Seat No. : _____

NB-105

November-2022

B.Sc., Sem.-V

301 : Microbiology

(Theory)

Time : 2½ Hours] **[Max. Marks : 70**

Instructions : (i) **All** questions are compulsory.

(ii) Draw figures wherever necessary.

(iii) Write correct question number against each answer.

(iv) Figures to the right indicate marks.

1. Write a detailed note on Watson and Crick's model of DNA with its elucidation. **14**

OR

(A) Describe the roles of the different proteins involved in replicating of DNA duplex. **7**

(B) Describe the experiment which demonstrated that genetic material of phage is DNA. **7**

2. Discuss in detail the initiation and elongation process of translation in prokaryotes. **14**

OR

(A) Explain the regulation of negative repressible control in *Lac* operon. **7**

(B) Discuss various important features of genetic code. **7**

3. What is mutation ? Describe in detail the molecular basis of mutation. **14**

OR

(A) Explain the mode of mutagenic action of acredine orange and UV rays. **7**

(B) Discuss the mechanism of SOS repair in prokaryotes with suitable diagram. **7**

4. Explain role of bacteriophage in gene transfer in bacteria. **14**

OR

(A) Write a note on gram positive bacterial transformation. **7**

(B) What is horizontal gene transfer? Explain the process of Hfr X F – cross. **7**

5. Give short and specific answers in **1-2** lines only : (any **seven**) **14**

(1) Define : Replisome

(2) Give two examples of enzymes used in replication.

(3) Why Z DNA forms ?

(4) Draw the structure of tRNA.

(5) What is charging of an amino acid ?

(6) What are the different regions / components of operon ? Define any one.

(7) Give two examples of mis-sense mutation.

(8) Name two chemical mutagenic agents.

(9) What are trans-version mutations ? Give one example of trans-version mutation.

(10) Enlist different types of plasmids.

(11) Differentiate between zygot and merozygotes.

(12) What does competent refer to in competent cells used in transformation ? Give one example of naturally competent bacteria.
