Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

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M.Tech. (Bio Tech.) (Sem.–2)

# APPLIED BIOTECHNOLOGY

Subject Code : MTBT-104

M.Code : 23004

Time : 3 Hrs. Max. Marks : 100

**INSTRUCTION TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

Q1 a) What are restriction enzymes? Give classification of restriction enzyme with suitable example? (3+4)

b) What is PCR? Give stepwise process of DNA amplification using PCR. (3+10)

Q2 a) Highlight the differences between RT-PCR and Real time PCR in terms of process and applications. (10)

b) What is a DNA Chip? Discuss the applications of DNA chips in Agriculture and Medicine. (3+7)

Q3 a) What is northern blotting? Give an account of applications of Northern blotting. (5+5)

b) What are the main features of the Yeast Artificial Chromosomes (YAC) vectors? (8)

c) What is the importance of a reporter gene? (2)

Q4 a) Write short notes on any three (approx. 500 words) (5 × 3)

a. Fluorescence *In situ* hybridization

b. DNA foot printing

c. Cosmids

d. *Ex vivo* gene therapy

e. Southern Blotting

b) What is anti-sense RNA technology? Highlight applications. (3+2)

Q5 Give an account on the role of recombinant DNA technology in production of therapeutic proteins. (20)

Q6 a) Describe the genetic features of the vector pBR322. (8)

b) What are the salient genetic features of a typical E. coli based expression vector? (8)

c) Explain the meaning of "Competent *E.coli*". (4)

Q7 a) Give the major applications of CDNA and genomic library. (10)

b) Describe the structure of BAC vector. (10)

Q8 a) Define Gene Therapy. How is in vivo gene therapy different from ex vivo gene therapy? (5+5)

b) Describe the method of production of the transgenic plant for insect resistance. (10)



**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**