UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

(BSC) IN ENVIRONMENTAL HEALTH

SECOND SEMESTER FINAL EXAMINATION PAPER 2009

TITLE OF PAPER	:	ENVIRONMENTAL ECOLOGY II
COURSE CODE	:	EHS 556
DURATION	:	TWO HOURS
MARKS	:	100
INSTRUCTIONS	:	ANSWER ONLY FOUR QUESTIONS
	:	EACH QUESTION CARRIES 25 MARKS
	:	QUESTIONS ONE AND TWO ARE COMPULSARY
	:	NO QUESTION PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM
	:	BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR

QUESTION ONE

1. The population change in a particular year can be calculated by
    a. (deaths + emigration – (births + immigration)
    b. (births + immigration) – (deaths + emigration)
    c. (deaths + immigration) – (births + emigration)
    d. (births + emigration) – (deaths + immigration)

2. The crude birth rate is the number of live births per -------- persons in a given year.
    a. 50
    b. 100
    c. 500
    d. 1000

3. Which of the following would contribute the greatest number to total population size in one year?
    a. A country of 1.5 million people with a growth rate of 3%
    b. A country of 5 million people with a growth rate of 2.5%
    c. A country of 100 million people with a growth rate of 2%
    d. A country of 500 million people with a growth rate of 1.5%

4. The most useful measure of fertility for projecting future population change is the
    a. Replacement – level fertility.
    b. One – year future fertility level.
    c. Total fertility rate.
    d. Birth rate.

5. Which of the following would decrease the likelihood of a couple having a child?
    a. The child is part of the family labor pool.
    b. Contraceptives are not available.
    c. They have no public or private pension.
    d. Women have many opportunities to participate in the work force.

6. Two useful indicators of overall health in a country or region are
    a. Birth rate and death rate.
    b. Replacement-level fertility rate and total fertility rate.
    c. Life expectancy and infant mortality rate.
    d. Life expectancy and death rate.

7. The age structure of a population is the number or percentage of
    a. Males and females age 14 years or under.
    b. Male and females age 15 to 44.
    c. Males age 15 to 44.
    d. Persons of each sex at each level.

8. Which of the following leads to an increase in biodiversity?
    a. Habitat degradation.
    b. Phosphate pollution of streams.
    c. Elimination of exotic vegetation.
    d. Acidic deposition.

9. You are an ecologist studying alligators in the outback. You find that the population of alligators is so depleted that organisms that depend on alligator holes for their survival are also hurting. You would most likely label the alligators
    a. Threatened.
    b. Endangered.
    c. Locally extinct.
    d. Ecologically extinct.

10. The blue whale is extinction prone for all of the following reasons except
    a. Low reproduction rate.
    b. Feeding at the top trophic level.
    c. Specialized feeding habitats
    d. Fixed migratory patterns.

11. The greatest species terminator is habitat destruction of
    a. Coral reefs.
    b. Grasslands.
    c. Tropical forests.
    d. Deserts.

12. You are studying species diversity in some islands in the Indian Ocean. Which island would you expect to have the most number of species?
    a. A large island near the mainland.
    b. A large island far removed from other sites.
    c. A medium-sized island in the middle of an island chain.
    d. A small island far removed from other sites.

13. CITIES is
    a. A treaty controlling the international trade in endangered species.
    b. A set of regulations controlling the introduction of exotic species.
    c. A pact that supports critical ecosystems that support wildlife.
    d. An international organization dedicated to the preservation of endangered species.

14. Seed gene banks are
    a. Refrigerated environments with low humidity.
    b. Refrigerated environments with high humidity.
    c. Warm environments with low humidity.
    d. Warm environments with high humidity.

15. Captive breeding programs in zoos
    a. Eliminate the need to preserve critical habitats.
    b. Can be used for most species except mammals.
    c. Increase the genetic variability of species.
    d. Require the captive population to number between 100 and 500.

16. Wildlife managers have to make plans based on all of the following principles except
    a. Ecological succession.
    b. Food and habitat requirements for each species.
    c. Laws of thermodynamics.
    d. Number of potential hunters.

17. The most common use of trees in Swaziland is as
    a. Pulp in paper production.
    b. Lumber for building.
    c. Fuel wood.
    d. Raw material in the manufacture of various synthetics.

18. Aquatic ecosystems provide all of the following services except
    a. Pharmaceuticals.
    b. Climate moderation.
    c. Flood control
    d. Nutrient cycling

19. Where is the most of the marine biodiversity found?
    a. Deep ocean floor.
    b. Salt flats.
    c. Coral reefs.
    d. Tide pools.

20. What are cetaceans?
    a. Whales and porpoises.
    b. Sea turtles.
    c. Seals and walruses.
    d. Penguins.

21. Which of the following devices has saved many thousands of sea turtles from shrimp trawlers?
    a. Gil nets.
    b. Shrimp rakers.
    c. Turtle exclusion devices.
    d. Sonic devices that scare turtles away.

22. The best long-rage strategy to reduce beach erosion is
    a. Building groins and seawalls.
    b. Preventing development on beach areas or allowing development only behind protective dunes.
    c. Importing sand.
    d. Extensive building on barrier beaches.

23. What is considered the single greatest threat to biodiversity in Swaziland?
    a. Dumping of raw human sewage.
    b. Alien species.
    c. Poaching.
    d. Pollution from industrial sites.

24. The urban growth occurring in the developing countries is
    a. Caused by both migration and natural increase.
    b. Generally well planned and orderly.
    c. Generally offset by migration to rural areas.
    d. Helping to eliminate urban poverty.

25. A sustainable city has a ---------- metabolism
    a. No.
    b. Linear.
    c. Exponential.
    d. Circular.

TOTAL 25 MARK

QUESTION TWO

1. Explain giving examples why a population's density can affect how rapidly it can grow or decline, but some population control factors are not affected by population density. (9 marks)
2. The populations of different species vary in how long individual members typically live. Discuss this statement using survivorship curves. (6 marks)
3. Given the current environmental conditions, if you had a choice, would you rather be an r-strategist or a k-strategist? Explain your answer. (10 marks)

TOTAL 25 MARKS

QUESTION THREE

1. Death rates have declined worldwide. Discuss the factors that have lead to this. (18 marks)
2. Explain how empowering women in Swaziland could help control population growth. (7 marks)

TOTAL 25 MARKS

QUESTION FOUR

1. The recent wild fires in Swaziland have caused misery, loss of property, biodiversity, and death. However, fire can be used to manage forest resources. Discuss how this can be achieved in Swaziland. (13 marks)
2. Briefly explain why we should care about biodiversity in Swaziland and how have we affected the country's biodiversity. (12 marks)

TOTAL 25 MARKS

QUESTION FIVE

1. Would you consider Swaziland, a land locked country, as part of the Indian Ocean coastal area? Support your answer. (10 marks)
2. Why is it difficult to protect aquatic biodiversity? (8 marks)
3. Motivate with examples the protection of endangered and threatened marine species using legal and economic approaches. (7 marks)

TOTAL 25 MARKS