

April 22, 2015

1. Write your name on this exam
2. Write your name on the answer sheet
3. Fill in your name and bubbles on the back of the answer sheet (last name first)
4. Fill in your URI student ID number and bubbles on the back of the answer sheet

Choose the best answer for the questions that follow.

1. Some estuaries are essentially drowned river valleys that form when sea water floods low-lying plains or river basins. Estuaries of this type are common on the US east coast such as Delaware Bay and are called ____ estuaries.
a. Coastal plain b. Tectonic c. Fjord d. Bar-built
2. Some estuaries may form as the result of an earthquake that causes land to sink and the depression covered with sea water. Estuaries of this type are common on the US west coast such as San Francisco Bay and are called ____ estuaries.
a. Coastal plain b. Tectonic c. Fjord d. Bar-built
3. Estuaries may be classified according to the pattern of salt water/freshwater mixing. For example at the mouths of rivers flowing into the ocean freshwater may flow rapidly out to sea at the surface while saltwater flows upstream along river bottom and the rapid freshwater flow prevents saltwater from entering further into the estuary. This is an example of a/an ____ estuary:
a. Salt-wedge b. Well mixed c. Partially mixed d. Unmixed
4. Estuaries may be classified according to the pattern of salt water/freshwater mixing. For example where freshwater river flow is low, tidal currents play a major role in circulation and the seaward flow of water and there is uniform salinity at all depths. This is an example of a/an ____ estuary:
a. Salt-wedge b. Well mixed c. Partially mixed d. Unmixed
5. Which best characterizes productivity in estuaries? Estuaries are:
a. Very productive c. Moderately productive
b. Not very productive d. The lowest productive marine ecosystem
6. Most of the input of food or energy from primary production in estuaries is in the form of:
a. Algae b. Seagrass c. Phytoplankton d. Detritus
7. Because salinity of estuaries can change very rapidly, most estuarine organisms:
a. Tolerate a broad range of salinities
b. Move in and out of estuaries as salinity changes
c. Are invertebrates because vertebrates cannot tolerate salinity changes
d. Are invertebrates that are strict osmoregulators

8. In estuaries both freshwater rivers and tidal currents often create conditions of strong water movement that is a major challenge for estuarine organisms. Most benthic invertebrates meet this challenge of water movement by:
- Burrowing in the sediment or attaching to plants
 - Attaching to hard substrate
 - Living on the sediment surface
 - Swimming against tidal and river currents
9. There are a number of marine communities associated with estuarine ecosystems. For example in some estuaries, particularly temperate estuaries such as those along the US East Coast extensive beds of a mollusk are found. This mollusk is:
- Snails
 - Conch
 - Scallops
 - Oysters
10. Another marine community associated with estuaries is mud flats. Mud flat animals obtain food in a variety of ways, including deposit feeding. Deposit feeding can best be described as:
- Filter feeding
 - Feeding on mud and sediments to extract organic matter
 - Leaving their burrows to dig through mud for prey
 - Handling prey with versatile appendages
11. We looked at a number of intertidal ecosystems in class with a variety of conditions in a variety of locations and supporting a variety of organisms. However, we also saw that intertidal ecosystems share the characteristic of:
- Being above low tide and below high tide
 - Containing a high diversity of living things
 - Exhibiting zonation
 - All of these
12. Intertidal ecosystems are characterized by distinct changes in dominant organisms when one examines living things beginning at the water and moving towards land. These bands of distinct organisms are a result of:
- Gradation of environmental and biological conditions moving between water and land
 - The ability of organisms to tolerate changes in salinity
 - Temperature differences experienced along the gradient
 - Variable pH in the different areas
13. As one moves from the water towards land, which is true of factors that influence intertidal organisms?
- Physical features such as desiccation become more important
 - Biological factors such as competition become more important
 - Challenges for reproduction become more important
 - All of these
14. Salt marshes are dominated by a few species of grass including:
- Thalassia*
 - Helicornia*
 - Spartina*
 - Calanus*

15. Salt marsh grasses most often enter into food webs:
- Consumed by invertebrate herbivores
 - As detritus
 - When their seeds and flowers are consumed by herbivores
 - Through consumption by crabs
16. In the tropics shoreline intertidal ecosystems are dominated by:
- Salt marsh grasses
 - Mangroves
 - Sea grasses
 - Rocky shores
17. Mangrove plants most often enter into food webs:
- Consumed by invertebrate herbivores
 - As detritus
 - When their seeds and flowers are consumed by herbivores
 - Through consumption by crabs
18. For people that grew up watching the TV show Gilligan's Island much of the action on the island revolved around the intertidal habitat:
- Salt marsh
 - Mangroves
 - Lagoon
 - Channels
19. Two ecosystems that we examined in class were characterized by distinct zonation on both a horizontal and vertical scale. One of these ecosystems was coral reefs and the other was:
- Sandy beach
 - Mangroves
 - Lagoons
 - Salt marsh
20. An intertidal ecosystem that best typifies meeting of terrestrial and marine ecosystems is _____, where many members of the community above the water are terrestrial and members of the community below the water are marine.
- Rocky shore
 - Mangroves
 - Lagoons
 - Salt marsh
21. One of the challenges of living in the rocky shore environment is wave action. Organisms deal with this challenge by:
- Having compressed bodies
 - Attachment to hard substrate using cement
 - Hollowing out cavities to reside in
 - All of these
22. There are a number of other challenges associated with life in rocky shore ecosystems, but in one way or another the major challenges faced by organisms in these habitats are almost all related to:
- Changing temperatures
 - Food availability
 - Drastically changing salinity
 - Periods of submergence and exposure
23. Although there are a variety of organisms that inhabit the upper intertidal zone, one of the more dominant organisms that can form extensive tracts is a crustacean:
- Crabs
 - Barnacles
 - Chitons
 - Shrimp