1. A local-scale group of interacting organisms and their environment is a (an)
   a. biome
   b. community
   c. ecosystem
   d. niche
   e. producer

2. Bats and butterflies both have wings this an example of
   a. coevolution
   b. divergent evolution
   c. analogous structures
   d. macroevolution
   e. speciation

3. Biologists define evolution as
   a. genetic change owing to differences in survival and reproduction of variant individuals
   b. genetic change owing chance occurrences alone
   c. heritable change in a line of descent over generations
   d. inheritance of characteristics acquired by the individual
   e. the origin of a species

4. Bird-hipped dinosaurs are
   a. Ichthyosaurs
   b. Ornithischians
   c. Pterosaurs
   d. Saurischians
   e. Sauropods

5. Dinosaurs became Earth's dominant animals during the
   a. Cenozoic
   b. Holocene
   c. Mesozoic
   d. Paleozoic
   e. Pleistocene

6. The kind of evolution that results in a change in biodiversity through time is
   a. coevolution
   b. convergent evolution
   c. homologous structures
   d. microevolution
   e. macroevolution

7. How do marine biomes differ from terrestrial biomes?
   a. The marine biomes are bigger & have less temperature fluctuations
   b. The marine biomes are smaller & have more temperature fluctuations
   c. The marine biomes have more water & nutrients, but less oxygen
   d. The marine biomes have more water & oxygen, but more nutrients
   e. The marine biomes have less water and more oxygen & nutrients
8. Increasing drug resistance seen in certain human diseases is an example of
   a. artificial selection
   b. convergent evolution
   c. coevolution
   d. genetic drift
   e. macroevolution

9. Multicellular life first emerged on land during the
   a. Cenozoic
   b. Holocene
   c. Mesozoic
   d. Paleozoic
   e. Pleistocene

10. The “Age of Fishes” is a common name for the
    a. Cenozoic
    b. Holocene
    c. Mesozoic
    d. Paleozoic
    e. Pleistocene

11. Mammals and flowering plants dominated the Earth’s biomes during the
    a. Cenozoic
    b. Holocene
    c. Mesozoic
    d. Paleozoic
    e. Pleistocene

12. The margin of a lake, characterized by rooted vegetation is the ______ zone.
    a. Eutrophic
    b. Littoral
    c. Oligotrophic
    d. Pelagic
    e. Plankton

13. Microevolution that results in reduced variability in a trait of a population is
    a. Amplifying
    b. Directional
    c. Competition
    d. Diversifying
    e. Stabilizing

14. New alleles arise in the genetic code of a species through
    a. adaptation
    b. coevolution
    c. genetic drift
    d. mutation
    e. selection

15. Owens Lake is found to deposit sediment at a rate of 3 cm/year. The lake has 600 meters of
    sediment in it. What is the best estimate for the age of the lake (make the same assumptions made
    by geologists in Darwin’s time)?
    a. 100 years
    b. 600 years
    c. 20,000 years
    d. 90,000 years
    e. 250,000 years
16. The producers in an ecosystem
   a. are photosynthetic
   b. break down organic remains
   c. feed on both plants and animals
   d. feed only on herbivores
   e. receive energy from carnivores.

17. ______________________ speciation may result when a population is divided into two separate populations by a physical barrier.
   a. Allopatric
   b. Homoplastic
   c. Parapatric
   d. Phylogenetic
   e. Sympatric

18. Speciation may occur through the following **EXCEPT**
   a. Breeding seasons
   b. Favorite foods
   c. Geographical barriers
   d. Loss of mating barriers
   e. Preferred habitats

19. Strongly swimming organisms are __________.
   a. benthonic
   b. epilimmonic
   c. hypolimmonic
   d. nektonic
   e. planktonic

20. The Cactaceae of the North America and the spiny Euphorbiaceae of Africa are an example of
   a. coevolution
   b. convergent evolution
   c. diversifying selection
   d. extinction
   e. homologous structures

21. The biome whose distribution shown to the right, centered at about 30° N and S latitude is
   a. Boreal Forest
   b. Chaparral/woodland
   c. Deciduous Forest
   d. Desert
   e. Tundra

22. The biome whose distribution shown to the right, is characterized by cold climate (but, > 10° C summer temperature) and coniferous forest is
   a. Boreal Forest
   b. Chaparral/woodland
   c. Deciduous Forest
   d. Desert
   e. Tundra
23. The biome whose distribution shown to the right, is characterized by shrubby vegetation, warm dry climate and pronounced warm-season drought is
   a. Boreal Forest
   b. Chaparral/woodland
   c. Deciduous Forest
   d. Desert
   e. Tundra

24. The biome whose distribution shown to the right, is determined by cold climate (< 10°C summer temperature) and wind is
   a. Boreal Forest
   b. Chaparral/woodland
   c. Deciduous Forest
   d. Desert
   e. Tundra

25. The biome with the highest fire frequency is
   a. Deciduous Forest
   b. Desert
   c. Grassland
   d. Tropical Rainforest
   e. Tundra

26. The biome with the longest growing season is
   a. Deciduous Forest
   b. Desert
   c. Grassland
   d. Tropical Rainforest
   e. Tundra

