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UNIVERSITY REGULAR EXAMINATIONS

2013 /2014 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR

OF SCIENCE (MATHEMATICS)

COURSE CODE: SZL 123

COURSE TITLE: FUNDAMENTALS OF ECOLOGY

DATE: 22ND APRIL, 2014

TIME: 9:00A.M.- 12 NOON

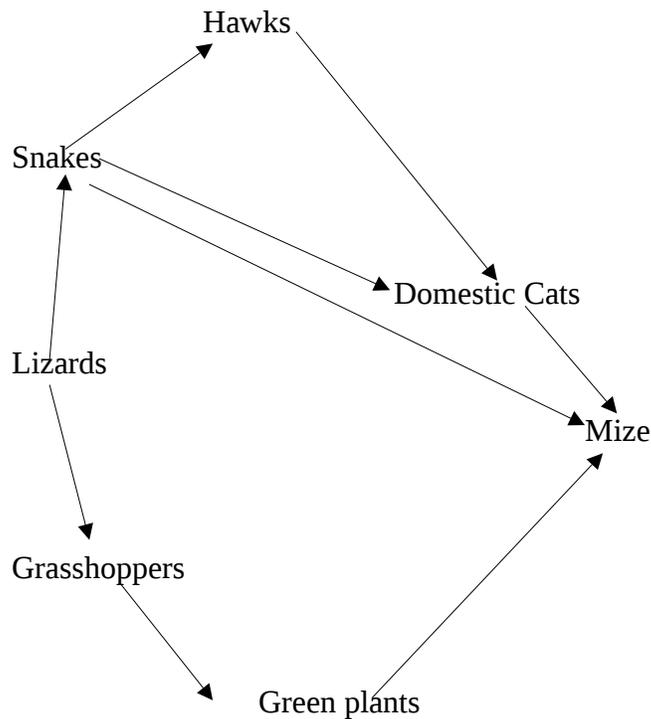
INSTRUCTIONS

*Answer Question **ONE** and any other **THREE***

1. What does the term environment mean?
What conditions determine the effects a given environment has on organisms living in it?
(25mks)

2. (a) The burning of fossil fuels seems to be causing an increase in the amount of carbon dioxide in the atmosphere.
(b) What are the three steps in nitrification process? What organisms perform these transfers of nutrients, and why are they important?
(13mks)

3. Study the chart below sharing a feeding relationship in a certain habitat.



- (a) Construct two food chains ending with a tertiary consumer in each case. (8mks)
- (b) Which organism has the highest variety of predators in the food web? (3mks)
- (c) Name secondary consumers in the food web. (5mks)
- (d) Suggest three ways in which the ecosystem would be affected if there was prolonged drought. (9mks)

4. Study table 1 below and answer the questions that follow. The table shows data obtained from a study carried out in a malaria- infected area for a period of one year. The entries show the month and the type of mosquitoes indicated as A and B caught every month. The last row shows the number of malaria cases treated every month.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Type A Mosquito	40 0	300	250	200	20 0	150	18 0	300	50 0	72 0	90 0	50 0
Type B Mosquito	50 0	700	100 0	700	52 0	400	40 0	500	30 0	25 0	20 0	40 0
No. of Malaria cases	90	110	120	110	10 5	100	90	85	80	80	90	10 0

- (a) i. During what period of the year was the least number of malaria cases treated? (2mks)
 ii. During what period of the year was the highest number of malaria cases treated? (2mks)
 iii. Suggest two possible factors that contribute to the high level of malaria cases? (4mks)
- (b) i. Which of the two types of mosquitoes was responsible for occurrence of malaria? (2mks)
 ii. Give reasons for your answer in (b)(i) above. (7mks)
- (c) State how malaria is prevented or controlled in Kenya. (8mks)
5. (a) Give an example of how a change in the population of a key stone predator can have major consequences for the ecosystem. (5mks)
- (c) Explain why human activity affecting the biosphere is more powerful today than ever before. (8mks)
- (d) What common practices in modern agriculture can be detrimental to farmland over the long term? Why are they in such widespread use? What measures can be taken to moderate the effects of large-scale agriculture on the environment. (12mks)