2. Write a note on the following :

(a) Excision repair,

(b) Mismatch repair.

Or

Write a note on the following :

(a) SOS repair system,

(b) Recombination repair.

3. Describe the various types of plasmids and its role in gene cloning.

Or

Explain transposons, mechanism of transposition and its uses in genetic analysis.

4. Describe the features of T4 life cycle and T4 gene organization.

Or

Explain the life cycle of λ phage and its genetic organization.

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G-3/336/21 **Roll No.……...**

III Semester Examination, April-2021

M.Sc.

MICROBIOLOGY

Paper II

(Microbial Genetics)

Time : 3 Hours] [Maximum Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 sections.* ***Section A*** *is objective type/Multiple Choice questions with no internal choice.* ***Section B*** *is short answer type with internal choice.* ***Section C*** *is long answer type with internal choice.*

SECTION 'A'

(Objective Type Questions)

Choose the correct answer : **1 × 8 = 8**

1. If the mutation has negligible effect on the function of a gene is known as :

(a) Silent mutation

(b) Frame shift mutation

(c) Substitution mutation

(d) Nonsense mutation

2. Which of the following process occurs between DNA molecules of very similar sequences ?

(a) Homologous genetic recombination

(b) Site specific recombination

(c) Non-homologous recombination

(d) Replicative recombination

3. In *E. coli* mismatches are detected by which repair protein ?

(a) Mut H (b) Mut L

(c) Mut S (d) Mut D

4. Xeroderma pigmentosum in human is associated with mutation in :

(a) Photoreactivation (b) Nucleotide excision repair

(c) Base excision repair (d) Mismatch repair

5. To be able to coexist in the same cell, different plasmid must be :

(a) conjugative (b) of high copy no.

(c) stable at high temperature

(d) compatible

6. The central block of the composite transposable element consist of gene for :

(a) Transposase (b) Antibiotic resistance

(c) Integrase (d) Lactamase

7. A map of chromosome which shows identifiable site is called :

(a) Gene expression

(b) Genome sequencing

(c) Chromosome walking

(d) Genome map

8. Which gene is required for the lysogenic phage to be adopted :

(a) C I (b) C II

(c) C III (d) All

SECTION 'B' **6 × 4 = 24**

(Short Answer Type Questions)

Note : *Answer the following questions in 250 words.*

1. Explain the gene transfer by conjugation in bacteria.

Or

Describe the methods of isolation of mutants

2. Describe the biological indication of DNA damage.

Or

Explain the following :

(a) Deamination,

(b) Alkylation of DNA.

3. Explain Lysogeny and its applications.

Or

Write a note on constructions of bacterial strains.

4. Discuss the genetic recombination in phages.

Or

Explain the genetic mapping.

SECTION'C' **12 × 4 = 48**

(Long Answer Type Questions)

Note : *Answer the following questions in 500 words.*

1. Describe the molecular basis of genetic recombination.

Or

Write an essay on various types of mutagens and their origin.