ECOLOGY EXAM   MYP BIOLOGY   MR. MORONE

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. The total number of individuals of the same species that occupy a given area at a given time is the
   a. population distribution.
   b. population growth.
   c. population birth rate.
   d. population size.
   e. carrying capacity.

_____ 2. Which of the following would be more likely to affect an animal's habitat than its niche?
   a. rainfall
   b. prey abundance
   c. predators
   d. defense mechanisms
   e. competition

_____ 3. Which of the following factors would be likely to be limiting in the surface waters of the open ocean?
   a. nutrients
   b. temperature
   c. oxygen
   d. light
   e. wind

_____ 4. Which of the following represent an early stage in primary succession?
   a. pine trees
   b. moss and lichens on bare rock
   c. weedy annual plants in an open field
   d. climax species in succession
   e. brambles and other shrubs

_____ 5. All of the populations of different species that occupy and are adapted to a given area are referred to by which term?
   a. biosphere
   b. community
   c. ecosystem
   d. niche
   e. habitat

_____ 6. Which is an example of warning coloration?
   a. the dark brown mane of a lion
   b. the bright green and blue feathers of a peacock
   c. the black and yellow bands of a wasp
   d. the black and white stripes of a zebra
   e. the bright red color of roses

_____ 7. Four of the five answers listed below are components of the abiotic environment. Select the exception.
    a.   soil
    b.   rainfall
    c.   competitors
    d.   temperature
    e.   sunlight

_____ 8. The biome with the greatest range of daily temperature extremes is the
    a.   tundra.
    b.   taiga.
    c.   tropical rain forest.
    d.   desert.
    e.   grassland.

_____ 9. A network of interactions that involve the cycling of materials and the flow of energy between a community and its physical environment is which of the following?
    a.   population
    b.   community
    c.   ecosystem
    d.   biosphere
    e.   species

_____ 10. Which is not a density-dependent, growth-limiting factor?
    a.   predation
    b.   drought
    c.   parasitism
    d.   competition
    e.   disease

_____ 11. Net primary productivity is the
    a.   rate of photosynthesis.
    b.   rate of energy flow.
    c.   amount of energy stored in the ecosystem.
    d.   amount of energy utilized.
    e.   amount of energy stored in the plant tissue in excess of that used by autotrophs in respiration.

_____ 12. Four of the five answers listed below are examples of mutualism. Select the exception.
    a.   plants and pollinators
    b.   plants and seed dispersal by seed-eating animals
    c.   mycorrhiza
    d.   antibiotic
    e.   lichen

_____ 13. In 1882, the tropical volcanic island Krakatoa exploded and was reduced to an abiotic island covered by a thick layer of volcanic ash. By 1933, populations of all of the following organisms were present. Which population was probably established after all the others?
    a.   ferns
    b.   bacteria
    c.   insects
    d.   rodents
    e.   grasses

_____ 14. Water in the oceans tends to move in great currents from
   a. north pole to south pole.
   b. equator to poles.
   c. poles to equator.
   d. south pole to north pole.
   e. equator to poles and back again.

OMIT _____ 15. In general, which list places the terms in order of increasing size?
   a. ecosystem, biogeographical realm, biome, biosphere
   b. ecosystem, biome, biosphere, biogeographical realm
   c. biome, ecosystem, biogeographical realm, biosphere
   d. ecosystem, biome, biogeographical realm, biosphere
   e. biogeographical realm, biome, biosphere, ecosystem

_____ 16. The interaction between two species in which both species are harmed is known as
   a. mutualism.
   b. parasitism.
   c. commensalism.
   d. competition.
   e. predation.

_____ 17. A group of individuals of the same species occupying a given area defines a(n)
   a. community
   b. ecosystem
   c. population
   d. biosphere
   e. habitat

_____ 18. A type III survivorship curve is characteristic of
   a. monkeys.
   b. horses.
   c. eagles.
   d. sea urchins.
   e. humans.

_____ 19. Which of the following does NOT cycle through an ecosystem?
   a. water
   b. carbon
   c. energy
   d. phosphorus
   e. nitrogen

OMIT _____ 20. Major air masses rise from the Earth's surface at
   a. the equator and 30 degree latitudes.
   b. 30 degree and 60 degree latitudes.
   c. the equator and 60 degree latitudes.
   d. 30 degree latitudes and the poles.

OMIT _____ 21. The soil described as a mixture of sand, silt, clay, and humus is
   a. humus.
   b. sand.
   c. soil.
   d. loam.
   e. silt.

