UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

(BSC) IN ENVIRONMENTAL HEALTH

SECOND SEMESTER FINAL EXAMINATION PAPER MAY 2010

TITLE OF PAPER	:	ENVIRONMENTAL ECOLOGY11
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

Question one is a multiple choice. Answer by writing the letter to the correct answer besides the number of the question e.g. 26. C.

1. 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.

2. 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.

3. 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.

4. 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)

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

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. 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.

14. 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.

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

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

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

18. 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.

19. 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.

20. 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.

21. 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.

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

23. 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%

24. 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.

25. 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

TOTAL 25 MARK

QUESTION TWO

1. What is environmental resistance? (1 mark)
2. Explain how does it affect populations? (5 marks)
3. Draw and label an exponential (J) and logistic growth (S) curves and indicate the biotic potential, environmental resistance, and carrying capacity and explain the carrying capacity (7 marks).
4. Explain why abiotic factors that influence population growth tend to be density-independent, while biotic factors that regulate population growth tend to be density-dependent (12 marks)

TOTAL 25 MARKS

QUESTION THREE

1. Define;
    a. Crude birth rate (2 marks),
    b. Total fertility rate (2 marks),
    c. Crude birth rate (2 marks), and
    d. Zero population growth (2 marks).
2. What is dependency ratio, and how might it affect Swaziland in the future (7 marks)?
3. Family planning allows couples to determine the number and spacing of their children. Discuss the traditional and modern birth control methods (10 marks).

TOTAL 25 MARKS

QUESTION FOUR

1. Define the following in relation to biodiversity management;
    a. What is biodiversity? (2marks)
    b. What are the two main reasons for extinction of species? (2 marks)
    c. List four examples of human activities that threaten species (4 marks); and
    d. What and keystone species (2 marks)

2. You are the Chief Executive Officer (CEO) of a fishing industry based in Maputo Mozambique. If you continue to catch many species they will quickly become economically (locally) extinct if not biologically exterminated. On the other hand, there are few jobs in your village which was relying very much on the fish industry for jobs. In addition, the social welfare fund "*Bo Gogo Fund*" will barely keep the people of your village alive. As the CEO of this industry coupled with your environmental health management training, what would you do (15 marks)?

TOTAL 25 MARKS

QUESTION FIVE

1. What is restoration ecology? (2 marks)
2. List five principles and five goals of ecosystem management (10 marks)
3. Some environmentalists often worry that the science of restoration ecology may give us the arrogant attitude that we can do anything we want now because we can repair the damage later. How would you respond to this concern? Advance the debate between the preservationists and restorationists (13 marks)

TOTAL 25 MARKS