KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE

SZL 500: BIOSTATISTICS

DATE: Monday 28th November, 2011 **TIME:** 9.00a.m. – 12.00 Noon

INSTRUCTIONS

All questions carry equal marks.

Illustrate your answers with diagrams and five examples wherever appropriate.

Answer any **FOUR** questions

1. A scientist wanted to find out whether the distribution of termite mounds was random. He identified 60 quadrats (100 m by 100 m) at random for this. In each quadrat, he counted the number off mounds and obtained the following data.

Number of mounds	Number of quadrats
0	6
1	18
2	7
3	13
4	2
5	3
6	2
7	5
8	3
9	1

Test whether the distribution of termite mounds was random.

2. Write an essay on "sampling finite populations".

3. A researcher wanted to find out the effects of vegetation burning on *Prosopis juliflora.* Five adjacent plots were burnt as show below

Plot	Time when burnt
A	5 years ago
B	4 years ago
C	3 years ago
D	2 years ago
E	1 year ago

From each plot 100 quadrats were taken. The number of *Prosopis juliflora* plants counted and mean number of plants per plot calculated. The results are shown in the table below

Plot	Mean number of P.juliflora plants
A	64
B	46
C	50
D	38
E	24

Using an appropriate statistical tool, determine whether burning has an effect on the spread of P.juliflora.

4. A study on the effect of age on the duration of anesthesia was conducted. Blood samples were taken and the rate of plasma clearance calculated. The data is given below,

Age **Plasma clearance (ml/min)**

20	610
25	500
30	400
35	450
40	420
45	300
50	370
55	405
60	280
65	320

State an appropriate null hypothesis and use the data to test.

5. The effect of insulin on blood sugar levels was investigated by treating 18 mice with three doses of insulin: A (low amount), B (medium amount), C (high amount). The percentage decrease in blood sugar was measured after an hour and results are shown in the table below.

Dose A	**Dose B**	**Dose C**
12	20	24
17	24	28
22	26	31
15	16	16
16	20	20
20	22	24

Test whether the amount of insulin affects blood sugar level.