2015

M.Sc.

2nd Semester Examination

MICROBIOLOGY

PAPER—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.

Illustrate the answers wherever necessary.

Group — A

(Microbial Genetics)

[*Marks : 20*]

Answer any *two* questions.

1. (a) Human AB-blood group deviate the Mendel's principle of Heredity – justify the statement.

(b) Define sex linked and autosomal linked characters with example.

(c) What is the frequnecy of heterozygous Aa in random mating population if the frequency of recessive phenotype is 0.09 ? 3+3+4

2. (a) State the distinguishable features between B and Z form of DNA ?

(b) Give a comparative account of Gram positive and Gram negative transformation mechanism.

(c) Write the medical significance of bacterial transposon.

(d) Distinguish between Retrovirus like eliment and retroposons. 2+3+2+3

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

(a) Dosage compensation ;

(b) Cis-trans test ;

(c) Impact of histone acetylation-deacetylation ;

(d) C-value paradox ;

(e) Specilized transduction ;

(f) Ac/Ds element in maize ;

(g) Genome wide mutagenesis.

Group — B

[Marks : 20]

Answer any *two* questions.

4. (a) What are the repeats associated Si RNA and pi RNA ? Describe their role in genome maintenance.

(b) Describe the transcriptional regulation in lambda phage.

(c) What are the roles of DNA polymerase I and Topoisomerase II in bacterial DNA replication. 3+4+3

5. (a) Define 'operon'. Briefly write the negative control of Lac operon and compare with the CAMP mediated gene regulation in *E.coli*. 1+5+4

6. Write notes on : $2\frac{1}{2} \times 4$

(a) RNA polymerase ;

(b) Epigenetics ;

(c) DNA methylation ;

(d) Site directed mutagenesis ;

(e) SOS repair ;

(f) Spliciosome.

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