BIO 301M – Ecology, Evolution, and Society NAME _____
EXAM THREE 5 MAY 2011

1. Chloroplasts and mitochondria are examples of _____.

a.) endosymbionts
b.) eukaryotes
c.) cells
d.) Protista
e.) parasites

2. The following represents which type of species interaction.

Species A	Species B
positive ("+")	neutral ("0")

a.) parasitism
b.) predation
c.) mutualism
d.) commensalism
e.) Mullerian mimicry

3. Fungi and algae that make up lichens are _____.

a.) Batesian mimics
b.) obligate mutualists
c.) social parasites
d.) eusocial
e.) prokaryotes

4. Eucalyptus trees that secrete flammable resins that cause neighboring plants to burn during a wildfire is an example of _____.

a.) mimicry
b.) parasitism
c.) interference competition
d.) exploitative competition
e.) mutualism

5. Competition for resources between members of the same species is termed _____.

a.) intraspecific competition
b.) interspecific competition
c.) innerspecific competition
d.) parasitism
e.) mutualism

6. The interaction between cattle and cattle egrets is best described as _____.

a.) intraspecific competition
b.) isogamy
c.) commensalism
d.) protandry
e.) polyandry

7. The term α_{ij} used in Lotka-Volterra equations is the _____.

a.) rate of growth
b.) number of competitors
c.) population growth rate of competitors
d.) carrying capacity
e.) competition coefficient

8. Beak shape diverges in some species of Galápagos finches when they are present on the same island. Which term best describes this phenomenon?

a.) interference competition
b.) logistic growth
c.) density dependent growth
d.) character displacement
e.) anisogamy

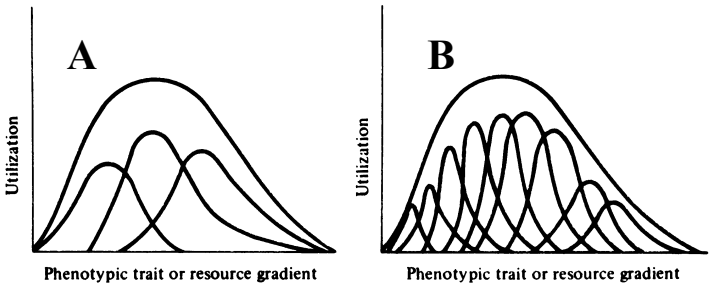
9. In Paine's rocky shore experiment. A species of mussel took over the community when _____.

a.) all of its competitors were removed by the experimenter
b.) a major predator was removed by the experimenter
c.) a sudden drought depleted populations of primary consumers
d.) a large hurricane hit the shore
e.) its food source was removed by the experimenter

10. In Dunham's study of lizards at Big Bend, competition for food resources appeared to increase when _____.

a.) all of its competitors were removed by the experimenter
b.) a major predator was removed by the experimenter
c.) drought depleted populations of primary consumers
d.) a large hurricane hit the area
e.) its food source was removed by the experimenter

11. In the following graph each line underneath the widest curve represents individuals within a population. Which graph represents a population of generalist consumers?



a.) A
b.) B

12. Which of the following population characteristics would you associate with high diversity communities?

a.) more *K*-selected
b.) resource specialized
c.) complex food webs
d.) all of these
e.) none of these

13. About what percent of the water on Earth is salt water?
a.) 10%
b.) 50%
c.) 97%
d.) 99.9%
e.) 30%

14. If you scored 60% on the last two tests in this class and made a perfect 100% on this test and the final, your final course number grade would be _____.
a.) 60
b.) 90
c.) 80
d.) 98
e.) 70

15. A top predator whose presence maintains high species diversity within a community is called _____.

a.) charismatic
b.) a eusocial predator
c.) a keystone predator
d.) an obligate mutualist
e.) conspicuous

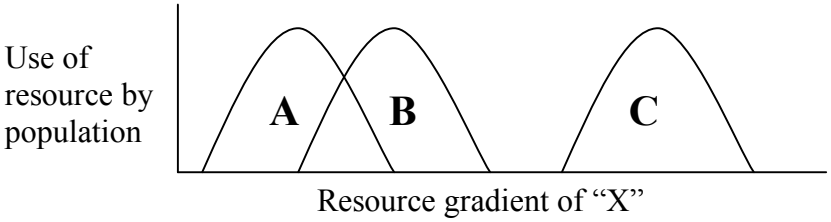
16. Aposematic coloration protects against predation and is used by _____.

a.) copperhead snakes
b.) coral snakes
c.) insects that mimic leaves
d.) hawks
e.) all of these

