

[This question paper contains 4 printed pages.]

1454

Your Roll No.

B.Sc. (Hons.) / II

A

MICROBIOLOGY – Paper X

(Microbial Genetics and Molecular Biology)

(Admissions of 2004 & onwards)

Time : 3 Hours

Maximum Marks : 60

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt Five questions in all.

Q. 1 is compulsory.

All questions carry equal marks.

1. (a) Define the following :

(i) si-RNA

(ii) Competence

(iii) Palindrome

(iv) R-plasmids

(v) Replicon

(vi) Operon

(vii) UP elements

(viii) TATA Box

(ix) Pseudoreversion

(x) Prototroph

P.T.O.

(xi) Integron

(xii) Suicide plasmid

(1×12=12)

2. Differentiate between the following (any three) :

(i) Inducible and Repressible operon.

(ii) Loss of function and Gain of function mutations.

(iii) Composite and non-composite transposons.

(iv) Generalised and Specialised transduction.

(4×3=12)

3. (a) How can bacterial genes be mapped by Interrupted Mating Technique ? (4)

(b) How does action and mutagenic effect of 5-Bromouracil differ from Nitrous acid ? (3)

(c) In what ways are most eukaryotic transcripts modified ? What are the functions of these post transcriptional modifications ? (4)

(d) What is Spliceosome ? (1)

4. Write short notes on the following :

(i) Error prone Repair mechanism

(ii) Mutator genes

- (iii) Host Controlled Restriction and Modification
- (iv) Codon bias (3×4=12)
5. (a) Write the functions of following :
- (i) Amino acyl – tRNA synthetase
 - (ii) Topoisomerase
 - (iii) Sigma factor (1×3=3)
- (b) How is the shortening of Chromosome prevented during replication ? (2)
- (c) Comment on the uses of mutants. (4)
- (d) Explain the terms – Conjugative, mobilizable and Self transmissible plasmids. (3)
6. (a) What are the similarities and differences among retroviruses, retrovirus like elements and retroposons ? (4)
- (b) Which genes in λ phage when mutated prevent lysogenisation ? (2)
- (c) Explain Intergenic reversion. (3)
- (d) Give the contributions of following scientists (**Do any three**) :

- (i) R. Okazaki
- (ii) Zinder and Lederberg
- (iii) Roger Kornberg
- (iv) Bruce Ames (1×3=3)