

**CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN,
NUVEM – GOA.**

SEMESTER END EXAMINATION, JUNE 2022

Semester: **VI of B.Sc.**

Subject: **BOTANY**

Course Title: **Molecular Biology and Genetic Engineering**

Course Code: **BOC 109**

Total Marks: **80**

Date: **/06/2022**

Duration: **2 Hours**

Total No. of Pages: **01**

Instructions: 1) *All questions are compulsory; however, internal choice is available.*
2) *Figures to the right indicate maximum marks assigned to the question.*
3) *Draw appropriate labelled diagrams wherever necessary.*

Q. 1. Answer any four of the following: (4 x 4 marks = 12)

- a. Explain Fraenkel-Conrat's experiment to show RNA as genetic material.
- b. Give the general features of the Genetic Code.
- c. List the characteristics of enhancers in transcription.
- d. Explain the gene organisation in eukaryotes.
- e. Draw a neat labelled diagram of the Ti plasmid.
- f. Elaborate on the steps in genetic engineering.

Q. 2. Write short notes on any four of the following: (4 x 4 marks = 12)

- a. Types of DNA.
- b. Central and revised dogma of molecular biology.
- c. Protein folding.
- d. Applications of ribozymes.
- e. Use of restriction enzymes in rDNA technology.
- f. Bacterial competence.

Q. 3. A. Give an account of the salient features of Watson and Crick's model of DNA. (6)

OR

A. Describe the structure of tRNA with the support of a diagram. (6)

B. Explain the semi-discontinuous model of DNA replication. (6)

Q. 4. A. Explain the rolling circle model of DNA replication. (6)

OR

A. Explain the initiation and elongation processes of transcription in prokaryotes. (6)

B. Describe the initiation and elongation processes of translation in eukaryotes. (6)

Q. 5. A. Examine the use pBR322 in as a vector in gene cloning. (6)

OR

A. Give a brief account of the dideoxy method of DNA sequencing. (6)

B. Explain gene regulation in prokaryotes. (6)

Q. 6. A. Write an account on hairy root culture. (6)

OR

A. Elaborate on the use of gene gun for gene transfer in plants. (6)

B. Explain the steps in the construction of a cDNA library. (6)
