MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE; PHARMACEUTCAL SCIENCE AND MEDICAL BIOTECHNOLOGY WITH INFORMATION TECHNOLOGY

PMT 318: BIOSTATISTICS AND BIOMETRICS

Date: 4th April, 2014 Time: 8.30 – 10.45 a.m.

PMT 318: Biostatistics and Biometrics

Section A

1. What is the usefulness of biostatistics in interpreting a diagnostic procedure? (5 marks)
2. Explain the difference between standard deviation of mean and standard error of mean? (5 marks)
3. Define type II error and its importance? (5marks)
4. Describe a box plot as a graphical presentation of distribution of data? (5 marks)
5. What is the probability that a randomly selected person has either blood type O or A? If blood type O is 42% and the probability of complement of blood type A is 57% in the population. (8 marks)
6. List the variables within -1SD and +2SD? The variables are:- 20, 34, 45, 48, 56, 83, 256, 504 and 765. (6 marks)
7. Explain two computer packages used for statistical analysis (2 marks)
8. Determine odd of case exposure when all cases are 200 individuals and the number of unexposed is 160? (4 marks)

Section B

1. Determine sample-size for a prevalence study with expected prevalence as noted below. The formula for sample-size calculation is $n = Z^2 P (1-P)/d^2$ where d = 5%

   a) The exact expected prevalence is unknown but it is within the range of 10% and 90%

   b) The expected prevalence is 94% (3 marks)

   c) The expected prevalence is 30% and precision is between 20% and 40% (3 marks)

2. Explain 5 significances of good sampling methods in biomedical research (4 marks)
3. Data shows that 120 people are at a risk of TB infection, 60 people have no infection and it also shows that 150 people are at no risk but 120 have no infection. Based on this information, calculate: (10 Marks)

   a) Experimental risk rate (ERR)

   b) Control event rate (CER) (2 marks)

   c) Relative risk ratio (RRR) (2 marks)

   d) Interpret obtained RRR in terms of risk to those with no infection (3 marks)

(3marks)