

BACHELOR OF SCIENCE (CBCS-2018 COURSE)  
T. Y. B. Sc. Sem-VI : WINTER- 2022  
SUBJECT : MICROBIOLOGY : GENETICS OF EUKARYOTES & GENE  
MANIPULATION

Day : Monday

Time : 10:00 AM-01:00 PM

Date : 12/12/2022

W-18489-2022

Max. Marks : 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

**Q.1** Attempt **ANY TWO** of the following: (12)

- a) What are cloning vectors? Write different characteristics of good vectors with examples.
- b) Enlist various types of blotting techniques and explain any one.
- c) Explain the term and write significance in RDT
  - i) Ligases
  - ii) Restriction enzymes

**Q.2** Attempt **ANY TWO** of the following: (12)

- a) Explain the PCR technique and write its applications.
- b) With the help of flow chart illustrate how cDNA library is constructed, write the significance of cDNA library.
- c) Define term:
  - i) Cytoplasmic inheritance
  - ii) Maternal effect
  - iii) Compare the structure of nuclear DNA with mitochondrial DNA.

**Q.3** Attempt **ANY TWO** of the following: (12)

- a) Describe genome structure of M<sub>13</sub> phage and explain in brief its use as cloning vector
- b) Schematically demonstrate colony hybridization technique for selecting engineered bacterial cells.
- c) Write application of genetic engineering.

**Q.4** Attempt **ANY THREE** of the following: (12)

- a) Give flowchart to explain Ti plasmid mediated gene transfer in plants.
- b) Schematically explain non-mendelian inheritance of leaf variegation in four o'clock plant.
- c) Write various cellular function encoded by different plasmids.
- d) Write the structure and role of adaptors and linkers in DNA Ligations.

**Q.5** Write short notes on: (**ANY FOUR**) (12)

- a) Petite mutants
- b) YAC vector
- c) PBR 322
- d) Edible vaccines
- e) Mitochondrial syndromes in human

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