

Seat No. : \_\_\_\_\_

# AH-102

April-2019

B.Sc., Sem.-IV

## CC-204 : Biotechnology (Basic Genetics)

Time : 2:30 Hours]

[Max. Marks : 70

1. (A) Discuss Benzer's work on fine-structure analysis of rII locus of T4 phage. Add a note on cis-trans test. 14

**OR**

- (1) Write about the test and back cross with example. 7
- (2) Describe sex-linked inheritance with suitable example. 7
- (B) Answer any **four** of the following : 4
- (1) Phenotypic ratio for dihybrid cross is \_\_\_\_\_.
- (2) Which of the following trait was Not studied by Mendel
- (a) Green pod (b) Yellow seed
- (c) Purple flower (d) Terminal flower
- (3) What is three-point test cross ?
- (4) Which of Mendel's laws is violated by linkage ?
- (5) What is Recombination Frequency ?
- (6) Give examples of Co-dominance.

2. (A) Discuss the various types of DNA repair mechanisms in the cell. 14

**OR**

- (1) Compare DNA and RNA polymerases. 7
- (2) Explain the steps for initiation of protein synthesis. 7
- (B) Answer any **four** of the following in brief : 4
- (1) What is role of Reverse Transcriptase ?
- (2) Define Genetic code
- (3) Name the scientists who proved semi-conservative nature of DNA replication.
- (4) What are Primosome and Replisome ?
- (5) Write any one codon triplet acting as termination codons.
- (6) What is Topoisomerase ?

3. (A) Define mutagen and explain mode of action of various chemical mutagen agents with diagrams. 14

**OR**

- (1) Describe principle and procedure for Ames test. 7
- (2) Discuss morphological and biochemical phenotypic characteristics of bacterial mutants. 7
- (B) Answer any **three** of the following in brief : 3
- (1) What is Spontaneous mutation ?
- (2) How X-ray act as mutagenic agent ?
- (3) Differentiate between Insertion and Deletion.
- (4) What is a Lethal mutant ?
- (5) What is Transversion mutation ?

4. (A) Discuss horizontal gene transfer mechanisms. 14

**OR**

- (1) Describe transposons and its role in gene transfer. 7
- (2) Define 'plasmid' and discuss properties of bacterial plasmid. 7
- (B) Answer any **three** of the following in brief : 3
- (1) The cell having F-factor carrying with it some chromosomal genes are :
- (a) F<sup>+</sup>cell                      (b) F<sup>-</sup>cell
- (c) F'cell                        (d) F'' cell
- (2) What is virulence ?
- (3) Plasmid replication is dependent on replication of host cell (True/False).
- (4) Genetic recombination occurs between \_\_\_\_\_ chromosomes.
- (5) Name the enzyme that catalyses the transposition of an IS element
- \_\_\_\_\_