

1. Sea-level during the most recent ice age (about 18,000 years ago), was as low as ____ below current sea-level.
 - a) 32 meters (100 feet).
 - b) 68 meters (200 feet).
 - c) 125 meters (400 feet).
 - d) 241 meters (800 feet).
 - e) 480 meters (1600 feet).

2. Waves erode cliffs through which of the following mechanisms?
 - a) Grinding by sand and gravel.
 - b) Chemical attack (dissolution of minerals in the rock).
 - c) Jamming water and air into tiny cracks in the rock.
 - d) All of the above.
 - e) a) and c) above.

3. Waves tend to straighten a coast by what mechanism?
 - a) waves striking the coast at an angle smear the coastline by moving sand along the shore.
 - b) waves converge on headlands and away from bays, concentrating their energy on the headlands.
 - c) headlands stick out into the ocean more, receiving energy from deep-water ocean waves.
 - d) when a tsunami strikes, it takes a big bit out of the whole coast, which tends to straighten it.

4. Beaches are composed of
 - a) pieces of quartz.
 - b) plastic fragments.
 - c) fragmented coral.
 - d) fragmented basaltic lava.
 - e) all of the above.

5. The important thing to understand about a beach is that
 - a) it is composed of material that is constantly in motion.
 - b) it is always made of sand.
 - c) sand from the berm is harder than sand on the foreshore.
 - d) it is always made of sediment from beach cliffs or nearby mountains.

6. The part of the beach that is covered and uncovered by the tide is called
 - a) the berm.
 - b) the backshore.
 - c) the foreshore.
 - d) the longshore bare.
 - e) the longshore trough.

7. A beach will grow when
 - a) the volume of material removed by the swash exceeds the volume added by the backwash.
 - b) the volume of material added by the swash exceeds the volume removed by the backwash.
 - c) the volume of material removed by the backwash exceeds the volume added by the swash.
 - d) the volume of material added by the backwash exceeds the volume removed by the swash.

8. What sediment grain size would you be likely to find on a very steep beach?
 - a) very fine sand
 - b) very coarse sand
 - c) cobbles
 - d) pebbles
 - e) medium sand

9. The most common source of energy driving longshore currents is
- a) the Longshoresmen's union.
 - b) hurricanes.
 - c) waves approaching the shore at an angle.
 - d) tides.
10. A coastal cell is defined as
- a) a section of coast where sand input equals sand outflow.
 - b) a prison cell with a nice view of the ocean.
 - c) a portion of the coast where sand collects.
 - d) a portion of the coast where sand is transported to the ocean by rivers and streams.
11. The Silver Strand is a sand spit running from Imperial Beach to North Island, protecting San Diego Bay from the large waves of the open ocean. The direction of the spit suggests that local longshore currents flow
- a) from San Diego towards El Cajon.
 - b) from Imperial Beach towards Point Loma.
 - c) from Point Loma towards Imperial Beach.
 - d) from Oceanside towards La Jolla.
 - e) Alaska towards Mexico.
12. A barrier island is formed by
- a) sand filling in a bay.
 - b) sand blocking off a bay, but not filling it in.
 - c) sand building up across a bay mouth, but with a channel.
 - d) sand being transported into the ocean by a river.
 - e) sand accumulating on a submerged rise parallel to the shore.
13. You are exploring an unfamiliar coastline and encounter a river delta that sticks out into the water with well-defined distributaries. This delta is likely dominated by
- a) a strong flow of river water into a protected sea.
 - b) high energy tidal currents.
 - c) high energy waves.
 - d) a combination of strong river flow and high energy waves.
 - e) a combination of high energy waves and tidal currents.
14. According to Darwin, the last stage in the cycle of coral reef formations is
- a) a fringing reef.
 - b) an atoll.
 - c) an algal rim.
 - d) a barrier reef.
 - e) a kelp forest.
15. An estuary is a semi-enclosed place where fresh- and saltwater meet. Which of the following geological features is not associated with estuaries?
- a) drowned river valley
 - b) fjord
 - c) volcano
 - d) tectonic fault zone
 - e) barrier islands

16. San Francisco Bay is an example of a
- glacially eroded U-shaped trough.
 - drowned river mouth.
 - bar-built estuary.
 - tectonically formed estuary.
 - drowned volcanic crater.
17. An estuary formed by a glacier, often with a sill that traps a layer of stagnant water behind it is most likely
- a well-mixed estuary.
 - a salt-wedge estuary.
 - a partially mixed estuary.
 - a fjord estuary.
18. The steep cliffs and rugged coast of much of the west coast of the U. S. are due in large part to
- biological activity.
 - marine deposition.
 - river deposition.
 - glacial erosion.
 - tectonic activity.
19. The Pacific Coast of the U. S. is generally _____, the Atlantic Coast is generally _____, and the Gulf Coast is generally _____.
- subsiding ... subsiding ... rising
 - subsiding ... rising ... subsiding
 - rising ... subsiding ... subsiding
 - rising ... subsiding ... rising
 - rising ... rising ... subsiding
20. Evidence that erosion dominates a shoreline includes _____ while evidence that deposition dominates includes _____.
- wave-cut cliffs and barrier islands ... sea caves and sand spits
 - wave-cut cliffs and sea caves ... barrier islands and sand spits
 - wave-cut cliffs and sand spits ... sea caves and barrier islands
 - barrier islands and sand spits ... wave-cut cliffs and sea caves
 - sea caves and barrier islands ... wave-cut cliffs and sand spits
21. A seawall has what effect on coastal erosion?
- It counters erosion by trapping sand on the beach behind it.
 - it counters erosion on the upcurrent side by trapping sand, but increases erosion on the downcurrent side.
 - It permanently counters erosion of private property at the expense of the beach in front of the seawall.
 - It temporarily counters erosion of private property at the expense of the beach in front of the seawall.
22. Sketch a typical summer beach profile, including the foreshore, the backshore, the berm, the high tide mark, and the low tide mark.
23. Explain why a summer beach is more likely to be sandy than a winter beach. Where does the sand go in the winter?
24. Sketch a shoreline with headlands and beaches, and use the sketch along with your understanding of refraction to explain how waves tend to straighten a shoreline.