Seat No. : _____

ML-102

May-2018

B.Sc., Sem.-IV

CC-204 : Biotechnology
(Basic Genetics)

Time : 3 Hours] **[Max. Marks : 70**

1. Answer any **two** : **14**
   (A) Describe Mendel's mono-hybrid and Di-hybrid crosses with examples.
   (B) Discuss linkage mapping and the method to estimate the recombinants by *chi*-square analysis.
   (C) Describe all the Mandelian laws of inheritance.
   (D) Explain the mechanism involved for the inheritance by sex-linked genes.

2. Answer any **two** : **14**
   (A) Explain various models of chromosomal DNA replication.
   (B) Describe the process of DNA replication with diagram.
   (C) Describe DNA repair mechanism and its types.
   (D) Explain the process for cellular synthesis of protein.

3. Answer any **two** : **14**
   (A) Explain mutagenic effects of chemical agents with examples.
   (B) Describe the principle and procedure of Ames test.
   (C) Explain the mechanism and effects of insertion and deletion mutation.
   (D) Describe the types and characteristics of bacterial mutants.

4. Answer in **two** : **14**
   (A) Explain the horizontal mode of gene transfer.
   (B) Write a note on properties and types of bacterial plasmids.
   (C) Discuss transposable elements and their types.
   (D) Explain various types of genetic recombination.

5. Answer the following questions : **14**

(1) What is the function of SOS genes ?

(2) List all terminating codons.

(3) Define frameshift mutation.

(4) What are Okazaki fragments ?

(5) What is replisome ?

(6) What is the importance of a test cross ?

(7) Write the function of virulence plasmid.

(8) Define *cis-trans* test.

(9) What is phenotypic effects of co-dominant alleles ?

(10) What is the function of reverse transcriptase ?

(11) What is incomplete dominance ?

(12) Define the effects of mutation by UV rays.

(13) What is the importance of mutagenesis ?

(14) What is the difference between random and targeted mutations ?
