

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES
DEPARTMENT OF FOREST RESOURCES AND WILDLIFE MANAGEMENT
BACHELOR OF SCIENCE HONOURS DEGREE
MAIN EXAMINATION

VERTEBRATE POPULATION DYNAMICS: EFW 2205

May 2013

Time Allowed: 3 Hours

Total Marks: 100

INSTRUCTIONS TO CANDIDATES:

Answer **QUESTION ONE** and any **THREE** others. Each question carries **25 marks**

1. Table 1 is an incomplete life table for a population of female wildebeest (*Connochaetes taurinus*) at the Gonarezhou National Park.

Table 1: Life table of female wildebeest (*Connochaetes taurinus*)

Age (x)	Frequency (f_x)	Survival (l_x)	Mortality (d_x)	Mortality rate (q_x)	Survival rate (p_x)
0	500				
1	350				
2	320				
3	290				
4	267				
5	234				
6	182				
7	144				
8	109				
9	87				
10	58				
11	38				
12	26				

- (a) Copy and complete the table by calculating the values of l_x , d_x , q_x and p_x . [12 marks]
- (b) Use the completed life table to calculate the mean expectation of life (e_x) for individuals alive at start of age x and comment on life expectancy of the wildebeest. [9 marks]
- (c) What are the four schedules of the life table (l_x , d_x , q_x and p_x) used for in studies of population dynamics? [4 marks]
2. Discuss the concepts of population viability analysis (PVA) and minimum viable population (MVP).
3. Compare and contrast the exponential and logistic growth models using clearly labelled diagrams.

4. Discuss the use of the Lotka-Volterra model in population ecology.
5. (a) Describe how you would conduct a census of large herbivores in a national park. **[15 marks]**
- (b) Distinguish between absolute density and relative density. **[10 marks]**
6. Discuss measures you would take to regulate ungulate populations within the carrying capacity of a named national park.

***** END OF PAPER *****

