

Roll No. ....

Total No. of Questions : 13]

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**J-3454[S-1310]**

**[2037]**

**B.Sc.(BI) (Semester - 4<sup>th</sup>)**

**MOLECULAR GENETICS (B.Sc.(BI)-401)**

**Time : 03 Hours**

**Maximum Marks : 75**

**Instruction to Candidates:**

- 1) Section - A is **compulsory**.
- 2) Attempt any **Nine** questions from Section - B.

**Section - A**

**Q1)**

**(15 × 2 = 30)**

- a) Classify the different nucleic acid bases.
- b) Define nucleosides and the nucleotides.
- c) What are the results of the X-ray diffraction of the DNA.
- d) Explain the overlapping gene.
- e) What is operon?
- f) What do you understand by central dogma.
- g) Explain the term DNA sequencing and its utility.
- h) Explain the transposon.
- i) What is genomic library. What is its utility?
- j) Define the term reading frame.
- k) What are the restriction enzymes and their sources?
- l) What do you understand by gene mapping?
- m) What is the basic principle of the jell electrophoresis? What is its use?
- n) What do you understand by genetic clone?
- o) Define the genetic code and reading frame?

**P.T.O.**

## Section - B

(9 x 5 = 45)

- Q2)** Differentiate between the replication and transcription. Discuss the enzymes involved in the replication of the DNA.
- Q3)** Discuss about the structure of the DNA.
- Q4)** What do you understand by translation. Discuss about the important characteristics of the genetic codes.
- Q5)** Show and explain the principal steps of the bacterial transformation.
- Q6)** Write short note (any one)
- (a) PCR
  - (b) Chromosome replication cycle.
- Q7)** What are the different levels of gene expression and mechanisms of their regulations involved.
- Q8)** Describe the principle of DNA fingerprinting.
- Q9)** What do you understand the repetitive DNA. Describe different variations in the sequence architecture of the repetitive DNA.
- Q10)** Discuss about the construction of genomic library of Eukaryotic organism.
- Q11)** Name the different techniques of the recombinant selection. Discuss about the recombinant selection by hybridization.
- Q12)** What are the different types of genetic recombination takes place in bacteria. Discuss about the general mechanisms.
- Q13)** Classify different types of vectors. Discuss about the vector phage virus.

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