1. To save a species you must
   a) eliminate its natural competitors.
   b) put it on the endangered species list.
   c) put it in cold storage.
   d) save the ecosystem it lives in.

2. What form of life is the basis of all food chains?
   a) plants
   b) keystone species
   c) herbivores
   d) insects

3. Maximum sustainable yield means
   a) the highest rate of use a system can match with a rate of replacement.
   b) an annual record breaking crop harvest.
   c) the capacity of a trolling net.
   d) the number of births to death within a species.

4. Life on Earth depends on two natural processes: recycling chemical elements and
   a) climate variation
   b) flow of energy from the Sun to the Earth’s surface
   c) natural selection/evolution
   d) plate tectonics

5. The distribution of species on Earth is limited by
   a) availability of food
   b) barriers and unfavorable environments
   c) predators and parasites
   d) climatic change

6. What is the “global power source”?
   a) oil
   b) natural gas
   c) Sun
   d) Wood

7. What five chemical elements make up 95% of all living things?
   a) carbon, nitrogen, oxygen, phosphorous, hydrogen
   b) carbon, nitrogen, argon, hydrogen, helium
   c) carbon, oxygen, hydrogen, iron, uranium
   d) carbon, oxygen, nitrogen, calcium, sodium
8. John Locke wrote…
   a) “Adapt, Migrate, or Die.”
   b) “Mother Nature bats last.”
   c) “They paved paradise to put up a parking lot.”
   d) “Hell is the truth seen to late.”

9. What is the Earth’s best “natural” pesticide?
   a) integrated pest management practices
   b) birds
   c) summer droughts
   d) winter

10. A group of interbreeding organisms belonging to the same species is a
    a) population
    b) ecosystem
    c) colony
    d) habitat

11. Populations change due to one of what four processes?
    a) climate, food, other organisms, healthy places to live
    b) births, deaths, immigration, emigration
    c) self-inflicted loses, food, predators, immigration
    d) parasites, predators, emigration, food

12. What is the Earth’s oldest known living ecosystem?
    a) rain forests
    b) boreal forests
    c) deserts
    d) coral reefs

13. The maximum population of a given species an ecosystem can support without being degraded or destroyed in the long-run is called
    a) the carrying capacity
    b) a filled niche
    c) the population ceiling
    d) the balance dependent limit

14. If you want an ecosystem to remain balanced, it is necessary to
    a) have abundant species variation
    b) maintain climatic equilibrium
    c) have population balance
    d) have a complimentary number of predators to prey

15. Most extinctions in Earth history are the result of
    a) human induced factors
    b) pollution
    c) natural causes
    d) excessive exploitation
16. C.I.T.E.S. stands for
   a) Convention of International Tests of Ecosystem Standards
   b) Convention on International Trade of Ecological Systems
   c) Convention on International Trade in Endangered Species
   d) Contract on Institutional Tests of Environmental Standards

17. A species whose role is essential for the survival of many other species in an ecosystem is
   a) a parasite
   b) a predator
   c) a keystone species
   d) a food pyramid staple

18. All natural systems on Earth
   a) recycle essential materials
   b) go extinct
   c) evolve in response to climate change
   d) create essential habitats

19. If you alter the climate, you alter communities.
   a) True
   b) False

20. The belief that disturbed communities can return to their pre-disturbance pristine state is
   a) dependent on quick abatement actions
   b) backed by years of research
   c) dependent on removing the invasive species
   d) a myth

21. Which environmental policy is aimed at managing and regulating natural resources?
   a) restoration
   b) preservation
   c) mitigation
   d) conservation

22. The number of offspring or seeds a species may produce under ideal conditions is called
   a) recruitment
   b) biotic potential
   c) resistance
   d) exponential increase
   (credit will be given for both a and b)

23. Over many generations, characteristics of organisms change in response to changes in
   a) predator/prey populations
   b) their surrounding environment
c) the total number of mating encounters
d) their ability to migrate

24. Under ideal conditions every species has the ability to
   a) increase its population
   b) fill all available niches
   c) adapt, migrate, or die
   d) out adapt its enemies

25. The rabbit population explosion in Australia is an example of
   a) exponential growth
   b) natural disease resistance
   c) poor resource management
   d) bad marksmanship

26. Population explosions are common in natural ecosystems.
   a) True
   b) False

27. An equilibrium reached between births and deaths would be
   a) a balanced habitat
   b) a balanced population
   c) a balance between predators and prey
   d) the basis of the “Best Man” theory

