



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

THIRD YEAR FIRST SEMESTR EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN PHARMACEUTICAL
SCIENCE, BACHELOR OF SCIENCE IN MEDICAL
BIOTECHNOLOGY AND BACHELOR OF SCIENCE IN
LABORATORY SCIENCE WITH INFORMATION TECHNOLOGY
(MAIN CAMPUS)

PMT 318: BIOSTATISTICS AND BIOMETRICS

Date: 25th November, 2013

Time: 2.30 - 4.30 p.m.

Laboratory Science
PMT 318: Biostatistics and Biometrics
BSc Medical Biotechnology, BSc Pharmaceutical Science and BSc Medical

Section A (Answer ALL questions in this section)

1. List and briefly describe three scales of measurement in biostatistics. (5 marks)
2. Explain the difference between arithmetic and geometrical mean. (5 marks)
3. What is the importance of adjusting crude rates? (5marks)
4. What is a statistical power of a study and what is its importance? (5 marks)
5. Define what is meant by a parameter in statistics and give three examples (5marks)
6. Measure the relative spread of the following data sets; Shock index in the total sample with the mean of 0.69 and standard deviation of 0.20 and systolic BP index with the mean of 138 and standard deviation of 26. (5 marks)
7. Explain two computer packages used for statistical analysis (2 marks)
8. The following are weights of ten individuals (10.5, 23.7, 43.2, 44, 26.9, 33, 34.0, 24.1, 47 and 45). Determine if these weights are normally distributed or not? (8 marks)

Section B (Answer ALL questions in this section)

1. You conducted an active-controlled random trial to assess the effectiveness of drug A on pain. Your total sample size including 10% drop out is 200. The level of significance is 0.05 (two-tailed test), the power is 80%, and standard deviation is 1.195. Using this formula, $n = [(Z\alpha/2 + Z\beta)^2 \times \{2(\sigma)^2\}] / (\mu_1 - \mu_2)^2$ Determine the % mean change of the pain score? (10marks)
2. Outline 10 roles of biostatistics in biomedical research (10 Marks)
3. Explain the following correlation coefficients using appropriate graphic illustrations.
 - a) A correlation of zero (2marks)
 - b) A correlation of +1 (2marks)
 - c) A correlation greater than 0.75 (3 marks)
 - d) Transformed correlation data (3 marks)