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

   (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.

   (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 5OS subunit of ribosomes ?

(8) What is catabolite repression ?

(9) Give example of Mis-sense mutation.

(10) What is transleison 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.