

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

# ME-102

May-2022

B.Sc., Sem.-IV

CC-204 : Bio-Technology  
(Basic Genetics)  
(New Syllabus)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :**
- (1) All questions in **Section – I** carry equal marks.
  - (2) Attempt any **three** questions in **Section – I**.
  - (3) Question **9** in **Section – II** is **Compulsory**.
  - (4) Draw figures where necessary. Show question number against each answer.
  - (5) Figures in right are marks.

## SECTION – I

1. (A) Explain law of independent assortment with suitable example. 7  
(B) Discuss Benzer's work on rII locus of T4 bacteriophage. 7
2. (A) Define Genetic map. Explain three-point test cross and its significance in mapping. 7  
(B) Discuss Non-Mendelian inheritance and its importance in modern genetics. 7
3. (A) Explain Rolling circle model of DNA replication in detail. 7  
(B) Write a short note on transcription in prokaryotes. 7
4. (A) What is semi-conservative mode of DNA replication ? Describe post replicative modifications in DNA. 7  
(B) Describe genetic code and its importance in protein synthesis. 7
5. (A) List the means of DNA repair mechanism and explain any one in detail. 7  
(B) Write a short note on Chemical mutagen. 7
6. (A) List phenotypic classes of bacterial mutations giving emphasis on conditional mutations. 7  
(B) Elaborate Ames test and its significance in detail. 7

7. (A) What is transduction ? Differentiate between generalized and specialized transduction. 7  
 (B) Write a short note general characteristic of plasmid with suitable diagrams. 7
8. (A) Describe non-homologous recombination illustrating suitable diagrams. 7  
 (B) Elaborate composite transposons. 7

### SECTION – II

9. Answer the following (any **eight**) 8
- (a) What is reverse transcription ?  
 (b) Write role of single stranded binding proteins.  
 (c) Who gave the proof of semiconservative mode of replication ?  
 (d) Write significance of test cross.  
 (e) Formula of Chi-square.  
 (f) Give phenotypic and genotypic ratio of monohybrid cross.  
 (g) What effect does UV radiation causes on skin ?  
 (h) Define physical mutagen.  
 (i) Draw PBR322 plasmid.  
 (j) Draw Primosome.  
 (k) What is processivity of DNA polymerase ?  
 (l) What would be the result of following conjugation ?
- I.  $F^+ \times F$   
 II.  $F^- \times HFr$
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