

# Oceanography Practice Midterm Exam III

## Ocean Waves and Coastlines

**Please Note:** 1) The actual midterm will consist of approximately 60 to 70 questions; there will be true-false, multiple choice, and matching.

2) Most of the questions on the midterm will be very similar to those found in the practice test.

### Section I. True or False

*Answer true or false to the following questions or statements. Mark "a" for True and "b" for false on your Scantron sheet.*

- \_\_\_1. **Eustatic changes are variations in sea level that can be measured all over the world ocean.**  
a. true  
b. false
- \_\_\_2. **Wave-dominated deltas are usually smaller than river-dominated deltas.**  
a. true  
b. false
- \_\_\_3. **A coastline with an exposed set of marine terraces characterizes a submerged-type coast.**  
a. true.  
b. false.
- \_\_\_4. **The longer the wavelength, the faster the wave.**  
a. true  
b. false
- \_\_\_5. **An ocean wave will break on the shore when the wave height is  $\frac{1}{2}$  of the water depth.**  
a. true.  
b. false.
- \_\_\_6. **Seawalls are designed to protect the beach.**  
a. true  
b. false
- \_\_\_7. **Jetties are designed to protect the beach.**  
a. true.  
b. false.
- \_\_\_8. **Beaches, sand spits, tombolos, and barrier islands are depositional coastal features.**  
a. true  
b. false
- \_\_\_9. **Wave-dominated shaping of a coast is characteristic of secondary type coastlines.**  
a. true  
b. false
- \_\_\_10. **Drowned coastal river valley systems are characteristic of a submerged-type coast.**

- a. true.
- b. false.

\_\_\_ 11. Ocean waves classified as deep-water do not touch the ocean bottom as they traverse the ocean.

- a. true
- b. false

\_\_\_ 12. An ocean wave is classified as shallow-water if the water depth is less than 1/2 its wavelength.

- a. true.
- b. false.

\_\_\_ 13. Beach sand is effectively “trapped” on both side of a groin.

- a. true
- b. false

\_\_\_ 14. A northwest swell hitting a west coast will create a northward-moving longshore current.

- a. true.
- b. false.

\_\_\_ 15. A barrier reef is considered a more mature, evolved reef type than a fringing reef.

- a. true
- b. false

\_\_\_ 16. All tsunami are considered seismic sea waves.

- a. true
- b. false

\_\_\_ 17. Rogue waves most likely originate by underwater landslides.

- a. true.
- b. false.

\_\_\_ 18. The restoring force for most ocean waves is gravity.

- a. true
- b. false

\_\_\_ 19. A rip current forms perpendicular to the beach and moves shoreward.

- a. true.
- b. false.

\_\_\_ 20. Human attempts to maintain beaches and bluffs is remarkably successful.

- a. true
- b. false

## Section II. Multiple Choice:

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_\_ 1. Which of these lists is arranged in order from smallest wavelength to longest wavelength?

- a. seiches, tsunami, wind waves, tides.
- b. wind waves, seiches, tsunami, tides.
- c. wind waves, tsunami, seiches, tides.
- d. tides, seiches, tsunami, wind waves.
- e. wind waves, tides, tsunami, seiches.

\_\_\_\_\_ 2. Water particles in a deep-water wave

- a. move rapidly toward the shore.
- b. move in circular orbits.
- c. do not move: only the wave form moves.
- d. move in flat elliptical circles.

\_\_\_\_\_ 3. In shallow water, the motion of water particles

- a. ceases completely.
- b. forms large circular orbits.
- c. becomes a back-and-forth motion near the bottom.
- d. becomes an up-and-down motion near the bottom.

\_\_\_\_\_ 4. The diameter of the orbits of water particles in a deep-water wave is equal to the

- a. wavelength.
- b. wave period.
- c. wave velocity.
- d. wave height.

\_\_\_\_\_ 5. Unlike other moving things, wind waves travel over great distances in virtually straight lines. This is physically possible because:

- a. While the wind wave *is* moving, *some* water molecules are traveling in closed circles.
- b. The wind waves don't move as fast as speeding cannon balls, so Coriolis effect has no influence on them.
- c. Wind waves carry only *energy*, and energy has no mass, and is therefore not subject to Coriolis deflection.
- d. Wind waves curve one way in the southern hemisphere and the other way in the northern hemisphere. So waves only look like they are coming in a straight line from their point of origin. It's all a gigantic optical illusion, actually.
- e. Wrong! Wind waves are deflected in the same way as everything else that moves on a turning planet. Coriolis effect does not play favorites.

