BINDURA UNIVERSITY OF SCIENCE EDUCATION
BIOLOGICAL SCIENCES DEPARTMENT
HBScBioTec/ BScBZH

PRINCIPLES OF ECOLOGY (BZH 114/ ECOLOGY / BZH 201)

EXAMINATION
2 HOURS (100 MARKS)

INSTRUCTIONS TO CANDIDATES
Answer FOUR questions. You MUST answer QUESTION 1 (Section A) and any THREE questions from section B. Each question carries 25 MARKS. Where a question contains sub-divisions, the mark value of each sub-division is given in brackets. Illustrate your answer where appropriate with large clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. A conservation organization is assessing the diversity of bird species in two different forest reserves. Table 1 shows a summary of the findings.

Bird Species	Description	Forest reserve A	Forest reserve B
P	Green	40	60
Q	Brown with yellow	35	25
R	Large, blue	20	20
S	Small, blue	15	10
T	Red and blue	10	5

(a) Calculate and compare the Simpson's diversity index value for the two reserves. (20 marks)

(b) Comment on the Simpson index values obtained in 1(a) above. (5 marks)

SECTION B

2. (a) Define ecological succession and provide an example of primary and secondary succession. (15 marks)

(b) Explain the concept of trophic levels in a food chain. (10 marks)

3. Write short notes on any **FIVE** of the following terms:

   (a) Population dispersion (5 marks)
   (b) Eutrophication (5 marks)
   (c) Succession (5 marks)
   (d) Mutualism (5 marks)
   (e) Nitrification (5 marks)
   (f) Animal behavioural defences to predation (5 marks)

4. Explain the concept of ecological succession and discuss the different types of succession that can occur in ecosystems.

5. Describe the different types of symbiotic relationships that can occur between species in an ecosystem and provide examples for each type.

6. Discuss the impacts of human activities on ecosystems and propose potential solutions to mitigate these impacts.

END OF EXAMINATION QUESTION PAPER