

UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

(BSC) IN ENVIRONMENTAL HEALTH

SECOND SEMESTER FINAL EXAMINATION PAPER MAY 2012

TITLE OF PAPER : ENVIRONMENTAL ECOLOGY 2

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 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. Fragmenting one large park or nature reserve such as Mlawula into many small parks with human habitation in between them is most likely to lead to which of the following?
 - A. Reduction in species diversity
 - B. Stabilization of microclimates
 - C. Decrease in the proportion of edge habitat
 - D. Increase in gene flow within species
2. The current World population has passed the ----- mark.
 - A. 5 billion
 - B. 7 billion
 - C. 3 billion
 - D. 9 billion
3. Which of the following is most likely to result from destruction of wetlands surrounding a river?
 - A. A decreased sediment load in the river
 - B. A decreased level of pollutants such as nitrates in the river
 - C. An increased diversity of aquatic species in the river
 - D. An increased frequency of flooding of the river valley.
4. Which of the following is most likely to be the direct result of lack of genetic diversity in a food crop such as maize?
 - A. Decreased kernel size
 - B. Decreased potential yield
 - C. Increased susceptibility to plant disease
 - D. Increased resistance to pests
5. Overgrazing of public land by privately owned livestock is an example of the
 - A. Tragedy of the commons
 - B. Competitive exclusion principle
 - C. Ten per cent rule
 - D. Precautionary principle
6. In general, which of the following is the best long-term method of preventing extinction of species
 - A. Breeding endangered species in captivity
 - B. Protecting the habitat of endangered species
 - C. Removing predators from areas that contain endangered species
 - D. Providing food to endangered species in the wild

7. Which of the following is most likely to occur in a forested region that has been clear-cut?
- A. The concentration of nitrates in streams running through the region will increase
 - B. The average depth of topsoil will increase
 - C. Volumes of runoff after rains will decrease
 - D. The frequency of landslides will decrease
8. In human population undergoing the demographic transition, which of the following generally decreases first?
- A. Birth rate
 - B. Death rate
 - C. Life expectancy
 - D. Average family size
9. High rates of species extinction caused by human activities have taken place at which of the following times in the Earth's history? I. at the end of the Permian Period, II. At the end of the Cretaceous Period, III. During recent times.
- A. I only
 - B. II only
 - C. III only
 - D. I and II only
10. 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
11. An endangered species is any species that can
- A. Undergo alteration of its genetic traits
 - B. Become rare within the next century
 - C. Eventually become threatened or rare
 - D. Soon become extinct in all or part of its range
12. In this course, we learnt that 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 habitats
 - D. Fixed migratory patterns

13. Bioinformatics is a science that includes
- A. Providing means for communicating biological information such as the internet
 - B. Building computer databases to organize and store useful biological information
 - C. Providing computer tools to find, visualize, and analyze biological information
 - D. Providing computer means to detect and control wastewater pollution
14. Which of the following is not one of the three major approaches to protecting wild species?
- A. The species approach
 - B. The ecosystem approach
 - C. The wildlife management approach
 - D. The precautionary approach
15. Which of the following statements is false?
- A. Fire may help to release minerals locked up inside organisms
 - B. Fire is universally a dangerous and destructive force that reduces productivity
 - C. Fire may occur periodically without the interference of humans
 - D. Surface fires may be prescribed to reduce the chance of serious fires
16. Monoculture forestry has led to all of the following except
- A. Suppression of ecologically important natural fires
 - B. Draining of wetlands
 - C. Loss of soil nutrients
 - D. Increased biodiversity
17. The greatest destruction of tropical forest is taking place in
- A. Central Africa
 - B. North America
 - C. South America
 - D. South East Asia
18. For Swaziland to succeed with its conservation plans,
- A. Population growth have to be slowed down
 - B. Land will need to be turned over to the government
 - C. Management must be made more efficient and centralized
 - D. Ecotourism must be banned
19. The reintroduction of the big five game animals namely the Lion, the Elephant, The Leopard, the Buffalo and the Rhino in Swaziland had been supported by

- A. All the Swazi population
 - B. Environmentalists
 - C. Game rangers
 - D. Ranchers
20. Which of the following are approaches to restore ecosystems except
- A. Rehabilitation
 - B. Secondary succession
 - C. Replacement
 - D. Creating artificial ecosystems
21. Where is most of the marine biodiversity found?
- A. Deep ocean floor
 - B. Estuaries
 - C. Coral reefs
 - D. Tide pools
22. Aquatic ecosystems provide all of the following ecological services except
- A. Pharmaceuticals
 - B. Climate moderation
 - C. Flood control
 - D. Nutrient cycling
23. When fish populations are temporarily reduced due to overfishing, they are said to be
- A. Locally extinct
 - B. Commercially extinct
 - C. Biologically extinct
 - D. Economically extinct
24. Which approach to estimating fish populations is the most beneficial to fish populations?
- A. Maximum sustained yield
 - B. Commercial sustained yield
 - C. Optimum sustained yield
 - D. Potential sustained yield
25. The squatter settlement populations of most cities in developing countries
- A. Have lower incomes than do the rural poor
 - B. Are declining in number
 - C. Consist of squatters living in makeshift shelters
 - D. Get the same services as other residents

TOTAL 25 MARKS

QUESTION TWO

1. In recent years in Swaziland like in other developing countries, people migrate to urban areas in pursuit for better living conditions. Discuss
 - a. The push factors that lead to people migrating from the rural areas to the urban areas (5 marks)
 - b. The pull factors that lead to people migrating from the rural areas to the urban areas (5 marks)
2. Explain the principles of
 - a. Smart growth (5 marks)
 - b. Garden cities (5 marks)
 - c. Conservation designs (5 marks)

TOTAL 25 MARKS

QUESTION THREE

1. Discuss the concept of family planning (7 marks)
2. Evaluate the pressures for and against family planning in
 - a. Traditional societies (8 marks)
 - b. Modern societies (10 marks)

TOTAL 25 MARKS

QUESTION FOUR

1. Evaluate the pros and cons of restoring, replacing, or substituting ecosystems and resources for those we have damaged (13 marks)
2. Explain the principles and practices of landscape ecology and ecosystem management (12 marks)

TOTAL 25 MARKS

QUESTION FIVE

1. Summarize the benefits we derive from biodiversity (11 marks)
2. Describe how the following can contribute to preserving biological resources
 - a. Habitat conservation plans (7 marks)
 - b. Captive breeding (7 marks)

TOTAL 25 MARKS