

2013

M.Sc.

2nd Semester Examination

MICROBIOLOGY

PAPER—VIII (MCB-202)

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any two questions from each group.

Group—A

(Microbial Genetics)

[Marks : 20]

Answer any two questions.

1. (a) Comment on the applicability of Mendelian principles of inheritance in bacteria.
- (b) Explain the law of DNA constancy and c-value paradox.
- (c) Classify transposons. Explain briefly the function of Ac - Ds elements. 2+3+(2+3)

(Turn Over)

2. (a) Briefly explain eukaryotic gene regulation with two examples.
- (b) Mention the significance of comparative genomics in bacteria.
- (c) What is epigenetics?

$(2\frac{1}{2}+2\frac{1}{2})+3+2$

3. Write short notes on (any four) : $2\frac{1}{2} \times 4$

- (a) DNA microarray ;
- (b) Hfr F^- \times conjugation ;
- (c) Positive regulation of *lac* gene ;
- (d) Major differences between B-DNA and Z-DNA ;
- (e) Incomplete dominance and codominance ;
- (f) Histone proteins.

Group—B

(Molecular Biology)

[Marks : 20]

Answer any two questions.

4. (a) State the role of the following in DNA replication mechanism : 1×5
- (i) Dna B ; (ii) Dna G ; (iii) Gyrase ; (iv) SSB
- (v) DNA pol-I.

- (b) Explain semiconservative DNA replication. 3
- (c) What is Oric? 2
5. Write short notes on the following (any four) : $2\frac{1}{2} \times 4$
- (a) Split gene ;
 - (b) Capping ;
 - (c) Self splicing ;
 - (d) TF-IID ;
 - (e) Shine Dalgarnosequence ;
 - (f) Pribnow box.
6. (a) Describe how thymidine dimer is repaired by the photoreactivation mechanism. 3
- (b) What are the common properties of cancer cell that differs from normal counterpart. 2
- (c) Describe the role of pRB in cell cycle check point regulation. 3
- (b) State the role of methylation in gene regulation. 2
-

