A Constituent College of Kenyatta University

UNIVERSITY EXAMINATIONS 2010/2011 ACADEMIC YEAR

INSTITUTIONAL BASED PROGRAMME

3RD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

COURSE CODE/ TITLE: SZL 300: BIOSTATISTICS

END OF SESSION I   DURATION: 3 HRS

DAY/TIME:WEDNESDAY 7.00AM – 10.00AM   DATE: 02.08.2011-S3

INSTRUCTIONS:

1. Answer ALL questions in Section A and any Two questions in Section B
2. All questions carry equal marks.
3. Illustrate your answers with diagrams wherever appropriate

SECTION A   **(40MARKS)**

Question One

A basket has 8 red and 3 green oranges;

a) What is the probability of drawing from this basket a red orange, followed by a green orange, assuming that the drawn orange is replaced before drawing the second?   **(5marks)**

b) What is the probability of drawing green, then green, then red without replacement assuming the first two were green oranges?   **(5marks)**

Question Two

a) If the probability of a male insect emerging from a pupa selected randomly is 0.5, what is the probability that 4 pupae will result in 1 male and 3 female.

(3marks)

b) Estimate the Poisson distribution for x=0 to 3 when $\bar{x}$ (the estimate of λ) is 4.0

(4marks)

c) State three (3) classes of relationships in regression analysis.   **(3marks)**

Question Three

a) Calculate the coefficient of variation of 100 shoot length measurements for which mean is 74.00mm and standard deviation is 2.34mm.   **(3marks)**

b) Estimate the 95% confidence interval of the mean of the 100 shoot measurements given in (a) above.   **(2marks)**

c) From a set of data, a statistician calculated the following set figures: Correction factor (cf)= 29.9, total sum of squares (tss)=29.09, treatment sum of squares (Tss)=0.826, total degrees of freedom (df)= 19, treatment (df)=3, error df=16, treatment mean square (ms)=0.275, error mean square (ms)=1.77. Compute the F value and fill the outline of the ANOVAR below.

Source of variation	Degree of freedom	Sum of square	Mean square	Computed F value	Tabular F 0.05	0.01
Treatment						
Error						
Total						

(5marks)

Question Four

Calculate the mean, with 95% confidence limits of a sample of observations of rodents masses (g): 19.4, 21.4, 22.3, 22.1, 20.1, 23.8, 24.6, 19.9, 21.5 and 19.1.   **(10marks)**

SECTION B – ANSWER ANY TWO QUESTIONS.   **(30MARKS)**

Question Five

Two samples of roaches from normal distributions gave respectively, means of 4.29g and 4.18g and variance of 6.89 and 2.55 based on 10 and 12 observations respectively. Can these samples be from the same distribution with the same mean?   **(15marks)**

Question Six

In a dihybrid cross using a sample of beans, a researcher obtained the following results for F2 generation.

Tall plants with coloured flowers	= 230
Tall plants with White flowers	= 80
Dwarf plants with coloured flowers	= 73
Dwarf plants with White flowers	= 23
Total	406

Test whether these results are consistent with the hypothesis of independent assortment whose ratio is 9.3.3.1?   **(15marks)**

Questions Seven

The diastolic blood pressure of 2000 normal healthy pigs have a mean $\mu=120$mmHg and a σ of 10mmHg

a) What is the proportion of the population having blood pressure larger than 126mmHg?   **(5marks)**

b) What is the probability of obtaining a pig with blood pressure between 132mmHg and 114mmHg?   **(5marks)**

c) How may pigs have blood pressure greater than 110mmHg?   **(5marks)**