\_\_\_\_\_ 6. The distance measured from trough to trough of a wave is

- a. the wavelength.
- b. the wave height.
- c. the wave period.
- d. the orbit.

\_\_\_\_\_ 7. The period of wind waves is usually expressed in

- a. feet or meters.
- b. miles per hour, or kilometers per hour.
- c. seconds.
- d. any of the above.

\_\_\_\_\_ **8. Waves with the greatest propagation rate or velocity**

- a. have the longest wavelengths.
- b. occur in shallow water only.
- c. form when the wind is blowing less than 0.5 nautical miles per hour.
- d. have wave periods of less than one second.

\_\_\_\_\_ **9. The first waves to form on the ocean surface when the wind starts to blow are:**

- a. gravity waves.
- b. internal waves.
- c. swell
- d. capillary waves.

\_\_\_\_\_ **10. Surface tension of the water tends to limit the size of**

- a. tsunami.
- b. storm surges.
- c. capillary waves.
- d. gravity waves.

\_\_\_\_\_ **11. As the wind velocity increases during a storm,**

- a. the wave height increases.
- b. the wave velocity decreases.
- c. the wind tends to flatten the ocean surface.
- d. mass transport decreases in the open ocean.

\_\_\_\_\_ **12. The ultimate height of a wind wave will depend on**

- a. the fetch.
- b. the length of time the wind blows.
- c. the velocity of the wind.
- d. all of the above.

\_\_\_\_\_ **13. As wind waves move out of a storm area,**

- a. the short waves move out first and form "chop."
- b. the short-period waves overtake the long-period waves.
- c. the waves are sorted by velocity and form the swell.
- d. the sea becomes flat outside the storm area.

\_\_\_\_\_ **14. Most waves in the open ocean have an average height of**

- a. over 30 meters.
- b. less than 3 meters.
- c. close to 100 meters.
- d. over 200 meters.

\_\_\_\_\_ **15. When waves approach the shore a series of changes takes place. One change is that the**

- a. wave crest forms a steep peak.
- b. wavelength increases.
- c. wave height decreases.
- d. wave velocity increases.

\_\_\_\_\_ **16. Near shore, if the wave crests are two hundred feet apart, the wave will "feel" bottom when the depth is about**

- a. 20 feet.
- b. 50 feet.
- c. 100 feet.
- d. 200 feet.

\_\_\_\_\_ **17. Waves at the shore will start to break when the**

- a. water depth is about twice the wavelength.
- b. crest flattens into a rounded form.
- c. wave period increases to 15 seconds.
- d. water depth is about four-thirds the wave height.

\_\_\_\_\_ **18. When waves approach the shore, if the bottom is a steep slope,**

- a. the waves will plunge.
- b. the waves will form seiches.
- c. the waves will spill.
- d. a surf beat will form.

\_\_\_\_\_ **19. Waves tend to be parallel to the shore when they break due to the process of**

- a. diffraction.
- b. reflection.
- c. refraction.
- d. reaction.
- e. recreation.

\_\_\_\_\_ **20. Internal waves are thought to be generated by**

- a. movements of large fish or marine mammals.
- b. subsea volcanoes or vigorous hydrothermal vents.
- c. energy from wind waves or tides moving into deeper water.
- d. movements of the Earth's crustal plates.

\_\_\_\_\_ **21. Rogue waves are best described as:**

- a. the highest waves of a tsunami.
- b. a breaking internal wave.
- c. a strong rocking motion within a harbor.
- d. a single massive wave that develops in the open ocean.

\_\_\_\_\_ **22. "Interference" or "resonance" in wind waves can cause:**

- a. an occasional wave greater than any noted before or after its occurrence.
- b. every seventh wave (or every ninth, or sixth, etc.) to be larger or smaller than those preceding or following.
- c. waves 100 meters down the beach to be larger than waves where you are standing. When you go down *there* to enter the water for surfing, the waves where you *were* get big again.
- d. a and b above.
- e. all of the above.

\_\_\_\_\_ **23. The Ramapo wave is unique because:**

- a. many lives were lost when it struck the shore.
- b. it is the largest wave ever observed by people.
- c. it is the largest wave accurately measured by people.
- d. it was captured and brought alive to Woods Hole Oceanographic Institution

in 1933. It is preserved there in the WHOI museum.