17. Populations of predatory birds declined sharply in the 1960's mostly because of ____.

a.) being electrocuted by power lines
b.) being hit by airplanes
c.) hunting
d.) the use of DDT pesticides
e.) bird flu

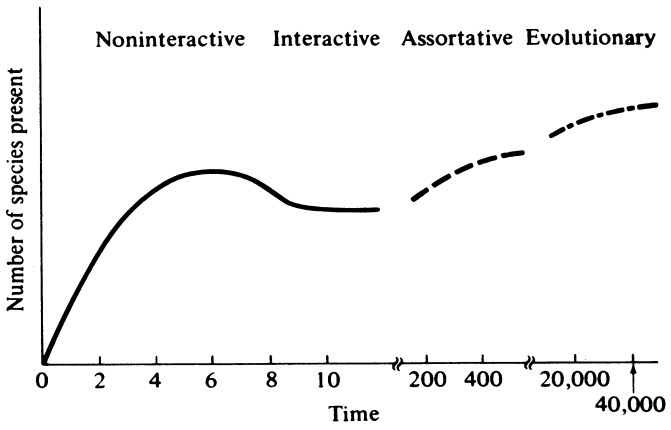
18. In the graph below, which populations have the greatest potential for competition over resource "X"?



a.) A and B
b.) B and C
c.) A and C
d.) all equal

19. Which of the following stages of island re-colonization would you most associate with r-selected population growth?

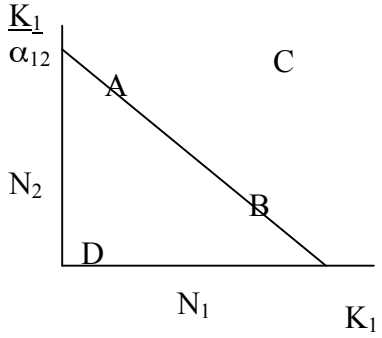
a.) nonintereactive
b.) intereactive
c.) assortative
d.) evolutionary



20. Pseudoreplication is a form of asexual reproduction that occurs in female only populations of haploid individuals.

a.) TRUE
b.) FALSE

21. In this zero-growth isocline graphical model, population 1 is neither increasing nor decreasing at which point(s)?



a.) A
b.) B
c.) C
d.) D
e.) A and B

22. A flu-infected person sneezing, dysentery in Cholera patients, biting in rabid animals are examples of _____.

a.) Batesian mimicry
b.) host altered behavior
c.) prey escape tactics
d.) aspect diversity
e.) altruistic behavior

23. The major histocompatibility complex (MHC) is _____.

a.) the total number of species in an ecosystem
b.) a group of altruistic social organisms
c.) a group of parasites in an organism
d.) the life cycle of a nematode parasite
e.) part of the immune system in most vertebrates

24. An optimal reproductive strategy for a transmissible virus is to infect a host, spread inside the host, and kill the host as fast as possible.

a.) TRUE
b.) FALSE

25. What is this insect?

a.) mosquito
b.) assassin bug
c.) wasp parasitoid
d.) eusocial hymenoptera
e.) fire ant

26. The evolution of a diversity of escape tactics among prey that share a common predator is termed _____.

a.) niche concept
b.) adaptive suite
c.) aspect diversity
d.) eusociality
e.) parasitism

27. Myxoma virus _____.

a.) is deadly to humans and other apes
b.) is transmitted between humans and apes
c.) killed many Australians in the 19th century
d.) was used to control Australian rabbit populations
e.) all of these

28. Which of the following is NOT a characteristic of the ant and bullhorn acacia tree mutualistic relationship?

a.) ants defoliate their host acacia tree each spring and return the following winter
b.) ants eat nectar exuded from acacia tree
c.) ants live inside hollowed out thorns of acacia trees
d.) ants defend acacia trees from other herbivores

29. Approximately _____ of the number of cells on your body are your own.

a.) 10%
b.) 50%
c.) 90%
d.)100%
e.) 25%

30. It took rabbit populations _____ to spread from the east to west coast of Australia.

a.) three centuries
b.) three days
c.) 50,000 years
d.) all of the last decade
e.) less than half a century

31. Every natural ecosystem is in a perfect equilibrium state. All organisms are optimally fit to acquire the most resources available and to convert those resources into energy used for growth and reproduction.

