

G-3/382/22

Roll No.

III Semester Examination, January 2022

M.Sc.

MICROBIOLOGY

Paper II

(Microbial Genetics)

Time : 3 Hours]

[Max. 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

1×8=8

(Objective Type/Multiple Choice Questions)

Choose the correct answer :

1. Which of the following mechanisms will remove Uracil and incorporate the correct base ?
 - (a) Direct repair
 - (b) Base excision repair
 - (c) Mismatch repair
 - (d) Nucleotide Excision Repair

P.T.O.

[2]

2. A point mutation that replaces a purine with another purine, or a pyrimidine with another pyrimidine :
 - (a) Nonsense mutation
 - (b) Silent mutation
 - (c) Transition mutation
 - (d) Transversion
3. Which of the following process occurs in regions where no large scale sequence similarity is apparent ?
 - (a) Homologous genetic recombination
 - (b) Site specific recombination
 - (c) Non-homologous recombination
 - (d) Replicative recombination
4. The enzymes that catalyze the strand transfer step during recombination are called :
 - (a) recombinases (b) transferases
 - (c) helicase (d) gyrase
5. Bacterial recombination causes transformation of the recipient cell to :
 - (a) donor cell (b) merozygote
 - (c) zygote (d) recipient cell

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6. The IS elements can be identified by the presence of :
- Antibiotic resistance gene
 - Endonuclease cleavage site
 - 50 bp inverted repeat
 - Integrase site
7. Choose the correct statement for the C.I. gene :
- It represses only C | | gene
 - It activates C | | gene & represses C | | | gene
 - It represses both C | | & C | | | gene
 - It activates both C | | | an C | | | gene
8. The immediate early transcripts direct synthesis of which genes ?
- N genes
 - Cro genes
 - Both (a) and (b)
 - PR and PL genes

SECTION B**6×4=24****(Short Answer Type Questions)**

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

Unit-I

1. What are results of DNA damages ?

Or

Distinguish between direct repair and excision repair.

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Unit-II

2. Explain what physical mutagens are.

Or

Write a note on genetic analysis of mutants.

Unit-III

3. Explain role of plasmids in bacterial conjugation.

Or

Describe the experiment of discovery of transformation.

Unit-IV

4. Write a note on RAPD.

Or

Discuss gene organization in T₄ phage.

SECTION C**12×4=48****(Long Answer Type Questions)**

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

Unit-I

1. Discuss about mismatch base repair.

Or

Describe formation of pyrimidine dimers and its repair.

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Unit-II

- 2.** Discuss somatic and germinal mutations.

Or

Give biological role of site specific recombination.

Unit-III

- 3.** Discuss structure of transposons and their significance.

Or

Describe generalized transduction and its significance.

Unit-IV

- 4.** Describe genetic recombination in phages.

Or

Discuss life-cycle of λ phage.

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