\_\_\_\_\_ **24. What wave form typically carries the greatest amount of energy through the ocean surface at any given time?**

- a. wind waves.
- b. tsunami.
- c. seiches.
- d. tides.

\_\_\_\_\_ **25. Waves with longer wavelengths travel faster from the area of their formation than short wavelength waves, separating themselves into groups having similar wavelengths and speeds. This process is known as:**

- a. diffusion.
- b. dispersion.
- c. wave training.
- d. swelling.
- e. decorrelation.

\_\_\_\_\_ **26. A spring tide is higher than a neap tide, and only occurs during the spring and summer months in each hemisphere.**

- a. true
- b. false

\_\_\_\_\_ **27. A wave of water moving up a river, initiated by tidal action and normal resonances within a river estuary, is called:**

- a. A tidal node. (Also known as an amphidromic point.)
- b. A tidal wave.
- c. A tidal gyre.
- d. A tidal current.
- e. A tidal bore.

\_\_\_\_\_ **28. Which body has the most profound influence on ocean tides?**

- a. Sun.
- b. Moon.
- c. Jupiter.
- d. Venus.
- e. All of the bodies listed have an equal influence.

\_\_\_\_\_ **29. Tsunami or seismic sea waves are generated by**

- a. storms at sea.
- b. tidal currents in the open sea.
- c. breaking internal waves.
- d. coastal or submarine earthquakes.

\_\_\_\_\_ **30. In the open sea, tsunami**

- a. are giant breaking waves that are dangerous to ships.
- b. are slow-moving waves, slower than the swell.
- c. are long-period waves, often of 15-20 minutes.
- d. have short wavelengths of 100-200 feet, similar to wind waves.

\_\_\_\_\_ **31. In the open sea, tsunami reach an average wave height of about**

- a. 1 meter

- b. 10 meters
- c. 100 meters
- d. 1,000 meters

\_\_\_\_\_ **32. When a tsunami reaches shore,**

- a. the wave height is increased by entry into shallow water.
- b. it always arrives at the time of a high tide.
- c. the wave will appear as a single huge breaking wave.
- d. it will always reach hundreds of meters inland.

\_\_\_\_\_ **33. The best place to study the effects of a seiche is**

- a. on a shallow beach at the edge of the Pacific.
- b. in a harbor or lake.
- c. near tropical islands in the Pacific or Atlantic.
- d. in the open sea.

\_\_\_\_\_ **34. Rogue waves are best described as:**

- a. the highest waves of a tsunami.
- b. a breaking internal wave.
- c. a strong rocking motion within a harbor.
- d. a single massive wave that suddenly develops and disappears in the open ocean.

\_\_\_\_\_ **35. The primary force(s) that cause(s) tides in the sea is (are):**

- a. coastal earthquakes and landslides.
- b. wind and storms at sea.
- c. the gravitational attraction of the moon and the sun.
- d. the gravitational attraction of Mars and Venus.
- e. the rotation of the moon on its axis.

\_\_\_\_\_ **36. The tides at any one locality will result from the interaction of**

- a. sun, moon, and Earth.
- b. elliptical orbits of the moon and Earth.
- c. rotation of the Earth.
- d. size, shape, and depth of the ocean basin.
- e. all of these things.

\_\_\_\_\_ **37. The side of the Earth facing the moon will experience a high tide, while the opposite side of the Earth will have a**

- a. low tide.
- b. time of no tidal action.
- c. high tide also.
- d. tide that cannot be predicted.

\_\_\_\_\_ **38. When the sun and moon are in a line with the Earth, the**

- a. gravitational attraction will be less.
- b. difference between high and low tides will be minimal.
- c. arrival of high tide will be delayed.
- d. highest high and lowest low tides will occur.

\_\_\_\_\_ **39. A tide pattern of one high and one low each day describes a**

- a. diurnal tide.
- b. mixed tide.
- c. solar tide.
- d. semidiurnal tide.

\_\_\_\_\_ **40. The water level from which the heights of the tides are measured is referred to as the**

- a. sea level of spring tides.
- b. tidal datum.
- c. maximum range.
- d. tidal variance.