a.) TRUE
b.) FALSE

32. Plant material that is not consumed by animals is mostly consumed by _____.

a.) omnivores
b.) insects
c.) other plants
d.) decomposers
e.) insectivores

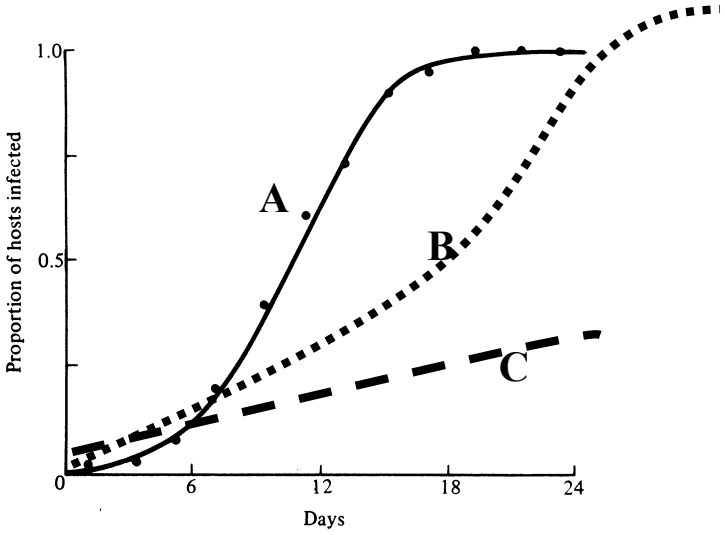
33. The approximate percentage of energy utilized by primary carnivores relative to the total energy produced by primary producers is (given 10% transfer efficiency per level) _____.

a.) 100%
b.) 90%
c.) 10%
d.) 1%
e.) 0.00001%

34. The following describes a **four trophic level** food web.

a.) parasite on wolf, wolf that eats rabbits, rabbits that eat carrots
b.) bear that eats fish, berries, and leaves
c.) deer, sheep, and bison that eat grass
d.) rabbits that eat plants and two kinds of decomposers that eat dead plant material
e.) worm parasites in killer whales, killer whales that eat sharks, sharks that eat sea turtles, sea turtles that eat jelly fish, jelly fish that eat zooplankton, zooplankton that eat phytoplankton

35. If the three lines in this graph represent the same infectious disease with the same virulence, which line is most likely represents spread through a more crowded population?

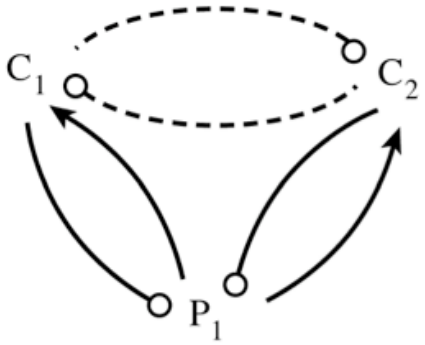


a.) A
b.) B
c.) C

36. Evidence indicates that Galápagos finch species have evolved variation in beak shape to adapt to varying food sources.

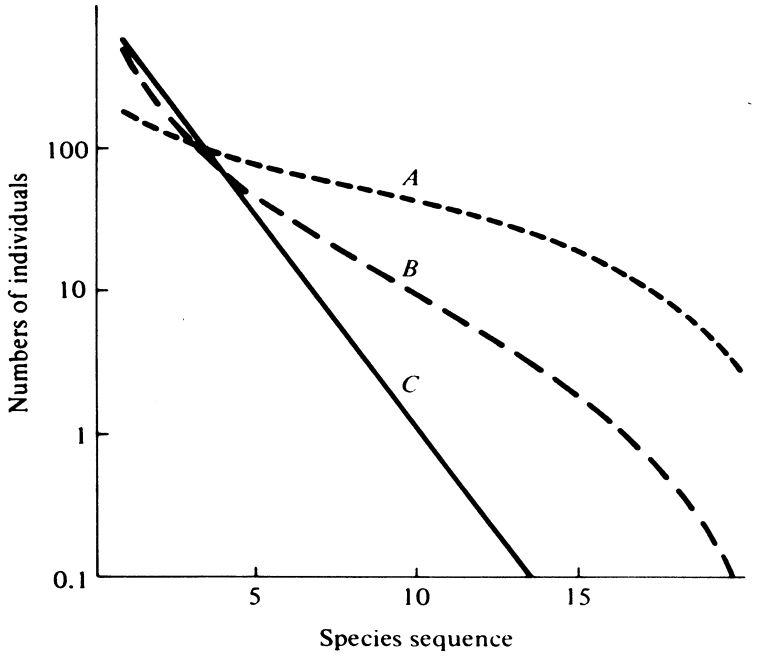
a.) TRUE
b.) FALSE

37. If consumer 1 (C_1) in the following figure were to increase overall consumption of P_1, less P_1 will be available for consumption by C_2. This indirect interaction between two consumers of a single resource type is described as _____.



