

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2337 F-4 Your Roll No.....

Unique Paper Code : 2531401

Name of the Course : **B.Sc. (Hons.) Microbiology**
(Three year course of Undergraduate erstwhile FYUP)

Name of the Paper : Microbial Genetics and Genomics

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt five questions in all.
3. All questions carry equal marks.
4. Attempt all parts of a question together.

1. Define any six of the following :

(a) Frame-shift mutations

(b) IS elements

(c) Mobilizable plasmids

(d) Hybrid dysgenesis

(e) Reversions

(f) Plasmid incompatibility

(g) Conditional lethal mutations

(2.5×6=15)

2. Write short notes on any three of the following :

(a) Ty Retrotransposons

(b) Colicinogenic plasmids

P.T.O.

- (c) Mapping by Co-transduction of markers
- (d) Plasmid replication (5×3= 15)
3. (a) Differentiate between **any three** of the following :
- (i) Intragenic and Intergenic suppression
 - (ii) Composite and Non-composite transposons
 - (iii) Generalised and Specialised Transduction
 - (iv) Loss of function and gain of function mutations (4×3=12)
- (b) Explain the genome organization of *Tetrahymena*. (3)
4. (a) Explain mapping by Interrupted mating experiment. (6)
- (b) Explain the contribution(s) of Barbara McClintock in microbial genetics. (3)
- (c) Give mode of action of **any two** of the following mutagens :
- (i) Nitrous acid
 - (ii) Acridine orange
 - (iii) 5-bromo uracil (2×3=6)
5. (a) Explain the genetic regulation of lysogeny in lambda phage. (6)
- (b) Explain the Ti plasmids. (4)
- (c) Describe the U-tube experiment for conjugation. (5)
6. (a) Explain bacterial transformation and its significance. (6)
- (b) Explain Ames test and its importance. (6)
- (c) Which of the following base-pair changes are transitions and which are transversions :
- (i) AT to TA
 - (ii) AT to GC
 - (iii) GC to TA (1×3=3)