\_\_\_\_\_ **41. Tidal currents can result in a rotary direction of water flow called**

- a. slack water.
- b. ebb and flood tides.
- c. whirlpools or maelstroms.
- d. amphidromic points.

\_\_\_\_\_ **42. Tidal bores usually occur**

- a. in rivers or long narrow bays.
- b. in open ocean far from land.
- c. around islands.
- d. in enclosed basins such as the Mediterranean.

\_\_\_\_\_ **43. An amphidromic point is**

- a. a "no tide" point in the ocean around which the tide crest rotates through one tidal cycle.
- b. a place in the ocean where tides are highest.
- c. a place in the ocean where tidal datum is displaced to the right (in the northern hemisphere), or to the south (in the southern hemisphere).
- d. a "no tide" point at the coast where there is a daily high tide, but no low tide.

\_\_\_\_\_ **44. Tractive forces**

- a. are responsible for the tides.
- b. cause water to flow away from some ocean areas.
- c. cause water to flow toward some ocean areas.
- d. are influence ocean and atmosphere.
- e. all of the above.

\_\_\_\_\_ **45. The only marine energy source being successfully exploited on a large scale is:**

- a. tidal currents
- b. waves
- c. salinity differences
- d. thermal gradient
- e. open ocean currents

\_\_\_\_\_ **46. Tsunami have historically posed little threat to human life.**

- a. true
- b. false



\_\_\_\_\_ **47. A tide pattern with two high tides (one higher than the other) and two low tides (one lower than the other) each day is called a**

- a. diurnal tide.
- b. mixed tide.
- c. solar tide.
- d. semidiurnal tide.

\_\_\_\_\_ **48. Storm surges are**

- a. regular phenomena generated by global winds.
- b. associated with all atmospheric storms.
- c. air currents caused by the tides.
- d. associated with the onshore arrival of a powerful cyclonic storm.
- e. interesting but not dangerous to life and property.

\_\_\_\_\_ **49. The present shorelines of the world are considered to be**

- a. geologically stable zones separating land and sea.
- b. features of great geological antiquity.
- c. a dynamic environment affected by both long-term and short-term cycles.
- d. that part of the marine environment most resistant to change.

\_\_\_\_\_ **50. Oceanographers believe that during the Pleistocene Ice Age of the last 1 - 2 million years major changes occurred in the ocean. The evidence indicates that**

- a. the sea froze even in the tropics.
- b. sea level was lowered about 120 meters (400 feet) during maximum advances of the ice.
- c. the dinosaurs in the ocean were finally killed off by the cold water.
- d. most of the continents were flooded as the sea expanded inland.

\_\_\_\_\_ **51. The single most influential agent changing the shore and coast is**

- a. wave action.
- b. the tidal range.
- c. alternate freezing and thawing of coastal cliffs.
- d. prevailing winds.

\_\_\_\_\_ **52. Eustatic changes are variations in sea level that can be measured all over the world ocean.**

- a. true
- b. false

\_\_\_\_\_ **53. The origin of sea cliffs, sea stacks, sea caves, blowholes, and arches is related to**

- a. longshore currents.
- b. high tides.
- c. human activities.
- d. erosion by waves.

\_\_\_\_\_ **54. The highest point on a summer beach profile is:**

- a. the berm.
- b. the backshore.
- c. the foreshore.
- d. the low-tide terrace.
- e. the shore face.

\_\_\_\_\_ **55. The large waves of late summer modify the shape of sandy beaches. Huge "bites" of beach are removed from the exposed beach and end up in offshore sand bars. These "bites" are most evident in the form of a very large and high**

- a. berm.
- b. shore face, or beach scarp.
- c. foreshore.
- d. backshore.
- e. cusp.

\_\_\_\_\_ **56. The downcoast transport mechanism for beach sand along much of the Pacific coast is called:**

- a. the longshore current, a current that moves sand north-to-south along the coast, parallel to shore, at a great distance away from land.
- b. the longshore current, a current that moves sand south-to-north along the coast, parallel to shore, at a great distance away from land.
- c. the longshore current, a current that moves sand north-to-south along the coast, parallel to shore, close to shore.
- d. the longshore current, a current that moves sand south-to-north along the coast, parallel to shore, close to shore.
- e. the longshore current, a current that moves sand on and off the shores, perpendicular to the coastline, only during large storm waves.

