



UNIVERSITY OF SWAZILAND
Faculty of Health Science

Department of Environmental Health
Sciences

Final Examination 2009

Title of paper: ENVIRONMENTAL ECOLOGY 1

Course code: EHS 555

Time allowed: 2 hours

Marks allocation: 100 Marks

Instructions:

- 1) Question One and Two are Compulsary
- 2) Answer ANY FOUR (4) questions
- 3) Each question is weighted 25 marks
- 4) Write neatly and clearly
- 5) Begin each question on a separate sheet of paper

This paper is not to be opened until the invigilator has granted
permission

QUESTION ONE

1. The most important factors determining the climate of an area are
 - a. temperature and ocean currents
 - b. precipitation and light
 - c. temperature and precipitation
 - d. light and temperature
2. Large ecological regions with characteristic types of natural, undisturbed ecological communities are called
 - a. Ecosystems
 - b. Communities
 - c. Biomes
 - d. Populations
3. You are going on a scientific expedition from the equator to the North Pole. As you leave the coniferous forest behind, you anticipate next exploring
 - a. Gases captured in the ice
 - b. The fall leaves of New England
 - c. Patterns of cone design in coniferous trees
 - d. The role of lichens and mosses in boggy ecosystems
4. The biome most likely to be found on the top of a very tall tropical mountain is the
 - a. desert
 - b. tundra
 - c. grassland
 - d. temperate deciduous forest
5. Trees of wet tropical rain forest tend to be
 - a. succulent
 - b. broad-leaf evergreen plants
 - c. broad-leaf deciduous plants
 - d. coniferous evergreen plants
6. Which of the following are examples of deciduous plants?
 - a. Maples and oaks
 - b. Algae and seaweed
 - c. grasses
 - d. Pines and cedars
7. An explorer seeking the driest place on Earth should be looking in a
 - a. Tundra desert
 - b. Savanna desert
 - c. Tropical desert
 - d. Temperate desert

8. Which of the following is not characteristic of some desert plants?
- Widespread, shallow root systems
 - Deep root systems
 - Large leaves that droop in the bright sunlight
 - Succulent leaves or stems
9. Which of the following is not the characteristic of the kangaroo rat?
- Excretes dry feces
 - Excretes almost solid urine
 - Is an imported pest from Australia
 - Is a nocturnal animal that stays in its burrow throughout the day
10. If you were exploring a desert ecosystem, which of the following species would you least expect to find?
- Creosote bush
 - Maple tree
 - Saguaro cactus
 - Prickly pear
11. All of the following organisms would be considered part of the benthos except
- Cod
 - Lobster
 - Oysters
 - Sand worms
12. In lakes, the nutrient-rich water near the surface layer is called the
- Limnetic zone
 - Benthic zone
 - Littoral zone
 - Profundal zone
13. Flying foxes are now recognized as a
- Thriving species
 - Alien species
 - Native species
 - Keystone species
14. Flying foxes contribute to the economy for the role they play in the production of ----- except,
- Tannins and dyes
 - Animal fodder
 - Fruits and medicines
 - Hunted for their horns

15. Of the following, ecosystem structure is least likely to include
- Species abundance
 - Species diversity
 - Physical appearance
 - Biochemical reactions in the intestines of detritus feeders
16. What does richness refer to
- The number of individuals of each species
 - The number of different species
 - The number of edge effects
 - The number of ecotones in an area
17. Based on the theory of island biogeography, you would predict that large islands near the mainland would have relatively
- High immigration and low extinction rates
 - High immigration and high extinction rates
 - Low immigration and low extinction rates
 - Low immigration and high extinction rates
18. Species that normally live and thrive in a particular ecosystem are known as
- Nonnative species
 - Native species
 - Keystone species
 - Specialist species
19. Which of the following statements about amphibians is false?
- The oldest of today's amphibians were living as long as 150 million years ago
 - Amphibians are important indicator species
 - Amphibians eat many insects, second in number only to birds
 - Amphibians are experiencing sharp population declines in a variety of habitats
20. Birds and trout make good
- Nonnative species
 - Native species
 - Keystone species
 - Indicator species
21. Which of the following predators avoid competition by being active at different times?
- Lions and tigers
 - Hummingbirds and bees
 - Hawks and owls
 - Zebras and antelopes

22. The relationship between fire ants and native ant populations is best described as
- Mutualism
 - Commensalisms
 - Intraspecific competition
 - Interspecific competition
23. The obvious relationship demonstrated by food chain is
- Competition
 - Predation
 - Parasitism
 - Mutualism
24. A relationship in which a member of one species obtains its nourishment by living on, in, or near a member of another species over an extended time is best labeled as
- Competition
 - Predation
 - Mutualism
 - Parasitism
25. You are a field ecologist. In an ecosystem under study, you observe turkeys and gray squirrels. Which stage of succession are you likely to report for this ecosystem?
- Early succession
 - Mid-succession
 - Late-succession
 - Mature succession

TOTAL 25 MARKS

QUESTION TWO

1. What key factors determine the earth's climate? (2 marks)
2. List the 13 major types of biomes found on earth (13 marks).
3. Name the two major types of aquatic life zones and list the main kind of organisms found in these zones? (7 marks)
4. What are barrier islands and why are they important? (3 marks)

TOTAL 25 MARKS

QUESTION THREE

Draw a neatly labeled drawing of the water cycle at Mbabane and explain how humans have influenced this cycle (25 marks)

TOTAL 25 MARKS

QUESTION FOUR

1. What is biomass? (2 marks)
2. Draw the pyramids of numbers and of energy and explain how the ten percent rule of energy transfer in trophic levels work (10 marks)
3. Describe ecosystem services, and explain how do they affect the sustainability of the earth's life-support systems? (13 marks)

TOTAL 25 MARKS

QUESTION FIVE

1. Describe evolution (2 marks)
2. Explain how has evolution led to the current diversity of organisms on the earth (10 marks)
3. If you could, would you exterminate all cockroach species (1 mark)? What might be some of the ecological consequences of doing what you have chosen? (12 marks)

TOTAL 25MARKS