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10NT55

**Fifth Semester B.E. Degree Examination, Dec.2015/Jan.2016**  
**Genetic Engineering and Applications**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

- 1
  - a. What is Genetic engineering and explain the applications in detail? (05 Marks)
  - b. What is meant by recombinant DNA and its application? (05 Marks)
  - c. What is the difference between the cosmid and plasmid? (05 Marks)
  - d. Explain vectors and its salient features. (05 Marks)
  
- 2
  - a. Discuss in detail restriction endonucleases and their role in genetic engineering. (10 Marks)
  - b. Define Enzyme. Explain the classification of enzymes based on function. (05 Marks)
  - c. Role of D Nase and R Nase and their mechanism of action. (05 Marks)
  
- 3
  - a. Explain Polymerase Chain Reaction (PCR) and its applications. (05 Marks)
  - b. Explain the methods of nucleic acid detection. (05 Marks)
  - c. Explain the methods of nucleic acid hybridization. (05 Marks)
  - d. Explain the southern and northern hybridization techniques. (05 Marks)
  
- 4
  - a. Explain the Isolation and purification techniques of Nucleic acids. (05 Marks)
  - b. Explain the quantification, storage and isolation of plasmids in Nucleic acid. (05 Marks)
  - c. Explain the construction of genomic and cDNA libraries. (05 Marks)
  - d. Write a note on screening and presentation. (05 Marks)

**PART – B**

- 5
  - a. Explain the different gene transfer techniques. (05 Marks)
  - b. Explain the Agro bacterium mediated gene transfer in plants. (05 Marks)
  - c. Explain the structure and functions of Ti plasmid. (05 Marks)
  - d. Write a note on Ti plasmid based vectors with advantages. (05 Marks)
  
- 6
  - a. Explain the gene mapping techniques. (05 Marks)
  - b. Explain the following : i) RFLD ii) RAPD iii) AFLD iv) Restriction mapping. (05 Marks)
  - c. Explain the Marker – Assisted selection and genetic improvement of live stock. (05 Marks)
  - d. Explain the Transgenic science for Animal Improvement. (05 Marks)
  
- 7
  - a. Explain the role of Micro organisms for the production of antibodies. (05 Marks)
  - b. Explain the monoclonal antibodies. (05 Marks)
  - c. Explain the genetic manipulation in microbial biotechnology. (05 Marks)
  - d. Write a note on Insulin. (05 Marks)
  
- 8
  - a. Explain the methods of gene therapy. (05 Marks)
  - b. Explain the gene targeting and silencing. (05 Marks)
  - c. Explain gene therapy in the treatment of different diseases. (05 Marks)
  - d. Write a note on challenges and scope for future work in gene therapy. (05 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and/or equations written eg. 4+8 = 50, will be treated as malpractice.