\_\_\_\_\_ **57. Steep, narrow, rocky beaches are usually found in areas of**

- a. summer beach conditions.
- b. wave deposition.
- c. high wave energy.
- d. small inlets and bays.

\_\_\_\_\_ **58. The energy that drives the longshore currents is derived from**

- a. hurricanes and cyclones.
- b. major surface currents, such as the Gulf Stream.
- c. monthly high tides.
- d. wind waves approaching the beach front at an angle.

\_\_\_\_\_ **59. A summer beach is characteristically**

- a. a rocky platform.
- b. steep and narrow.
- c. covered with boulders and cobbles.
- d. broad and covered with sand.

\_\_\_\_\_ **60. Solution, abrasion, and hydraulic action are factors involved in**

- a. wave deposition.
- b. moving longshore currents.
- c. causing wave refraction.
- d. wave erosion.

\_\_\_\_\_ **61. A long-term effect of wave refraction is**

- a. to straighten a coast.
- b. to build out points of land.
- c. to erode and deepen bays.
- d. to remove sand from the beach.

\_\_\_\_\_ **62. Oceanographers usually classify coasts by**

- a. the type of sand found on the beach.
- b. the physical processes shaping the coasts.
- c. the direction the coast faces.
- d. the latitude in which the coast resides.

\_\_\_\_\_ **63. Most of the minerals found in the sand of continental beaches are supplied by**

- a. erosion of local coastal cliffs.
- b. currents from the deep ocean floor.
- c. glacial processes.
- d. rivers and streams.

\_\_\_\_\_ **64. A problem facing many beaches along the U. S. east and west coasts is**

- a. excess sand being deposited around seaside installations.
- b. the rapid growth of deltas at the mouths of rivers.
- c. the development of barrier beaches across harbors.
- d. the loss of sand and the erosion of beaches.

\_\_\_\_\_ **65. Human activities that have contributed to shoreline erosion include**

- a. building of dams across the rivers carrying sediment to the shore.
- b. construction of jetties along the beach.
- c. placement of seawalls along the shoreline.
- d. building artificial breakwater that slow the longshore current system.
- e. all of the above.

\_\_\_\_\_ **66. If a beach is wide, gently sloping with fine sands, we would expect to see**

- a. very heavy breakers.
- b. a beach facing into Arctic storms.
- c. generally small waves winter and summer.
- d. high-energy waves all year around.
- e. wave erosion as the dominant process.

\_\_\_\_\_ **67. The steep cliffs and rugged coast of much of the West Coast of the United States are primarily the result of**

- a. biological activity.
- b. marine deposition.
- c. river deposition.
- d. glacial erosion.
- e. faulting and Earth movement.

\_\_\_\_\_ **68. An estuary in which salinities tend to be higher away from the ocean entrance than near the ocean entrance is called**

- a. a well-mixed estuary.
- b. a salt-wedge estuary.
- c. a partially mixed estuary.
- d. a reverse estuary.

\_\_\_\_\_ **69. You have arrived at a coast rough with sea stacks, cliffs, and small pocket beaches. Your friend asks you to classify it. You correctly answer that it is a**

- a. primary coast.
- b. secondary coast.

- c. tertiary coast.
- d. remnant coast.
- e. eustatic coast.

\_\_\_\_\_ **70. You and the friend later travel to a broad beach, wide enough to drive on. Again, your friend asks you to classify it. You correctly answer that it is a**

- a. primary coast.
- b. secondary coast.
- c. tertiary coast.
- d. remnant coast.
- e. eustatic coast.

\_\_\_\_\_ **71. If a river delta is to grow in size, \_\_\_\_\_ must exceed \_\_\_\_\_.**

- a. erosion ... deposition.
- b. deposition ... erosion.
- c. primary process ... secondary processes.
- d. secondary processes ... primary processes.
- e. eustatic processes ... tectonic processes.

\_\_\_\_\_ **72. Wave-dominated deltas are usually smaller than river-dominated deltas.**

- a. true
- b. false

\_\_\_\_\_ **73. Coasts on which terrestrial influences dominate are classified as**

- a. primary coasts.
- b. secondary coasts.
- c. tertiary coasts.
- d. remnant coasts.
- e. eustatic coasts.

\_\_\_\_\_ **74. Coasts on which marine influences dominate are classified as**

- a. primary coasts.
- b. secondary coasts.
- c. tertiary coasts.
- d. remnant coasts.
- e. eustatic coasts.

