



**THE OPEN UNIVERSITY OF SRI LANKA**

**B.Sc. DEGREE PROGRAMME - LEVEL 4**

**FINAL EXAMINATION 2006 / 2007**

**COURSE TITLE : FUNDAMENTALS OF ECOLOGY- PAPER 2**

**COURSE CODE : ZOU 2265**

**DURATION : 3 HOURS**

195

---

**DATE : 23<sup>RD</sup> OF JUNE 2007**

**TIME : 1.30 P.M. - 4.30 P.M.**

---

**INDEX NUMBER : \_\_\_\_\_**

---

**ANSWER QUESTION 1 FROM PART A AND ANY FOUR (4) QUESTIONS FROM PART B.**

**PLEASE NOTE THAT QUESTION 1 IS COMPULSORY AND THE ANSWERS SHOULD BE WRITTEN IN THE SPACE PROVIDED.**

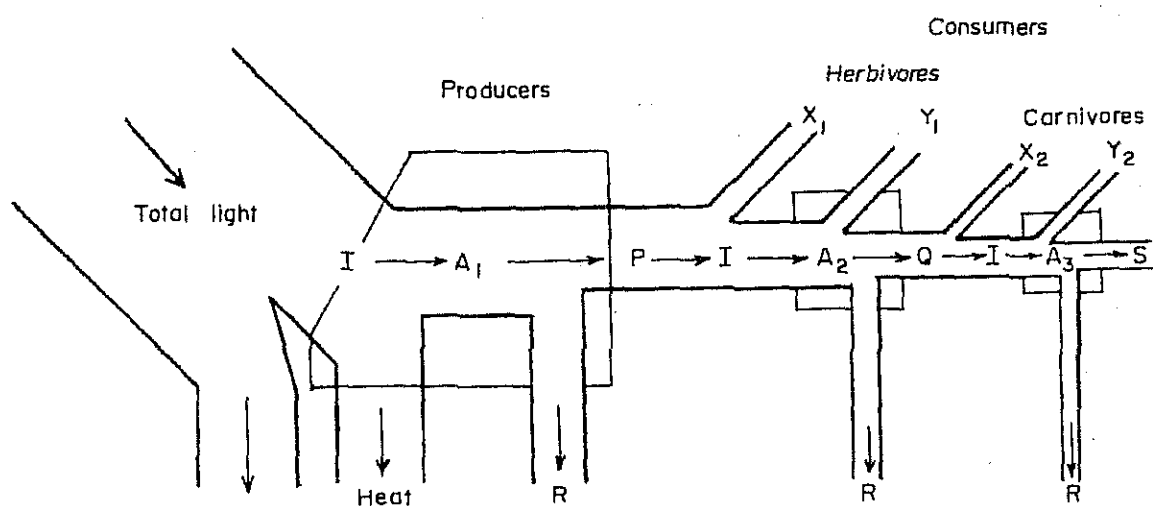
---

## PART A

1. Figure 1 shows a single channel energy flow model depicting three trophic levels in a grazing food chain. Questions 1.1 to 1.8 are based on this figure.

I - represents the total energy input of each trophic level.

R - represents the energy loss due to respiration at each trophic level.



**Figure 1**

- 1.1 Name the following forms of energy in figure 1.

A <sub>1</sub> _____	S _____
A <sub>2</sub> _____	X <sub>1</sub> _____
A <sub>3</sub> _____	X <sub>2</sub> _____
P _____	Y <sub>1</sub> _____
Q _____	Y <sub>2</sub> _____

- 1.2 Briefly explain how the energy flows through the trophic levels in the grazing food chain as shown in figure 1.

-----

-----

-----

-----

-----

-----

-----

- 1.3 Give two (02) differences between the single energy flow model shown in figure 1 and a two channel energy flow model.

i) -----

-----

ii) -----

-----

- 1.4 "Energy fixed by producers decreases as it travels through the trophic levels of a food chain".

Validate the above statement giving two (02) reasons.

i) -----

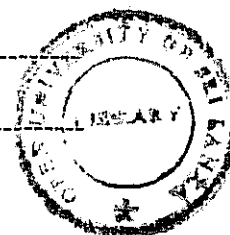
ii) -----

- 1.5 Name the type of food chain seen among consumers in figure 1.

-----

- 1.6 a) In what form / forms is/are energy available for decomposers ?

-----



b) Explain the role played by the decomposers in an ecosystem.

---

---

1.7 a) Define P.

---

---

b) How does  $A_t$  differ from P ?

---

---

1.8 Explain the relationship between P and "standing crop biomass".

---

---

1.9 Outline the methods that could be used in estimating the primary productivity of an ecosystem.

---

---

---

---

---

1.10 Name two types of ecosystems in nature which are found to be most productive.

---

---

## PART B

### ANSWER ANY FOUR QUESTIONS

2. a) Explain the term "speciation".  
b) Describe factors that bring about allopatric speciation in populations.
3. Describe the growth of a population with discrete generations under different situations of the multiplication rate ( $R_0$ ).
4. "Properties of abiotic components of the biosphere play a significant role in making it a life-supporting system". Elaborate on this statement.
5. Giving examples where necessary explain  
a) factors which determine the community organization and  
b) how the organized nature of a community is maintained.
6. Write short notes on any three (03) of the following.
  - a) Survivorship curves.
  - b) Nitrogen fixation.
  - c) Species diversity in oceanic islands.
  - d) Niche characteristics.
7. Describe the important features of the plant communities found on sea-shores and sand dunes of Sri Lanka.

\*\*\*\*\*