RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES, MIHINTALE.

B.Sc. (Special) Degree in Applied Biology
Third year – Semester II Examination – April/May 2016

MIB 4206 MOLECULAR BIOTECHNOLOGY

Time: (2) hours

Answer all questions
Use labeled diagrams where appropriate

1) Formulate a concept paper to improve probiotics through genetic engineering. **(100 marks)**

2) a. Explain why Bt δ endotoxin could be considered harmless to fish, amphibians, birds and mammals. **(50 marks)**

b. Evaluate the use of *Bacillus thuringiensis* subsp.israelensis (Bti) in local mosquito control programs. **(50 Marks)**

3) a. Compare cellular mutagenesis with *invitro* mutagenesis **(40 marks)**

b. Enzyme "Y" is a multi domain protein. The natural protein has no identified variants. If this protein is to be improved in terms of thermal stability, Ca^{+2} dependency and catalytic efficiency, propose a design to fulfill the requirement. **(60 marks)**

4) Write short notes on;

a. transgenic rice plant that can reduce methane emissions
b. designing unidirectional tandem arrays
c. use of next generation sequencing (NGS) for pathogen identification
d. use of *trp* promoter to regulate foreign gene expression **(25X4 marks)**