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

B.Sc. (Special) Degree in Applied Biology
Fourth year – Semester I Examination –October/November 2015

MIB 4207-MICROBIAL GENETICS

Time: Two (2) hours

Answer all questions
Use labeled diagrams where appropriate

1. Write short notes on the following;

a) bacterial integrons **(30 Marks)**

b) involvement of type iv pillus in DNA uptake **(30 Marks)**

c) Rec BCD system **(40 Marks)**

2. **a)** Justify the need for two sensory circuits in *nif* gene regulation using the Rhodobacter model. **(40 Marks)**

b) Describe how the specificity is achieved in the nodulation process of BNF **(30 Marks)**

c) Illustrate physical association of *nif* genes in *Klebsiella pneumoniae*. **(30 Marks)**

3. **a)** Briefly explain the different levels at which gene regulation occurs in eukaryotes. **(30 Marks)**

b) List 3 different structures of DNA binding domains of transcription factors and comment on their salient features. **(30 Marks)**

c) Justify the need for short term transcription regulation using yeast galactose utilizing genes as a model. **(40 Marks)**

4. **a)** Illustrate specialized transduction. **(30 Marks)**

b) Comment on the requirement of DNA exchange methods for bacteria. **(30 Marks)**

c) Explain the mechanism of specific DNA uptake in *Neisseria gonorrhoeae* **(20 Marks)**

d) Review the need for coupling competence with sporulation in bacteria **(20 Marks)**