_____ 22. Which gas is increasing in the atmosphere and threatening the world with the greenhouse effect?
  a. carbon dioxide
  b. carbon monoxide
  c. ozone
  d. fluorocarbons
  e. oxygen

_____ 23. Carbon enters the biomass of animal bodies in the form of
  a. carbon dioxide.
  b. carbon monoxide.
  c. carbohydrates.
  d. fossil fuels.
  e. calcium carbonate.

_____ 24. The ultimate source of energy in a terrestrial ecosystem is
  a. the organic matter in all the organisms of the ecosystem.
  b. water.
  c. sunlight.
  d. carbon dioxide.
  e. oxygen.

_____ 25. Biological magnification refers to the
  a. increase in size of animals as they progress through a food chain.
  b. increase in size of organisms as they progress through ecological succession.
  c. increase in the efficiency of energy utilization as organisms progress through a food chain.
  d. accumulation of toxic pollutants as animals pass through a food chain.
  e. increased predators when prey species increase.

_____ 26. Type II survivorship curves
  a. are characteristic of humans and elephants.
  b. typify a population in which all ages have an equal chance of surviving.
  c. indicate a high mortality rate in the very young.
  d. show that very few young are produced, that each is given parental support, and that most individuals live a relatively long life and die of old age.
  e. are typical of annual plants.

_____ 27. Which are nursery grounds for shrimp and many marine forms?
  a. photic zones
  b. benthic zones
  c. estuaries
  d. pelagic zones
  e. limnetic areas

_____ 28. Competitive exclusion is the result of
  a. mutualism.
  b. commensalism.
  c. competition.
  d. predation.
  e. parasitism.

_____ 29. The taiga could best be described as what type of forest?
    a.   deciduous
    b.   thorn
    c.   evergreen coniferous
    d.   broad-leafed
    e.   shrub

_____ 30. Thorough mixing of oxygen and nutrients within a lake occurs in
    a.   winter and summer.
    b.   winter and spring.
    c.   spring and summer.
    d.   spring and autumn.
    e.   summer and autumn.

_____ 31. Four of the five answers listed below are factors that affect population size. Select the exception.
    a.   births
    b.   distribution
    c.   emigration
    d.   immigration
    e.   deaths

OMIT 32. In a lake, the open sunlit water with its suspended phytoplankton is referred to as which zone?
    a.   epipelagic
    b.   limnetic
    c.   littoral
    d.   profundal
    e.   benthic

OMIT 33. The greatest concentration of nitrogen on the planet Earth is found in
    a.   living organisms, including bacteria.
    b.   the atmosphere.
    c.   soil minerals.
    d.   fossil fuels.
    e.   oceans.

_____ 34. Four of the five answers listed below are examples of prey defense. Select the exception.
    a.   display behavior
    b.   chemicals
    c.   camouflage
    d.   albinism
    e.   mimicry

_____ 35. A change in a population that is not related strictly to the size of the population is best described as
    a.   density-dependent.
    b.   density-independent.
    c.   within.
    d.   an S-shaped curve.
    e.   a J-shaped curve.

_____ 36. The organisms that occupy the first trophic level near hydrothermal vents are
   a. detritivores.
   b. chemosynthetic bacteria.
   c. decomposers.
   d. photosynthetic bacteria.
   e. photosynthetic algae.

_____ 37. The relationship between an insect and the plants it pollinates is best described as
   a. mutualism.
   b. competitive exclusion.
   c. parasitism.
   d. commensalism.
   e. all of these

_____ 38. Secondary succession is likely to occur
   a. in a clear-cut deciduous forest.
   b. on an eroded, bare hillside.
   c. in an abandoned field.
   d. in a clear-cut deciduous forest and on an eroded, bare hillside.
   e. in a clear-cut deciduous forest, on an eroded, bare hillside, and in an abandoned field.

_____ 39. The greatest diversity of organisms in lake ecosystems is found in what zone?
   a. profundal
   b. limnetic
   c. thermocline
   d. littoral
   e. sediment

_____ 40. Which of the following combinations of organisms could be expected to survive in isolation from other forms of life available?
   a. producers and decomposers
   b. producers and carnivores
   c. carnivores and decomposers
   d. herbivores and carnivores
   e. herbivores, carnivores, and decomposers

_____ 41. The amount of ultraviolet radiation hitting the Earth's surface is greatly reduced by which gas in the atmosphere?
   a. ozone
   b. oxygen
   c. water vapor
   d. carbon dioxide
   e. nitrogen

_____ 42. Four of the five answers listed below are effects of acid rain. Select the exception.
   a. attacks marble, metals, mortar, and nylons
   b. causes air inversion and pollution events
   c. makes toxic heavy metals more mobile
   d. has different effects in different watersheds
   e. produces sterile lakes

_____ 43. The biome with the greatest diversity of life forms is
   a. tundra.
   b. taiga.
   c. tropical rain forest.
   d. desert.
   e. grassland.

