

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**FACULTY OF APPLIED SCIENCES**  
**DEPARTMENT OF ENVIRONMENTAL SCIENCE AND HEALTH**  
**BACHELOR OF SCIENCE HONOURS DEGREE**  
**FINAL EXAMINATIONS**

**INTRODUCTORY ECOLOGY: ESH 1203**

May 2011

Time allowed: 3 Hours

Total Marks: 100

**INSTRUCTIONS:**

**Answer any FOUR questions. Each question carries 25 marks.**

**Question 1**

Describe the factors that regulate populations in ecosystem.

**Question 2**

“Rescued small populations in protected areas are the most likely to go extinct.” Discuss this statement.

**Question 3**

Discuss the significance of disturbances, both natural and human induced in ecosystems.

**Question 4**

Describe fully any three methods you would use to estimate population size of birds.

**Question 5**

The table below shows sampling data for macroinvertebrates in two ephemeral pools A and B.

Macroinvertebrates	Pool A	Pool B
Species 1	18	12
Species 2	11	3
Species 3	0	5
Species 4	5	1
Species 5	13	0
Species 6	7	15
Species 7	12	9
Species 8	19	13
Species 9	0	16
Species 10	11	4

- (a) What is S for both pools A and B. (2 marks)
- (b) Calculate Simpson's D and E for both pools A and B. (10 marks)
- (c) Calculate Shannon – Weiner's H and E for both pools A and B. (10 marks)
- (d) What conclusions can be drawn about the species of the two pools? (3 marks)

**Question 6**

Critically evaluate the latitudinal gradient concept in explaining geographical patterns of species diversity.

**End of Question Paper**