

Seat No. : _____

NB-110

November-2021

B.Sc., Sem.-V

**CC-301 : Microbiology
(Molecular Biology and Genetics of Prokaryotes)**

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) **Section – II** is **COMPULSORY**.

Section – I

1. (A) Explain with neat and labelled figure the events at replication fork. 7
(B) Describe the experiments that proved that DNA is the genetic material. 7
2. (A) Write a note on contributions of scientist that lead to elucidation of DNA structure. 7
(B) Write notes on :
 - (1) Okazaki fragments 7
 - (2) Cairn's model for DNA replication 7
3. (A) Explain termination of transcription with appropriate diagram. 7
(B) Write a note on tryptophan operon and its control. 7
4. (A) Write a detailed note on Genetic code. 7
(B) Write notes on :
 - (1) Structure of tRNA. 7
 - (2) Termination of translation 7
5. (A) Describe spontaneous mutation. 7
(B) Enlist DNA repair mechanisms and describe mismatch repair with a diagram. 7

6. (A) Write a note on transposons. 7
 (B) Describe chemical mutagenesis. 7
7. (A) Write a note on types of plasmids with a figure for at least one type. 7
 (B) Explain F+X F- conjugation and highlight how it differ from Hfr conjugation. 7
8. (A) Draw DNA uptake system for both Gram positive and Gram-negative bacteria and enlist functions of each associated proteins/enzymes. 7
 (B) Explain restricted transduction and define HFT. 7

Section – II

9. Answers the following in 1-2 lines : (Any 8) 8
- (1) Give functions of α subunit of DNA polymerase III.
 - (2) What is importance of feature 'DNA base pair can flip' ?
 - (3) Give two features of Watson and Cricks' DNA model that explains stability of DNA.
 - (4) Give conclusion of Meselson and Stahl experiment.
 - (5) Who proposed theory of central dogma ?
 - (6) Draw initiation complex for translation.
 - (7) What is the role of E site on 50S subunit of ribosomes ?
 - (8) What is catabolite repression ?
 - (9) Give example of Mis-sense mutation.
 - (10) What is translesion repair ?
 - (11) What are conditional mutants ?
 - (12) What is intergenic suppressor mutation ?
 - (13) What is F' conjugation ?
 - (14) Who discovered phenomenon of transduction ?
 - (15) Name two naturally competent bacteria.
 - (16) Highlight the difference between zygote and merozygote.