field have been recorded in the past 80 million years.
- ◎ true
- ◎ false

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CHECK ALL THE APPLY. Choose all options that best completes the statement or answers the question.

36) Identify all of the types of plate boundaries that are associated with active volcanism.

A) Divergent
B) Ocean-Ocean Convergent
C) Transform
D) Continent-Continent Convergent
E) Ocean-Continent Convergent

37) Identify all of the different observations Alfred Wegener used to support his theory of continental drift.

A) Seafloor magnetic anomalies
B) Geographic fit of the continents
C) Studies of fossil plants and animals
D) Dipping zones of earthquakes at ocean trenches
E) Patterns of glaciation
F) Shallow earthquakes along transform faults
G) Matching bodies of rock on either side of the Atlantic
H) Alignment of mountain ranges when the Atlantic is closed
I) High heat flow at oceanic ridges

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38) Identify all of the different observations used to support Harry Hess's theory of seafloor spreading.

A) Seafloor magnetic anomalies
B) Geographic fit of the continents
C) Studies of fossil plants and animals
D) Dipping zones of earthquakes at ocean trenches
E) Patterns of glaciation
F) Shallow earthquakes along transform faults
G) Matching bodies of rock on either side of the Atlantic
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MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

39) The density of Earth materials_____ as the core is approached.
- A) remains the same
- B) decreases
- C) increases
- D) increases then decreases
- E) decreases then increases

40) The Moho is located between the_____.
- A) lithosphere and the asthenosphere
- B) crust and the mantle
- C) mantle and the outer core
- D) inner and outer cores
- E) continental margin and the abyssal plain

41) Which of the following help us believe that Earth's mass is distributed spherically and uniformly around Earth's center?
- A) Lack of roughness of Earth's surface
- B) Earth's spherical shape
- C) Lack of rotational wobble TBEXAM.COM
- D) Earth's spherical shape and lack of rotational wobble.
- E) Lack of roughness of Earth's surface, Earth's spherical shape, and lack of rotational wobble

42) Which of Earth's layers contains the greatest volume of material?
- A) Inner core
- B) Outer core
- C) Mantle
- D) Lithosphere
- E) Outer crust

43) The deepest portion of the lithosphere is formed from_____.
- A) oceanic basalt
- B) terrestrial granite
- C) a combination of basalt and granite
- D) mantle material
- E) the Moho

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44) The theory of drifting continents was proposed by_____.
- A) John Murray
- B) Matthew F. Maury
- C) Alfred Wegener
- D) Charles Darwin
- E) Robert Ballard

45) The mechanism causing lithospheric plates to move is thought to be_____.
- A) convection in the mantle
- B) slab pull caused by a subducting lithosphere
- C) tidal forces
- D) Earth's rotation
- E) a combination of convection in the mantle and slab pull caused by subducting lithosphere

46) Higher seafloor heat flow values are found_____.
- A) along coastlines
- B) in the middle of ocean basins
- C) near ocean ridge systems
- D) associated with abyssal hills
- E) along the edges of trenches

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47) Which of the following are found along subduction zones?
- A) Oceanic trenches
- B) Active earthquake zones
- C) Island arc systems
- D) All of these are correct.
- E) None of these is correct.

48) Magnetic stripes on the seafloor are created at_____.
- A) subduction zones
- B) spreading centers
- C) abyssal plains
- D) subduction zones and spreading centers
- E) subduction zones, spreading centers, and abyssal plains

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49) Plates move horizontally past each other along_____.
A) transform faults
B) convergent plate boundaries
C) divergent plate boundaries
D) the rift valley
E) hot spots

50) The Pacific Plate is carrying Baja California and the coastal cities of Southern California_____ the continent of North America.
A) away from (west)
B) toward (east)
C) southward along
D) northward along
E) None of these is correct; there is no motion in this region.

51) Thinning of Earth's crust and the resulting faulting is called_____.
A) convection
B) subduction
C) folding
D) rifting
E) trailing

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52) The deep-ocean trenches are usually associated with_____.
A) volcanism
B) island arc systems
C) earthquakes
D) All of these are correct.
E) None of these is correct.

53) Seafloor spreading is continuing at a rate of approximately_____.
A) 1 to 10 cm/year
B) 1 to 10 m/year
C) 1 to 10 km/year
D) 1 to 100 cm/year
E) 1 to 100 m/year

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54) A fixed volcanic hot spot on Earth tends to produce a_____ on a moving plate.
A) series of volcanic peaks
B) high landmass with a fixed location
C) transform fault system
D) submarine canyon and associated abyssal hills
E) trench

55) The present oceans have been created during the last_____.
A) 2250 million years
B) 225 million years
C) 20 million years
D) 2 million years
E) 2 billion years

56) Which of the following occurred during the Paleozoic era?
A) Landmasses were strung along Earth's equator.
B) Landmasses drifted across the South Pole.
C) Landmasses came together to form Pangaea.
D) All of these are correct.
E) None of these is correct.