_____ 44. The carrying capacity of an environment is determined by
   a. the net rate of reproduction of the female members.
   b. an S-shaped curve.
   c. the predation rate on the females.
   d. diseases suffered by both sexes.
   e. the sustainable supply of resources it provides.

_____ 45. Eutrophication refers to which change in a lake?
   a. decrease in depth
   b. increase in dissolved nitrogen and phosphorus
   c. increase in species diversity
   d. decrease in nutrient concentrations
   e. increase in temperature

_____ 46. Detritus specifically includes
   a. organic wastes.
   b. toxic materials.
   c. dead and partially decayed material.
   d. living bacteria and fungi.
   e. both organic wastes plus dead and partially decayed material.

_____ 47. A J-shaped growth curve is converted to an S-shaped one
   a. when the parents are past reproductive age.
   b. if the data are plotted in reverse.
   c. when the carrying capacity is reached.
   d. if reproduction stops.
   e. only for fast-growing populations such as bacteria.

_____ 48. At the top of a pyramid of biomass are the
   a. primary producers.
   b. secondary producers.
   c. primary consumers.
   d. secondary consumers.
   e. tertiary consumers.

_____ 49. A tropical biome with grasses as primary producers and scattered trees adapted to prolonged dry spells is known as a
   a. warm desert.
   b. savanna.
   c. tundra.
   d. taiga.
   e. chaparral.

_____ 50. Of the following four islands at the same latitude, the one that possesses the fewest number of species is
a. 1,000 square kilometers and 300 km from the mainland.
b. 3,000 square kilometers and 100 km from the mainland.
c. 100 square kilometers and 3,000 km from the mainland.
d. 300 square kilometers and 1,000 km from the mainland.
e. 300 square kilometer and 100 km from the mainland

_____ 51. Acid rain can occur when
a. carbon dioxide combines with water in the atmosphere.
b. phosphorus-rich water in lakes evaporates to form phosphoric acid.
c. sulfur released in burning fossil fuels combines with water in the atmosphere.
d. excess hydrogen is released into the atmosphere where ozone is formed.
e. all of these

_____ 52. Oligotrophic lakes are characterized by all but which of the following?
a. deep water
b. steep banks
c. abundant oxygen
d. low nutrients
e. high production of algae

_____ 53. Of the following, which must always have a base larger than the other components?
a. pyramid of numbers
b. pyramid of energy
c. pyramid of biomass
d. pyramid of numbers and pyramid of energy.
e. pyramids of numbers, energy, and biomass.

_____ 54. A community differs from an ecosystem in that the former does NOT include
a. unicellular organisms.
b. decomposers.
c. abiotic (nonliving) factors.
d. unicellular organisms and decomposers.
e. unicelluar organisms and abiotic (nonliving) factors.

_____ 55. Most of the energy within an ecosystem is lost
a. when organisms disperse.
b. when organisms die.
c. as a result of metabolism.
d. by organisms at the top of the food web.
e. by herbivores.

_____ 56. Low temperature, short growing seasons, limited rainfall, dwarf trees, and herbaceous plants characterize the
a. tundra.
b. taiga.
c. temperate deciduous forest.
d. grassland.
e. tropical montane forests.

_____ 57. The age structure diagram for rapidly growing populations
    a. is in the form of a pyramid.
    b. is characterized by a large percentage of the population in the postreproductive years.
    c. has a very broad base showing a large number of young.
    d. has about equal distribution between all age groups.
    e. is in the form of a pyramid and has a very broad base showing a large number of young.

_____ 58. Wastes would accumulate and most nutrients would stop cycling if the _____ in the ecosystem died.
    a. protozoans and protistans
    b. bacteria and fungi
    c. flatworms, roundworms, and earthworms
    d. insects
    e. vertebrates

_____ 59. A mountain rain shadow is the
    a. arid area on the windward slope.
    b. wet area on the windward slope.
    c. arid area on the leeward slope.
    d. wet area on the leeward slope.
    e. arid area on both slopes.

_____ 60. Four of the five answers listed below are characteristics of the tropical rain forest. Select the exception.
    a. slash and burn
    b. great diversity
    c. highly stratified
    d. lack of nutrients
    e. large herds of herbivores

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