



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE
DEGREE OF MASTER OF SCIENCE IN BIOMEDICAL SCIENCES
& TECHNOLOGY
(CITY CAMPUS)

PMT 814: CELLULAR STRUCTURES AND MEMBRANES

Date: 20th November, 2013

Time: 2.00 - 5.00 p.m.

PMT 814: CELLULAR STRUCTURES AND MEMBRANES

Answer Question 1 and Any Other FOUR (4) Questions

1. Discuss the structure of the plasma membrane and show how this relates to its various functions (16 marks)
2. Explain the molecular diversity of eukaryotic cell surfaces and its role in cell recognition, aggregation and adhesion (11 marks)
3. Discuss the structure of the mitochondria and its role in generation of energy (11 marks)
4. Use the structure of the neuromuscular innervation to explain how a nervous impulse is generated and linked to muscle contraction (11 marks)
5. Compare and contrast cell motility in pathogenic bacteria to that of human spermatozoa (11 marks)
6. Discuss signal transduction and the generation of second messengers in the following tissues (11 marks)
 - a) *Alpha*₁ receptors in smooth muscle vasculature
 - b) *Beta*₂ receptors in the lungs. In your discussion explain how overproduction of the initial signals can lead to specific diseases such as hypertension and asthma in the two tissues/organs