

# **UNIVERSITY OF SWAZILAND**

**Faculty of Health Sciences**

**(BSC) IN ENVIRONMENTAL HEALTH**

**SECOND SEMESTER FINAL EXAMINATION PAPER 2013**

**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 COMPULSORY
- : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER

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

### **QUESTION ONE (25 MARKS)**

1. You have just been appointed by the Matsapha Town Board as an environmental manager. Your assignment is to control land use in the town of Matsapha. Which one of the following strategies would you apply?
  - a. Not requiring building permits
  - b. Zoning
  - c. Providing unlimited services
  - d. Encouraging development around the Lushuswana River, Sgodvweni, Eteni, the Logoba and any other open areas in the town's jurisdiction.
  
2. 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
  
3. Economic rewards and penalties in population control strategies work best if they
  - a. Push rather than nudge people to have fewer children
  - b. Are retroactive
  - c. Reinforce existing customs and trends
  - d. Decrease a poor family's income or land
  
4. Of the following forms of birth control, the most effective is
  - a. Total abstinence
  - b. Condom (good brand)
  - c. Hormonal implant
  - d. Diaphragm plus spermicide
  
5. Two useful indicators of the 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
  
6. Which of the following leads to an increase in biodiversity?
  - a. Habitat degradation
  - b. Phosphate pollution of streams
  - c. Elimination of exotic vegetation
  - d. Acid deposition
  
7. An ecologist is most likely to say that the passenger pigeon is
  - a. Endangered
  - b. Locally extinct
  - c. Ecologically extinct
  - d. Biologically extinct

8. An endangered species is any species that can
  - a. Undergo alteration of its genetic traits
  - b. Become rare within the next century
  - c. Soon become extinct in all or part of its range
  - d. Eventually become threatened or rare
  
9. All of the following characteristics would make a species more prone to extinction except
  - a. Low population density
  - b. Small body size
  - c. Specialized niche
  - d. Low reproductive rate
  
10. Fruit-eating bats on many tropical islands are
  - a. Keystone species
  - b. Alien species
  - c. Indicator species
  - d. Foundation species
  
11. When we visited Hlane Game reserve, the tourist guide told us that a single male Lion living to the age of 7 years is worth E520,000 as a
  - a. Sporting trophy
  - b. Tourist attraction
  - c. Functioning component of the ecosystem
  - d. Specimen to be sold alive to a zoo in South Africa
  
12. People in Swaziland regard wildflowers as beautiful, and this is evidence that wildflowers have ----- importance
  - a. Economic
  - b. Aesthetic
  - c. Medical
  - d. Ecological
  
13. An environmentalist is least likely to go on an ecotour which
  - a. Takes precautions to reduce the tour's impact on the local ecosystem
  - b. Contributes a high percentage of the tour company's profits to local environmental projects
  - c. Hires naturalists and local people
  - d. Provides lodging in internationally owned lodging
  
14. People who believe that wild species have an inherent right to exist generally believe that species have
  - a. Economic value
  - b. Extrinsic value
  - c. Intrinsic value
  - d. Utilitarian value

15. You are an environmentalist studying species diversity in some islands in the Indian Ocean. Which island would you expect to have the most number of species?
- A large island near the main land
  - A large island far removed from other sites
  - A medium-sized island in the middle of an island chain
  - A small island far removed from other islands
16. In the course of the semester, we said that as a result of the global ban on elephant ivory sales, the elephant population increased in Zimbabwe and elsewhere in Africa and elephants started encroaching to people's farms and even threatening or killing the people. Which of the following ecological principles best describes this event?
- We lose quantity of energy every time an energy transformation takes place
  - Public resources will be overused by a few
  - We can never do just one thing
  - Habitat loss most severely effects the top predators
17. The introduction of nonnative species often results in unforeseen consequences. This experience indicates that when introducing nonnative species, we would be well-advised to apply the
- First law of thermodynamics
  - Law of common property
  - Precautionary principle
  - Law of supply and demand
18. You are tasked with managing and sustaining a forest resource in Swaziland. You decide to use the "even-aged management strategy". What would be your goal in using this strategy?
- Sustenance of maximum biological diversity
  - High-quality timber production
  - A long-term, ecologically oriented approach
  - Production of maximum return on a short-term basis
19. If you were to select the "selective cutting management strategy" in question 18 above, what would be your goal?
- Encouraging crowding of trees
  - Encouraging growth of more mature trees
  - Maintaining an uneven-aged stand of trees of different species, ages, and sizes
  - Requiring a special seed-distribution plan.

20. Transporting of live or dead wild animal across borders without permit is prohibited by
- CITIES
  - The CBD
  - The endangered species Act
  - The fauna Act
21. During the class educational tour to Maputo, Mozambique, we learnt that the major cause of species loss in marine ecosystems is ----- except
- Overfishing
  - Habitat destruction
  - Pollution
  - Cruise ships
22. When fish populations are temporarily reduced due to overfishing, they are said to be
- Locally extinct
  - Commercially extinct
  - Economically extinct
  - Biologically extinct
23. During the class educational tour to Mtunzini, we learnt that, “mitigation banking” can accomplish one of the following -----
- Provides layers fees in lawsuits over wetlands development
  - Allows wetland areas to be traded for forest areas development
  - Requires all wetlands to be protected from development
  - Allows wetlands to be developed as long as an equal area of wetland is created or restored
24. The population change in a particular year can be calculated by
- $(\text{deaths} + \text{emigration}) - (\text{births} + \text{immigration})$
  - $(\text{births} + \text{immigration}) + (\text{deaths} + \text{emigration})$
  - $(\text{deaths} + \text{immigration}) - (\text{births} + \text{emigration})$
  - $(\text{births} + \text{emigration}) - (\text{deaths} + \text{immigration})$
25. Which of the following would contribute the greatest number to total population size in one year?
- A country of 1.5 million people with a growth rate of 3%
  - A country of 5 million people with a growth rate of 2.5%
  - A country of 100 million people with a growth rate of 2%
  - A country of 500 million people with a growth rate of 1.5%

**TOTAL 25 MARKS**

## **QUESTION TWO**

1. In biodiversity conservation and management, what does the abbreviation HIPPOC mean? (6 marks).
2. Explain how each factor in this abbreviation affect the sustainability of biodiversity. (19 marks).

**TOTAL 25 MARKS**

## **QUESTION THREE**

1. Why do we need a system approach to study the environment? (5 marks).
2. In this course, we learnt that we are living in a world that is facing environmental crisis. Explain the challenges of solving the environmental crisis we are facing today. (6 marks).
3. Describe the ecological and economic values of wetlands and elaborate on how they are threatened by human activities. (14 marks).

**TOTAL 25 MARKS**

## **QUESTION FOUR**

- a. In tabular forms, differentiate between
  - i. A city and a village. (4 marks).
  - ii. A rural area and an urban area. (4 marks).
  - iii. A slum and a shantytown. (4 marks).
- b. Based on the concepts learned in this course, describe some ways that Mbabane city could be redesigned to become more ecologically sound, socially just, and culturally amenable. (13 marks).

**TOTAL 25 MARKS**

## **QUESTION FIVE**

- a. In tabular forms, evaluate the pressures for and against family planning in **traditional and modern societies**. (15 marks).
- b. Evaluate the traditional birth control methods and prepare a personal family planning agenda based on modern family planning methods. (10 marks).

**TOTAL 25 MARKS**