\_\_\_\_\_ **75. Of the following statements, which does not apply to coral animals?**

- a. They are Cnidarians.
- b. They are radially symmetrical.
- c. They are carnivores with stinging cells.
- d. They have a medusa body form.
- e. They build skeletal structures of calcium carbonate.

\_\_\_\_\_ **76. The coral reef community**

- a. is made up exclusively of various species of coral polyps.
- b. is limited to carnivorous animals.
- c. lies within the kelp forest habitat of the tropics.
- d. is made up of filter and suspension feeders living off the abundant plankton.
- e. is made up of various plants and animals, including primary producers, herbivores, and carnivores.

\_\_\_\_\_ **77. The zooxanthellae that live in the tissues of the coral polyps**

- a. provide carbon dioxide and phosphates for the polyps.
- b. feed on the tissues of the polyps and are dangerous parasites.
- c. are the main cause of coral bleaching, and are threatening the reefs of the world.
- d. provide additional nourishment and oxygen to the polyps.
- e. All of these.

\_\_\_\_\_ **78. Coral reefs are found only in areas**

- a. of deep water below 200 meters (660 feet).
- b. of cold water or in cold currents.
- c. where the water has normal or slightly elevated salinity.
- d. near rivers or stream deltas.
- e. of low sunlight because they need shade to grow.

\_\_\_\_\_ **79. According to Darwin, the last stage in the cycle of reef formation is:**

- a. the fringing reef.
- b. the atoll.
- c. the algal rim.
- d. the barrier reef.
- e. the kelp forest.

\_\_\_\_\_ **80. Life in productive tropical reefs is characterized by**

- a. extreme competition for food, territory, and reproductive opportunities.
- b. very few species, but large numbers of each species.
- c. large adults in each species that reproduce late in life.
- d. organisms with extremely long lifespans.
- e. All of these.

\_\_\_\_\_ **81. Enclosed lagoon, no land protruding.**

- a. Fringing reef.
- b. Barrier reef.
- c. Atoll.
- d. All of these.
- e. None of these.

\_\_\_\_\_ **82. Close to shore, not separated from land.**

- a. Fringing reef.
- b. Barrier reef.
- c. Atoll.
- d. All of these.
- e. None of these.

\_\_\_\_\_ **83. Separated from land by a lagoon.**

- a. Fringing reef.
- b. Barrier reef.
- c. Atoll.
- d. All of these.
- e. None of these.

\_\_\_\_\_ **84. Found above 30°N or below 30°S latitudes.**

- a. Fringing reef.
- b. Barrier reef.
- c. Atoll.
- d. All of these.
- e. None of these.

\_\_\_\_\_ **85. Charles Darwin's theory of coral reef formation (which is likely true) involves:**

- a. A drop in sea level.
- b. A lowering of the ocean floor.
- c. A rise in sea level
- d. A rising of the ocean floor.
- e. A steady relationship between sea level and ocean floor.

\_\_\_\_\_ **86. The average rate of growth of a coral reef is about \_\_\_\_\_ per year.**

- a. 1/2"
- b. 1"
- c. 1.5"
- d. 2 - 5"
- e. more than one foot per year.

\_\_\_\_\_ **87. Most reef building corals deposit a skeleton of:**

- a. silica ("glass")
- b. protein.
- c. calcium carbonate (limestone)
- d. a granite-like substance derived from sima.
- e. any of these -- it depends on temperature, salinity, and coral species.

\_\_\_\_\_ **88. Of the following statements, which does not apply to tsunami?**

- a. They move at speeds near 700 km per hour.
- b. Their wavelengths range form 100 to 400 kilometers.
- c. They are shallow water waves.
- d. Their form changing drastically when they approach shore.
- e. All the above is true.

\_\_\_\_\_ **89. The beaches of San Diego get most of their sand from which primary source?**

- a. Local sea bluffs.
- b. Trucked in from sediment quarries.
- c. Ocean floor.
- d. River sediment from the backcountry.
- e. Pumped onto the beach via human dredging activities.

\_\_\_\_\_ **90. Tidal movement across the oceans is primarily the result of**

- a. progressive free-wave propagation.
- b. the Coriolis effect.
- c. the Earth's rotation beneath the tidal bulges.
- d. rotation of the tidal bulges over the Earth's ocean bottoms.
- e. All of these.