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57) A program of deep-sea drilling for cores from the ocean's bottom is carried out by the_____.
A) Kon-Tiki
B) Fram
C) JOIDES Resolution
D) Calypso
E) Beagle

58) The oceans' oldest sediments are found_____.
A) adjacent to a rift valley
B) on top of the basalt layer, far from spreading centers
C) adjacent to a transform fault
D) at the surface of sediment layers, far from spreading centers
E) in hot spots

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59) During the next magnetic reversal, the magnetic force field surrounding Earth will shift by about_____.
A) 45°
B) 90°
C) 180°
D) 270°
E) 360°

60) The motion between the two sides of a transform fault is greatest_____.
A) outside the adjacent ridge axes
B) north of the adjacent ridge axes
C) between the adjacent ridge axes
D) south of the adjacent ridge axes
E) east or west of the adjacent ridge axes

61) The trailing margin of a continental landmass_____ than its leading margin.
A) is wider
B) shows less tectonic activity
C) is more stable
D) is wider and more stable
E) All of these choices are correct.

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62) Which method is being used to investigate the structure of the mantle?
A) Isostasy
B) Measurement of seafloor heat flow
C) Seismic tomography
D) Subduction
E) Radiometric dating

63) The crust and the mantle are divided into the following layers in order of increasing depth:
A) mesosphere, lithosphere, asthenosphere
B) asthenosphere, lithosphere, mesosphere
C) lithosphere, mesosphere, asthenosphere
D) lithosphere, asthenosphere, mesosphere
E) asthenosphere, mesosphere, lithosphere

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64) The east coast of the United States is an example of a(n)_____ continental margin.
A) passive
B) active
C) trailing
D) leading
E) passive and trailing

65) Seafloor spreading can be detected by_____.
A) changes in water temperature
B) changes in water chemistry
C) acoustic monitoring
D) submersible observation of the seafloor
E) All of these are correct.

66) Which of the Earth's layers has the greatest density?
A) Core
B) Mantle
C) Crust
D) Lithosphere
E) Asthenosphere

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67) Which layer of the Earth contains the greatest mass?
A) Core
B) Mantle
C) Crust
D) Lithosphere
E) Asthenosphere

68) Which layer is believed to behave most like a liquid?
A) Outer core
B) Mantle
C) Crust
D) Lithosphere
E) Inner core

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69) Which statement is true about continental crust?
A) It is composed of granitic-type rock and has a higher density than oceanic crust.
B) It is composed of basaltic-type rock and has a higher density than oceanic crust.
C) It is composed of granitic-type rock and has a lower density than oceanic crust.
D) It is composed of basaltic-type rock and has a lower density than oceanic crust.
E) It is composed of granitic-type rock and has the same density as oceanic crust.

70) When talking about plate tectonics, which of the Earth's layers comprises the plates?
A) Crust
B) Mantle
C) Core
D) Lithosphere
E) Asthenosphere

71) What is the approximate length of the mid-ocean ridge system that extends around the globe through all of the major ocean basins?
A) 6500,000 km
B) 650,000 km
C) 65,000 km
D) 6,500 km
E) 650 km

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72) Volcanic activity occurs at all of the following except _____.
A) convergent boundaries between two oceanic plates
B) continental rift valleys
C) convergent boundaries between two continental plates
D) mid-ocean ridges
E) convergent boundary between a continental and oceanic plate

73) Earthquakes occur at all of the following except _____.
A) convergent boundaries between two oceanic plates
B) continental rift valleys
C) convergent boundaries between two continental plates
D) mid-ocean ridges
E) Earthquakes occur at all of the above settings

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74) The density of the inner core reaches a maximum of about _____ grams/cm³.</p>
A) 150
B) 70
C) 52
D) 31
E) 16

75) List the following plates in order of largest to smallest:
A) North American, Pacific, Australian, Caribbean, Indian
B) Pacific, Indian, North American, Australian, Caribbean
C) Indian, Pacific, North American, Caribbean, Australian
D) Pacific, North American, Australian, Indian, Caribbean
E) Pacific, Australian, North American, Indian, Caribbean