27. The biome with the lowest annual temperature is
   a. Deciduous Forest
   b. Desert
   c. Grassland
   d. Tropical Rainforest
   e. Tundra

28. The deepest part of the oceans in ocean trenches are the _______ zone.
   a. Abyssal
   b. Bathyl
   c. Euphotic
   d. Hadal
   e. Intertidal

29. The evolutionary process diagramed under “B” is
   a. directional selection
   b. disruptive selection
   c. microevolution
   d. natural selection
   e. stabilizing selection
30. The extinction of megafauna during the late-Pleistocene was likely due to:
   a. asteroids
   b. human hunting
   c. oceanic catastrophe
   d. plate tectonics
   e. volcanoes

31. The following are examples of absolute (annual) dating methods:
   a. coral layers
   b. ice cores
   c. radiocarbon
   d. sediment varves
   e. tree rings

32. The following are primary factors determining Earth's climate **EXCEPT**
   a. Earth's energy is from the sun
   b. Earth is a sphere
   c. Earth loses heat to space through evaporation
   d. Earth rotates on its axis
   e. Earth's redistribution of energy

33. The following are unique features in primate-hominid evolution **EXCEPT**
   a. color binocular vision
   b. grasping hands
   c. large brain
   d. mating behavior
   e. walking upright

34. The general pattern of when and where Hurricanes develop is an example of ________, whereas an individual hurricane is an example of _________.
   a. climate, Hadley circulation
   b. climate, weather
   c. Hadley circulation, climate
   d. Hadley circulation, weather
   e. weather, climate

35. The global distribution of biomes is determined primarily by
   a. animals
   b. climate
   c. fire
   d. soils
   e. weather

36. The hominid that existed at the same time as modern humans is:
   a. *A. boisei*
   b. *H. coexisisus*
   c. *H. erectus*
   d. *H. habilus*
   e. *H. neanderthalensis*

37. The location of which of the following biomes result directly from Hadley circulation
   a. boreal forests
   b. deserts
   c. deciduous forests
   d. savannas
   e. tundras
38. The semi-permanent feature of climate produced by heating at the equator producing ascending air that descends at 20 - 30 °N and S latitude is (are)
   a. Easterlies
   b. Hadley Cell
   c. ITCZ
   d. Trade Winds
   e. Westerlies

39. Throughout most of geologic time:
   a. The climate was cooler, & the sea level was lower than at present
   b. The climate was warmer, & the sea level was higher than at present
   c. There were less greenhouse gases than at present
   d. There were more greenhouse gases than at present
   e. Both a & d

40. Treeless vegetation characterized by very low temperature is
   a. Boreal Forest
   b. Chaparral/woodland
   c. Deciduous Forest
   d. Desert
   e. Tundra

41. Which marine life zone occurs in the open ocean between 0 and 200 meters deep?
   a. abyssal
   b. benthic
   c. costal
   d. euphotic
   e. profundal

42. Which of the following choices is arranged as an evolutionary gradient (i.e., first-to-evolve to last-to-evolve)?
   a. Australopithecus, Homo habilis, Homo erectus, Homo sapiens
   b. Australopithecus, Homo sapiens, Homo habilis, Homo erectus
   c. Homo erectus, Homo habilis, Australopithecus, Homo sapiens
   d. Homo neanderthalensis, Homo erectus, Australopithecus, Homo habilis
   e. Homo neanderthalensis, Australopithecus, Homo erectus, Homo habilis

43. Which of the following graphs best represents the kind of population growth that is the potential for all species? (Darwin’s observation one)

   ![Graphs]

44. Which of the following hominids was a specialized group that gave raise to no other hominid taxa and went extinct about 1,000,000 years ago
   a. Australopithecus
   b. Homo erectus
   c. Homo neanderthalensis
   d. Homo sapiens
   e. Paranthropus

45. Which of the following hominids was first to leave Africa
   a. Australopithecus
   b. Homo erectus
   c. Homo neanderthalensis
   d. Homo sapiens
   e. Paranthropus
46. Which of the following human traits evolved last?
   a. bipedalism
   b. color binocular vision
   c. culture
   d. grasping hands
   e. large brain

47. Which of the following is an example of coevolution?
   a. A family living together
   b. Competition between species for limited resources
   c. Flowers of a certain shape attract only one species of pollinator
   d. Microevolution & Macroevolution occurring simultaneously
   e. Two populations evolving at the same rate during the same time period

48. Which of the following is FALSE?
   a. The Coriolis effect determines Earth’s major wind patterns
   b. The energy for climate is from the sun
   c. Earth is furthest from the sun in the northern hemisphere winter
   d. Earth’s axis of rotation is tilted relative to its orbit around the sun
   e. More solar energy is received at the equator than at the poles

49. Which of the following is NOT a major biome:
   a. boreal forest
   b. chaparral woodland
   c. tropical rainforest
   d. tundra
   e. urban

50. Which of the following was not a key observation for Darwin’s theory?
   a. Accumulation of favorable variations over many generations is natural selection.
   b. Natural resources are limited
   c. Populations are usually constant in size
   d. Populations have the potential to increase exponentially
   e. There is natural variation within a species, and the variation is inherited