\_\_\_\_\_ **91. The seawalls built along San Diego's bluff areas are designed to**

- a. protect property behind the seawall from wave erosion.
- b. protect the wildlife found along the bluffs.
- c. improve the aesthetic appearance of our coastline.

- d. dam local rivers and streams.
- e. protect the fragile beaches.

\_\_\_\_\_ **92. Which of the following features does San Diego's coast have?**

- a. Fringing coral reefs.
- b. Atolls.
- c. Barrier islands.
- d. Barrier reefs.
- e. None of the above.

\_\_\_\_\_ **93. San Diego's coast is best characterized as**

- a. a primary-type coast.
- b. a coast having both erosional and depositional characteristics.
- c. a submerged-type coast.
- d. an erosional-type coast.
- e. All of these.

\_\_\_\_\_ **94. The primary reason that the West coast is different from the East coast is because**

- a. the West coast is an active margin, and the East coast is a passive margin.
- b. the West coast is a passive margin, and the East coast is an active margin.
- c. the West coast is influenced by an eastern boundary current, whereas the East coast is influenced by a western boundary current.
- d. the West coast is influenced by a western boundary current, whereas the East coast is influenced by an eastern boundary current..
- e. Hey, wait a minute...they are actually pretty similar.

\_\_\_\_\_ **95. When caught in a rip current, one should**

- a. swim aggressively straight toward shore.
- b. start to wave your arms, and shout for help.
- c. just relax and let yourself be taken out to sea.
- d. swim parallel to the shore until you are out of the rip current.
- e. swim for the bottom where the current is weakest.

\_\_\_\_\_ **96. A beach's winter profile is primarily different from its summer profile because of**

- a. the seasonal difference in the wave action and storm activity.
- b. the change in water temperature.
- c. the number of people on the beach.
- d. the change in the types of sea life.
- e. the seasonal changes of the tides.

\_\_\_\_\_ **97. San Diego gets its largest, most frequent swells in the**

- a. Summer.
- b. Fall.
- c. Winter.
- d. Spring.

\_\_\_\_\_ **98. The Sumatra tsunami of December 26, 2005 was caused by:**

- a. a meteor impact.
- b. an underwater landslide.
- c. an undersea seismic event
- d. volcanic eruption.

e. the alignment of all the planets with Earth.

\_\_\_\_\_ **99. If all of Earth's glaciers were to completely melt, eustatic sea level would rise by roughly**

- a. 2 inches
- b. 2 feet
- c. 20 feet
- d. 200 feet
- e. enough to entirely cover all the continents

\_\_\_\_\_ **100. Eustatic sea level during the last maximum ice sheet advance 18,000 years ago was**

- a. 400 feet higher
- b. 200 feet higher
- c. the same as today
- d. 200 feet lower
- e. 400 feet lower.

### Section III.

#### Matching: Questions 101 through 110

Directions: Match wave or shoreline feature or concept with associated term or relationship (letter(s))

- |                                     |     |   |
|-------------------------------------|-----|---|
| a. Seismic sea wave                 | a+b | Laterally-moving river of sand in the surf zone |
| b. Elevated ancient shoreline       | b+c | Jetties   |
| c. King mineral of local beach sand | c+d | Amphidromic rotary standing waves               |
| d. Groins                           | d+e | North to south                                  |
| e. Seas becoming swell              | a+e | King of tropical beach sand                     |

\_\_\_\_\_ 101. Tides

\_\_\_\_\_ 102. Tsunami

\_\_\_\_\_ 103. Marine terrace

\_\_\_\_\_ 104. Longshore drift

\_\_\_\_\_ 105. Calcite

\_\_\_\_\_ 106. Wall-like structure built perpendicular to shore to trap/build up beach sand

\_\_\_\_\_ 107. Wall-like structure built perpendicular to shore to keep harbor channels open

