UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER 2011

TITLE OF PAPER : **INTRODUCTORY ZOOLOGY**

COURSE CODE : **B112**

TIME ALLOWED : **THREE HOURS**

INSTRUCTIONS :

1. **THIS PAPER HAS TWO SECTIONS, A AND B**
2. **USE ONE (1) ANSWER BOOKLET FOR EACH SECTION**
3. **ANSWER ANY TWO QUESTIONS FROM EACH SECTION.**
4. **EACH QUESTION CARRIES TWENTY FIVE (25) MARKS**
5. **WHEREVER POSSIBLE ILLUSTRATE YOUR ANSWERS WITH LARGE CLEARLY LABELLED DIAGRAMS**

SPECIAL REQUIREMENTS: **NONE**

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

SECTION A

QUESTION 1

a. Using illustrations, discuss in detail how the amniotic egg contributed to domination of terrestrial habitats by the reptiles (15)

b. Define the following and explain how each contributes towards changes in allele frequencies:

i. mutations (6)

iii. non-random mating (4)

[Total = 25 marks]

QUESTION 2

a. Using illustrations, describe the nitrogen cycle in a community. (10)

b. What is competition? Using examples, explain which is more intense between inter-specific and intra-specific competition (8)

c. Explain why amphibians are said to be partially adapted for terrestrial life. (9)

[Total = 25 marks]

QUESTION 3

a. Below is information, in no particular order, about the derived characters found in some vertebrates. Use the information to construct a phylogenetic tree, in which all members of the same branch share a feature or features not found in the presumed ancestral branch. The implication is that branches are evolutionary divergences.

Amniotic eggs found in reptiles, birds and mammals.
Feathers found in all birds.
Feathery forelimbs modified as flippers in penguins.
Pentadactyl limbs (sometimes only vestigial or modified) found in amphibians, reptiles, birds and mammals.
Hairy forelimbs modified as flippers in seals.
Lungs found in some bony fishes, almost all amphibians (obviously lost in some), reptiles, birds and mammals.
Mammary glands found in all mammals.
Forelimbs as wings of feathers found in eagles.
Forelimbs as wings of stretched skin found in bats.

Draw your cladogram based on the features above. [15 marks]

b. What is a coelom? What is the advantage of this feature? (6)

c. What is a cohort? Explain the importance of this in population ecology (4)

[Total = 25 marks]

SECTION B

QUESTION 4

a) Make large clearly labelled sketches of the human male and female reproductive systems (20 Marks)
b) Describe the secondary sex characteristics found in human females. (5 marks)

[Total Marks = 25]

QUESTION 5

a) Discuss the structure and function of either the thyroid gland OR the pancreas and its secretions. (13 marks)
b) What is meant by 'Malpighian tubules'? What is their function? How do they carry out this function? (12 marks)

[Total Marks = 25]

QUESTION 6

Make the following sketches:

a) Fish circulatory system (3 marks)
b) Reptile circulatory system . (5 marks)
c) Human circulatory system (12 marks)
d) Octopus circulatory system (5 marks)

[Total Marks = 25]