76) Throughout time, continents break apart and collide and ocean basins open and close. This cyclical process is known as the _____.
A) Wilson cycle
B) Wegener cycle
C) lithospheric cycle
D) Benioff cycle
E) Richter cycle

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77) Before Pangaea, there was an earlier supercontinent we call _____.
A) Panthalassa
B) Gorda
C) Rodinia
D) Lefse
E) Neogenia

78) Why does Earth have dry land?
A) There is not enough water to cover the surface completely.
B) All planets of the solar system have dry land.
C) Earth has continental crust, which rides isostatically higher than oceanic crust because it is relatively thick and less dense.
D) The mid-oceans ridges push up the bottom of the seafloor above sea level. Eventually, there will not be any ocean left.
E) All of these are correct.

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79) Evidence supporting the theory of continental drift includes _____.
- A) the fit of continental margins on opposite sides of the Atlantic Ocean
- B) the presence of similar mountain belts along continental margins across oceanic basins
- C) the distribution of fossil organisms
- D) the presence of similar glacial patterns across oceanic basins
- E) All of these are correct.

80) Fracture zones _____.
- A) are characterized by volcanism
- B) are characterized by earthquakes
- C) separate plates that move in different directions
- D) are a source of high heat flux
- E) None of these is correct.

81) All of the following statements apply to ocean spreading centers, except _____.
- A) they are part of mid-ocean ridge systems
- B) they are the location of volcanism
- C) they are characterized by deep earthquakes
- D) they are a divergent boundary
- E) they are typically shallower than surrounding abyssal plains

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82) Oceanic-oceanic plate collision _____.
- A) results in the newer, denser oceanic plate to subduct under the older, lighter plate
- B) results in the older, denser oceanic plate to subduct under the newer, lighter plate
- C) exhibits no volcanism whatsoever
- D) exhibits no earthquakes whatsoever
- E) None of these is correct.

83) With increasing distance away from the mid-ocean ridge _____.
- A) the oceanic crust gets older
- B) the seafloor gets deeper
- C) the sediment layer gets thicker
- D) All of these
- E) None of these is correct.

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84) Which of the following terms consistently describe an oceanic-continental subduction zone?
A) Shallow to deep earthquakes, volcanism, older oceanic crust, ocean trenches
B) Shallow to deep earthquakes, no volcanism, younger oceanic crust, ocean trenches
C) Only shallow earthquakes, volcanism, younger oceanic crust, ocean trenches
D) Only shallow earthquakes, volcanism, older oceanic crust, ocean trenches
E) No earthquakes, volcanism, older oceanic crust, thick sediment

85) The Hawaiian Islands are _____.
A) part of an island arc formed by a subducting plate
B) part of an island arc formed by a passive margin
C) part of an island chain formed by a subducting plate
D) part of an island chain formed by a passive margin
E) part of an island chain formed by a hot spot

86) A hot spot trace typically includes _____.
A) higher islands as one moves away from the hot spot
B) more atolls as one moves toward the hot spot
C) more volcanism as one moves toward the hot spot
D) older seamounts as one moves toward the hot spot
E) an island arc

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87) Subduction explains the fact that the oldest oceanic crust is close to 200 million years old, compared to the oldest continental rocks that are _____.
A) 4.4 million years old
B) 140 million years old
C) 1.4 billion years old
D) 4.4 billion years old
E) 14.4 billion years old

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Answer Key

Test name: Chapter 02

1) FALSE
2) TRUE
3) TRUE
4) TRUE
5) TRUE
6) TRUE
7) TRUE
8) TRUE
9) FALSE
10) FALSE
11) FALSE
12) TRUE
13) FALSE
14) TRUE
15) TRUE
16) FALSE
17) FALSE
18) TRUE
19) TRUE
20) FALSE
21) FALSE
22) TRUE
23) TRUE
24) TRUE
25) FALSE
26) FALSE
27) TRUE
28) FALSE
29) TRUE
30) TRUE
31) FALSE
32) TRUE
33) TRUE
34) FALSE
35) TRUE
36) [A, B, E]
37) [B, C, E, G, H]

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38) [A, D, F, I]
39) C
40) B
41) D
42) C
43) D
44) C
45) E
46) C
47) D
48) B
49) A
50) D
51) D
52) D
53) A
54) A
55) B
56) D
57) C
58) B
59) C
60) C
61) E
62) C
63) D
64) E
65) E
66) A
67) B
68) A
69) C
70) D
71) C
72) C
73) E
74) E
75) D
76) A
77) C

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78) C
79) E
80) E
81) C
82) B
83) D
84) A
85) E
86) C
87) D

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