28. Population balance is
   a) a steady state system
   b) a dynamic balance
   c) unattainable
   d) the first step toward extinction

29. Half of all humans to have lived on Earth are thought to have died from
   a) Polio
   b) Malaria
   c) Influenza
   d) Ebola

30. Which list includes only abiotic factors:
   a) light, salinity, parasites, food
   b) temperature, parasites, food, ph
   c) temperature, food, salinity, moisture
   d) light, predators, parasites, competitors

31. Density dependent factors are always part of
   a) changes in weather
   b) a negative feedback system
c) abiotic influences on a species  
d) predator/prey relationships

32. One of the most important density dependent factors is  
   a) shelter  
   b) number of births per life cycle  
   c) **competition**  
   d) fresh water availability

33. Hurricanes, blizzards, and killing frosts are considered  
   a) **density-independent factors**  
   b) density-dependent factors  
   c) climatic resisters  
   d) population contaminants

34. The most important unit of evolution is  
   a) the individual  
   b) the species  
   c) the mating pair  
   d) **the population**

35. Social animals often resist dangerous climatic conditions through collective behavior.  
   a) True  
   b) False

36. Sexual reproduction seems to prevail in conditions that are  
   a) continually changing  
   b) **stable**

37. Which theory of sexual reproduction suggests sex is a means of rapid genetic change in order to keep pace with adaptations and counter-adaptations of a species’ opponents?  
   a) Tangled Web  
   b) **The Red Queen**  
   c) The Best Man

38. What an animal feeds on, where it feeds, where it finds shelter, and where it nests is its  
   a) habitat  
   b) biome  
   c) **niche**  
   d) environs

39. A species that expends their energy in a single, immense reproductive effort is  
   a) **Semelparous**  
   b) Iteroparous
40. Newly introduced species are usually harmless.
   a) True
   b) False

41. Fierce, raging competition is uncommon in the natural world. Why?
   a) Predator domination is complete within a habitat
   b) There is always enough food to go around
   c) Each species is adapted and specialized to its own niche
   d) Weak members of a population get eliminated, lessening competition

42. The overall structure of any ecosystem is dominated by
   a) mating habits
   b) mutualism
   c) population pyramids
   d) feeding relationships

43. Two species living in close relationship where a mutual benefit or harm is not evident is a
   a) parasitic relationship
   b) **symbiotic relationship**
   c) ecological relationship
   d) an obsessive codependence

44. If the environment changes, a species must alter its life strategies in order to survive.
   a) True
   b) False

45. The place where a species is biologically adapted to live is called a
   a) niche
   b) biome
   c) ecosystem
   d) **habitat**

46. An ecosystem defined by having similar vegetation and governed by a specific climatic condition is called a
   a) niche
   b) **biome**
   c) habitat
   d) regime

47. What four key factors shape life strategies?
   a) **temperature, rainfall, altitude, latitude**
   b) birth, death, immigration, emigration
   c) climate, food, other organisms, healthy place to live
   d) mutualism, reproduction, climate, niches
48. Good examples of parasitism would include
   a) **ticks, tapeworms, and your younger brother constantly bumming money**
   b) epiphytes living in rainforests
   c) pinworms, flukes, insects pollinating flowers
   d) lichens, amoebas, mites

49. The orderly transition and replacement of one biotic community with another is called
   a) extinction
   b) **natural succession**
   c) communalism
   d) ecological progression

50. Unnatural changes to the ecosystem resulting in changes at unnatural rates is called
   a) ecological succession
   b) **forced succession**
   c) natural succession
   d) progressive succession

51. The lose of biological diversity is the most serious problem facing the environment because it is
   a) irreversible
   b) human controlled
   c) fixupable
   d) exponentially driven

52. Natural selection is an incredible function, not only does it produce vast diversity, it
   a) allows extinction to wipe out the weak
   b) produces only strong species
   c) **links all living forms in a single natural process**
   d) maintains global gene pools

53. A crown fire result when small amounts of fuel burn along the ground scorching the bottom trunks of trees and cause pine-cones to open and drop their seeds.
   a) True
   b) **False**

54. Who was Hypathia?
   a) **Librarian of the Library of Alexandria**
   b) Proconsul of Alexandria
   c) Greek philosopher responsible for the Gaia Hypothesis
   d) Guardian of the Roman Scrolls of Knowledge

55. What are the librarians of Earth’s gene pool?
   a) aquariums and zoos
   b) seed and sperm banks
   c) **traditional cultures**
56. The poorest protected provinces on Earth include
   a) tundra and deserts
   b) deserts and dry forests
   c) tundra and grasslands
   **d) grasslands and tropical forests**

