

### Practice questions for the Ecology midterm

1. All of the following statements about the logistic model of population growth are true *except*:
  - a) It fits an 's' shaped curve
  - b) It incorporates the concept of a carrying capacity
  - c) It describes changes in population size over time
  - d) It predicts an equilibrium where birth rates will equal death rates
  - e) The carrying capacity is determined by the action of predators
2. A biologist reports that at Mount Meru he observed 21 wildebeest per square kilometer. What is the biologist measuring?
  - a) Dispersion
  - b) Carrying capacity
  - c) Range
  - d) Density
  - e) Competition
3. Species extinction rates are higher on small islands because:
  - a) Small islands are usually further from the mainland
  - b) Small islands are harder for dispersers to find
  - c) Average population sizes are smaller on small islands
  - d) Small islands are more polluted
  - e) Evolution occurs faster on small islands
4. Which of the following would be most likely to affect population growth of a species in a density dependent manner?
  - a) Drought
  - b) Floods
  - c) Disease
  - d) Frost
  - e) Earthquakes
5. An introduced species is found to have a fundamental niche identical to that of a native species. A possible outcome is:
  - a) one of the species will be driven to extinction as they compete
  - b) evolutionary change will cause their niches to diverge
  - c) they will exhibit distinct, and different, realized niches and coexist
  - d) the introduced species may become extinct for reasons unrelated to competition
  - e) all of the above
6. As a habitat patch gets smaller which of the following statements is *incorrect*?
  - a) The patch can support fewer species.
  - b) The patch is influenced to an increasing degree by edge effects.
  - c) Extinction rates increase.
  - d) Immigration rates increase.

7. Which of the following is not an assumption of the logistic equation:
- a) The effect of population size on the rate of increase is instantaneous.
  - b) All individuals reproduce equally.
  - c) There is no immigration or emigration.
  - d) The carrying capacity is proportional to the population density.
8. All of the following statements about communities are correct *except*:
- a) Closely related species may be able to coexist if there is at least one significant difference in their niches.
  - b) Keystone predators reduce diversity in a community by holding down or wiping out prey populations.
  - c) Mutualism is an important biotic interaction that occurs in communities.
  - d) Disturbances may increase the diversity in a community.
  - e) Disturbances may decrease the diversity in a community
9. An r-selected, semelparous organism living in a frequently disturbed environment is likely to:
- a) produce many small offspring only once
  - b) produce a few large offspring only once
  - c) produce many small offspring more than once
  - d) produce a few large offspring more than once
10. The pattern of dispersion for a certain species of kelp is clumped. At different spatial scales, the pattern of dispersion for a certain species of snail that only lives on this kelp could be:
- a) uniform
  - b) clumped
  - c) random
  - d) any of the above
11. The proximate causes of behavior are interactions with the environment, but behavior is ultimately shaped by:
- a) hormones
  - b) evolution
  - c) sexuality
  - d) pheromones
  - e) the nervous system
12. Approximately how many kg of carnivore production can be supported by a field plot containing 2000 kg of plant material?
- a) 20,000
  - b) 2,000
  - c) 200
  - d) 20
  - e) 2