



MASEÑO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

**FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN MEDICAL
BIOTECHNOLOGY WITH INFORMATION TECHNOLOGY
(MAIN CAMPUS)**

PMB 448: GENOMICS AND PROTEOMICS

Date: 1st April, 2014

Time: 11.15 a.m. – 1.30 p.m.

INSTRUCTIONS:

- **This paper consists of two sections.**
- **Answer ALL questions in Section A and ANY TWO questions from Section B.**



Section A: Answer ALL Questions (30 Marks)

1. Define the following:
 - a) Haploid genome (1 mark)
 - b) Operon (1 mark)
 - c) Plasmid (1 mark)
 - d) Diploid genome (1 mark)
 - e) Chromatin (1 mark)
2. Briefly compare and contrast prokaryotic and eukaryotic chromosomes (5 marks)
3. Describe the levels involved in the formation of heterochromatin (4 marks)
4. For each of the following biological processes, list at least one corresponding proteomic techniques for analysis:
 - a) Protein localization (1 mark)
 - b) Protein function (1 mark)
 - c) Protein interaction (1 mark)
5. List:
 - (a) Any 8 examples of common covalent modifications of protein activity (4 marks)
 - (b) Any 4 techniques that can be used to map the modifications listed in (a) above (4 marks)
6. Write short notes on antibody microarrays with respect to:
 - a) Experimental set-up (3 marks)
 - b) Applications in biomedicine (2 marks)

Section B: Answer ANY TWO (2) questions (40 marks)

7. Discuss the sequence composition of the human genome (20 marks)
8. Discuss the principle, advantages and disadvantages of Yeast-2-hybrid assays (20 marks)
9. Discuss the applications of genomics and proteomics in medicine (20 marks)