UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
Department of Environmental Health Science

DEGREE IN ENVIRONMENTAL HEALTH SCIENCE

FINAL EXAMINATION PAPER DECEMBER 2016

TITLE OF PAPER	:	ENVIRONMENTAL ECOLOGY
COURSE CODE	:	EHM315
DURATION	:	2 HOURS
MARKS	:	100
INSTRUCTIONS	:	READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
	:	ANSWER **ANY FOUR** QUESTIONS
	:	QUESTION **ONE** IS COMPULSORY
	:	EACH QUESTION **CARRIES 25** MARKS.
	:	WRITE NEATLY & CLEARLY
	:	NO 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.

1

QUESTION ONE: Multiple choice (compulsory) 25 marks.

Instruction: This is a multiple choice question. Write the question number on your answer script and write the letter of the correct answer next to it. Wrongly numbered questions and or unclear letters of the answer will be given a zero mark.

1. The biotic potential of a population
   a. Is the maximum reproductive rate of a population
   b. Is the current rate of growth of a population
   c. Is an expression of how many offspring survive to reproduce
   d. Can be determined only by studying an age structure diagram
2. A population will increase if
   a. Natality decreases
   b. Mortality increases
   c. The biotic potential increases
   d. The environmental resistance increases
3. Carrying capacity refers to
   a. Reproductive rate
   b. Interaction of natality and mortality
   c. The maximum size of population the environment will support
   d. The proportion of males to females
4. Emigration is
   a. One-way movement of individuals into the area of an established population
   b. One-way movement of individuals into an uninhabited area
   c. One-way movement of individuals out of a particular population to another area
   d. The repeated departure and return of individuals to and from a population area
5. The most important factor in determining which biome is found in a particular area is
   a. Soil type
   b. Topography
   c. Magnetic fields
   d. Climate
6. Generally, the limiting factor that controls the vegetative character of a biome is
   a. Light
   b. Precipitation
   c. Nutrients
   d. Soil type

2

7. The biome most likely to be found on the top of a very tall mountain is the
    a. Desert
    b. Tundra
    c. Grassland
    d. Temperate deciduous forest
8. Which of the following adaptations would you least expect to find in desert animals?
    a. Live underground during the heat of the day
    b. Have thick outer coverings to minimize water loss
    c. Drink and store large amounts of water
    d. Become dormant during periods of extreme heat or draught
9. Which of the following is not characteristic of a kangaroo rat?
    a. Excretes dry feces
    b. Excretes almost solid urine
    c. Is a nocturnal animal that stays in its burrow throughout the day
    d. Is an imported pest from Australia
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. Acid deposition
11. A mature------- has the greatest species diversity of all terrestrial biomes
    a. Tundra
    b. Tropical rain forest
    c. Taiga
    d. Temperate deciduous forest
12. You read the data records of a field ecologist who reports the following varieties of species: beetles, spiders, grasshoppers, many insects and invertebrates, earthworms, wild dogs, rabbits, squirrels, meadowlarks, coyotes, foxes, hawks. You conclude that the field ecologist is located in a
    a. Desert
    b. Tropical grassland
    c. Temperate grassland
    d. Arctic tundra
13. Most of the nutrients in the tropical rain forests are found in the
    a. Living organisms
    b. Large rivers
    c. Deep, rich soil
    d. Thick atmosphere

3

14. Thriving coral reefs require
    a. Cloudy water
    b. Cool water
    c. Dissolved oxygen and nutrients
    d. Salinity that fluctuates with the tides
15. An aquatic environment
    a. Concentrates toxic metabolic wastes
    b. Increases fluctuations in temperature
    c. Increases chances of overheating
    d. Dissolves nutrients and make them readily available
16. The ecosystems with the world's highest net primary productivities per unit area are found in the
    a. Euphotic zone
    b. Abyssal zone
    c. Bathyal zone
    d. Coastal zone
17. Estuaries exhibit
    a. Constant temperature and salinity
    b. Constant temperature and variable salinity
    c. Variable temperature and constant salinity
    d. Variable temperature and salinity
18. A relationship in which one species benefits while the other is neither helped nor harmed to any significant degree is best labeled
    a. Competition
    b. Predation
    c. Commensalism
    d. Parasitism
19. Which of the following would exhibit primary succession?
    a. Rock exposed by a retreating glacier
    b. An abandoned farm
    c. A forest that had been clear-cut
    d. Newly flooded land to create a reservoir
20. 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
21. 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

QUESTION THREE

    A. What is a biome? (1 mark).

    B. Draw a table similar to the one below in your answer booklet and describe the characteristic of the given biomes. (24 Marks).

Biome	Climatic conditions	Animal species found	Plant species found	Where is this biome located
Grassland				
Tropical forest				
Desert				
Fynbos				
Succculent karoo				
Taiga				

TOTAL 25 MARKS

QUESTION FOUR

    A. Draw, and in a tabular form, distinguish between the pyramid of biomass, the pyramid of numbers and the pyramid of energy (12 marks)

    B. Define, and explain the concept of ecological restoration (13 marks)

TOTAL 25 MARKS

QUESTION FIVE

You are living in the city of Mbabane and have a small vegetable garden at your backyard and are facing a problem of pest infestation.

    A. With examples, explain what you understand by pests? (4 marks).

    B. How would you control these pests in your small garden? (5 marks)

    C. Describe the problems you might face when controlling these pests using artificial pesticides. (6 marks).

    D. Using the systems approach, draw the linkages that the pesticide would form with the environmental elements in your vegetable garden. (10 marks).

TOTAL 25 MARKS