



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

**THIRD YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF MEDICAL LABORATORY SCIENCE,
WITH INFORMATION TECHNOLOGY**

(MAIN CAMPUS)

PMT 324: MOLECULAR BIOLOGY OF THE GENE

Date: 17th July 2014

Time: 2.30 – 4.30 pm

INSTRUCTIONS:

- Answer ALL questions in section A.
- Answer question 9 and ANY OTHER question in section B.



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THIRD YEAR SECOND SEMESTER EXAM FOR THE DEGREE OF
BACHELOR OF SCIENCE IN BIOTECHNOLOGY AND BACHELOR OF
SCIENCE MEDICAL LABORATORY SCIENCE

PMT 324: MOLECULAR BIOLOGY OF THE GENE

Date: _____

Time: 2 HOURS

Attempt ALL questions in **section A** and any two questions in **section B**. Section A carries 40 marks while section B carries 30 marks.

SECTION A (40 marks)

1. Describe how photo-reactivation reverses thymine dimer formation (5 marks).
2. Briefly describe the process of DNA transformation in bacteria (5 marks).
3. Discuss how bioinformatics is applied in transcriptomics (5 marks)
4. Transposons are a major source of genetic mutations. Briefly comment (5 marks)
5. Briefly describe the process of DNA transformation in bacteria (5 marks).
6. Name five types of plasmids based on characteristics coded by the plasmid gene (5 marks).
7. Briefly describe any two approaches of gene isolation by DNA cloning (5 marks).
8. A squirrel is a rabbit with a long tail. Justify this statement using molecular genetic approaches (5 marks)

SECTION B (30 marks)

9. Discuss how the genetic code is used in protein formation (15 marks).
10. Describe the structure and basic units of a DNA molecule (15 marks).
11. Using polymerase chain reaction (PCR) as an example, describe the process of DNA amplification and discuss its applications in biotechnology (15 marks)