57. Sharks are biologically interesting because they
   a) get no infections
   b) get no tooth decay
   c) eat double their body weight daily
   d) sleep with their eyes open

58. Natural succession depends on maintaining
   a) soil free from erosion
   **b) biodiversity of the surrounding area**
   c) steady climatic conditions
   d) a limited gene pool

59. In the sequence of Primary succession, the first stage is bare rock, the last stage is a
   a) maximum biodiversity
   b) climatic ecosystem
   c) boreal forest
   **d) climax ecosystem**

60. The reinvasion of an area, after a natural or man-made disaster, where soil already 
    exists is called
   a) **secondary succession**
   b) primary succession
   c) native succession
   d) alternative succession

61. Which type of gene pool preservation allows natural selection to continue naturally?
   a) off-site storage
   b) on-site storage
   **c) on-site protection**
   d) off-site collections

62. Which is true of the gene Pax6:
   A. it is involved in olfactory reception in many organisms
   B. it regulates eye development in planarian flatworms
   C. it is an example of lateral gene transfer
   D. it is highly expressed in cave-dwelling fish
   E. it is involved with eye development in many organisms with vision (but not planarians).
63. Which of the following is **NOT** true about human evolution:
   A. the genus *Homo* evolved from a species of *Australopithecus*
   B. hominids share a common ancestor with other primates
   C. *Homo sapiens* is the only hominid species (living or extinct) capable of using tools
   D. *Homo sapiens* originated in Africa
   E. bipedalism evolved before larger brain size
   
   C. is incorrect. Homo habilis also used tools.

64. Which of the following is **NOT** a characteristic of adaptive radiations:
   A. descent from a common ancestor
   B. increase in species diversity
   C. opportunities for allopatry
   D. close proximity to a mainland population
   E. diversification to fill empty ecological niches

   D. close proximity to a mainland population would inhibit adaptive radiation, because gene flow would prevent island (or lake) species from evolving in isolation.

65. A population of cats is polymorphic for black and white alleles. Car drivers tend to notice the more common color and hit them less often. This is an example of:
   A. oscillating selection
   B. frequency-dependent selection
   C. genetic drift
   D. disruptive selection
   E. assortative mating

   B. frequency-dependent selection

66. Which is true of sympatric speciation:
   A. it never occurs
   B. it requires populations to be separated geographically
   C. it can occur through polyploidy
   D. it occurs more slowly than allopatric speciation
   E. it only occurs in animals

   C. is the right answer.

67. “Homology” is defined as similarity due to:
   A. descent
   B. morphological resemblance
   C. shared function
   D. common purpose

   A. descent.

68. An insect species evolves to be larger in order to prey on larger food items. This is an example of:
   A. stabilizing selection
   B. directional selection
   C. disruptive selection
   D. founder effect
   E. none of the above

   B. Directional selection.
69. The appearance of an organism that result from the expression of its genes is referred to as the:

A) genotype
B) phenotype
C) karyotype.
D) alleleotype
E) phenocopy

70. In humans, brown eye color (B) is dominant to blue eyes (b). Two parents with brown eyes have a large family of 24 children. 18 of the children have brown eyes, and 6 of them have blue eyes. This indicates that the parents' genotypes are:

A) Bb and Bb
B) BB and bb.
C) BB and Bb.
D) Bb and bb.
E) bb and bb.

71. For X-linked recessive alleles,

A) all of the sons of a homozygous mother will exhibit the trait.
B) all of the sons of a heterozygous mother will exhibit the trait.
C) all of the daughters of a homozygous mother will exhibit the trait.
D) more females than males exhibit the trait.
E) all of the above

72. The presence of a chiasma indicates that two chromatids

A) are about to form a synapsis
B) are haploid
C) are identical
D) have exchanged genetic material
E) are in a synaptonemal complex
73. What is the probability that a family with three children, all will be girls?
   A) 1/4
   B) 1/2
   C) 1/3
   D) 3/16
   E) 1/8

74. In a double-stranded DNA molecule, what holds the two complementary strands to the other?
   A) ionic bonds
   B) covalent bonds
   C) hydrogen bonds
   D) Van der Waals interactions
   E) hydrophobic and hydrophilic interactions

75. What is the name given to the three bases in a messenger RNA which bind to the anticodon of tRNA to specify an amino acid placement in a protein?
   A) codon
   B) anti-anticodon
   C) cistron
   D) nucleotide
   E) triplet