G-3/354/22

Roll No. .....

III Semester Examination, January 2022

M.Sc.

BIOTECHNOLOGY

Paper IV

(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 is a non composite transposon ?

   (a) Tn 5 (b) Tn 10

   (c) Tn 3 (d) Tn 9

2. Which of the following is the correct sequence of events in replication by bacterial phage ?

   (a) Adsorption, pinning, DNA injection, sheath contraction

(b) Adsorption pinning, sheath contraction, DNA injection

(c) Adsorption, absorption, sheath contraction pinning

(d) Adsorption absorption pinning, DNA injection

3. Acridine orange is which type of mutagene :

(a) Chemical compound

(b) Transposons

(c) Base analog

(d) Intercalating agents

4. What does viral DNA becomes after being associated with the bacterial chromosomes ?

(a) Plasmids (b) Plaque

(c) Prophage (d) Gene

5. In the growth curve of plaque forming units, the time from infection until lysis is known as :

(a) Eclipse period (b) Rise period

(c) Burst period (d) Latent period

6. Name the regulatory component of cell cycle :

(a) Cyelin (b) CDR

(c) DNA (d) APC

Unit-III

7. An organism containing a gene which does not belong to it and is derived from somewhere else the organism is said to :

(a) Transformed (b) Mutant

(c) Transgenic (d) Modified

8. All the following techniques involve hybridization between single strand nucleic acid except :

(a) RFLP

(b) Southern Blot analysis

(c) Northern Blot analysis

(d) Microarray

SECTION B 6×4=24

(Short Answer Type Questions)

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

Unit-I

1. Explain mechanism of transformation.

Or

Describe about transformation mechanism.

Unit-II

2. Describe test for mutages.

Or

Explain lysogenic life-cycle of virus.

3. What are Transcriptome ?

Or

Write the role of Cyclin Dependent Kianase (CDK) in cell cycle.

Unit-IV

4. What is *c*DNA ? Describe in brief.

Or

Write the role of agrobacterium Ti plasmid in genetic transformation.

SECTION C **12×4=48**

(Long Answer Type Questions)

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

Unit-I

1. What are Plasmid ? Explain types and replication of plasmid.

Or

Give a detailed account of transposons.

Unit-II

2. Describe mutation, types of mutages and mechanism of mutation.

Or

Describe retrovirus genome and it's application.

Unit-III

3. Describe genetics of microbes.

Or

Explain genetic regulation of cell cycle in *S.cervisae*.

Unit-IV

4. Explain the ISH and FISH techniques in detail.

Or

Write the role of microbes as vector.

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