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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

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(xi) Integrator

(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

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(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) :

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

(1×3=3)

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