a.) trophic cascade
b.) facilitation
c.) exploitation competition
d.) apparent competition
e.) interference competition

38. In the following graph each line represents a community of many species, which community has the highest equitability or evenness?



a.) A
b.) B
c.) C
d.) all are equal

39. Ant colonies that cultivate fungi are an example of _____.

a.) mutualism
b.) eusociality in ants
c.) symbiosis
d.) all of these
e.) none of these

40. Robert May used mathematical models to simulate species interactions in order to understand _____.

a.) phylogenetic histories
b.) evolution of new traits
c.) mechanisms of natural selection
d.) computational limitations
e.) community stability

41. Trophic level interactions in pacific coastal communities cause _____ when sea otter populations are denser.

a.) sea urchin population to increase in density
b.) kelp forest to proliferate
c.) latitudinal gradients in species diversity
d.) seedling rings
e.) interference competition

42. The idea that species lineages living at high latitudes have had less to time to diversify since the last ice age is the _____.

a.) evolutionary time hypothesis of latitudinal gradients in species diversity
b.) ecological time hypothesis of latitudinal gradients in species diversity
c.) disturbance hypothesis of latitudinal gradients in species diversity
d.) competition hypothesis of latitudinal gradients in species diversity
e.) nutrient mosaic hypothesis

43. Darwin observed highest plant diversity in patches of his lawn that he _____.

a.) fertilized
b.) mowed every day
c.) mowed once a month
d.) never mowed
e.) watered

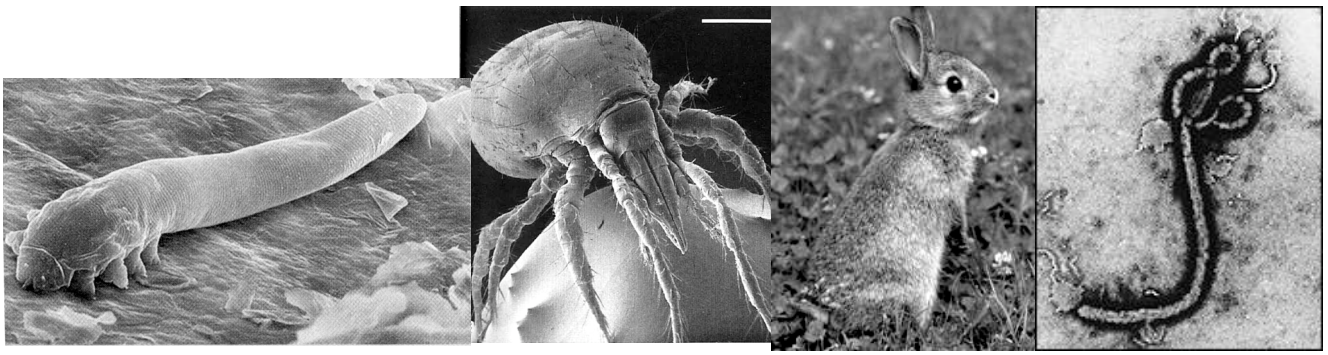
44. Malaria is caused by mosquitoes _____.

a.) injecting toxins into the bloodstream
b.) transmitting a protozoan parasite into the bloodstream
c.) sucking too much blood out of people
d.) that make people crazy from itching all over
e.) with a deadly virus

45. What is *Dracunculus mediensis*?

a.) a lizard
b.) a trematode
c.) a nematode
d.) a dragon
e.) none of the above

46. Which organism poses the most danger to you?



A **B** **C** **D**

a.) A
b.) B
c.) C
d.) D

47. Which organism from the previous question is on your eyebrows right now?
a.) A
b.) B
c.) C
d.) D

48. The relationship between acacia ants and the acacia tree is an example of _____.
a.) ant herbivory on the tree sap
b.) interference competition between ants and other herbivores
c.) mutualism between ant and tree
d.) all of these
e.) none of these

49. Your body is _____ percent water.
a.) 1
b.) 2-10
c.) 50
d.) 60-70
e.) 90-100

50. The Haber-Bosch process _____.
a.) genetically engineers crop plants for a higher yield
b.) provides pest resistance for crop plants
c.) produces clean electricity through nuclear fission
d.) produces ammonia from atmospheric gases
e.) produces energy through photosynthesis