\_\_\_\_\_ 108. Quartz

\_\_\_\_\_ 109. Wave dispersion

\_\_\_\_\_ 110. Predominant longshore current direction along California coast

### Section IV. Matching: Questions 111 through 118

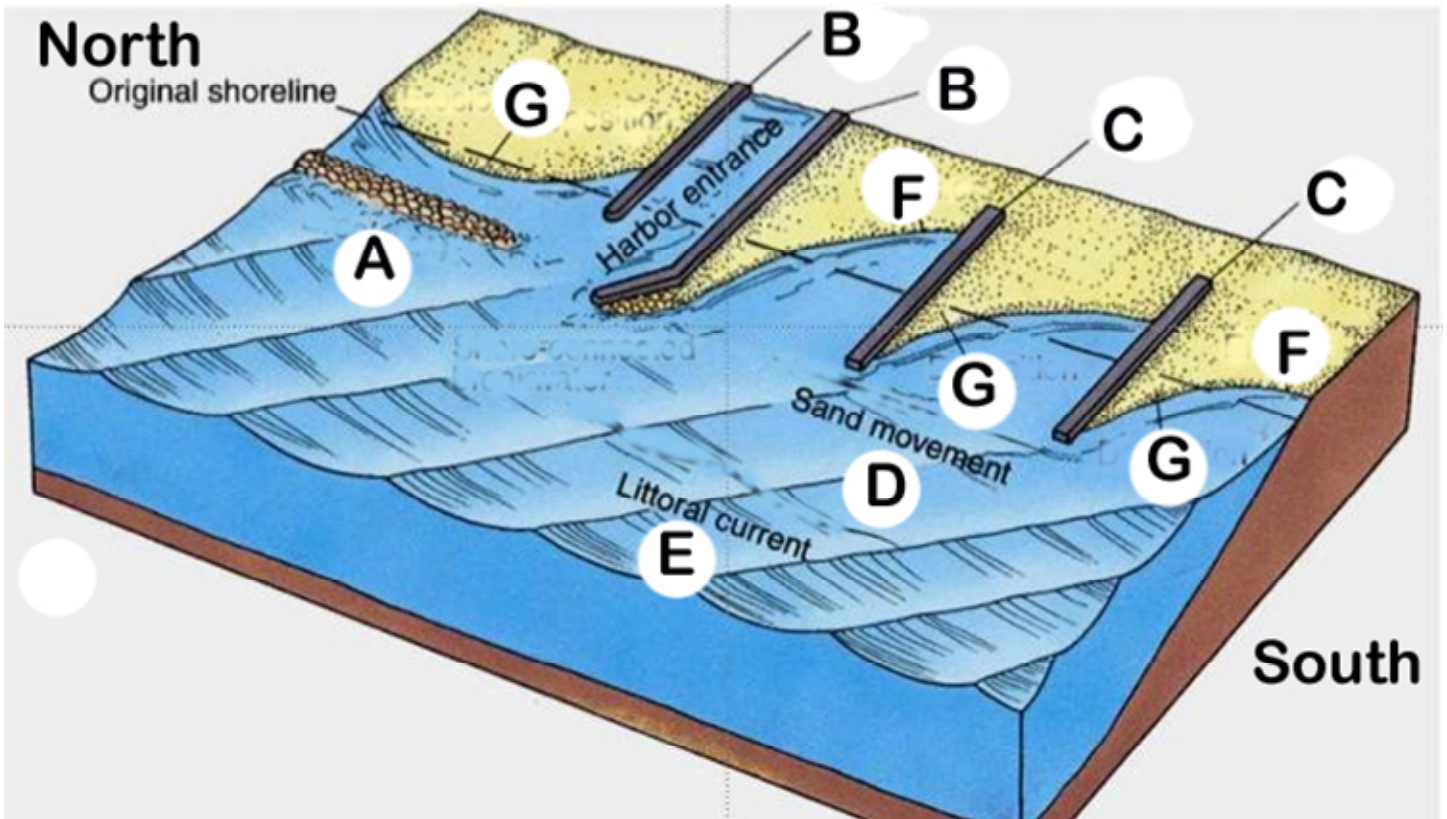
Directions: Match each specified geographic Feature or Process (Capital Letter) with its associated definition or description and/or intended purpose (small-case letter(s)).

- |  |   |
|--|---|
| a. Traps sand to maintain larger beach | e. Region of beach erosion                      |
| b. Kuroshio                            | f. Protects water channels from sand deposition |



- c. Protects beach from waves
- d. Region of beach deposition

- a+b. North-to-south movement
- b+c. South-to-north movement



- \_\_\_ 111. Feature A
- \_\_\_ 112. Feature B
- \_\_\_ 113. Feature A
- \_\_\_ 114. Feature C
- \_\_\_ 115. Feature D
- \_\_\_ 116. Feature E
- \_\_\_ 117. Feature F
- \_\_\_ 118. Feature F