[Time:2 Hrs] **[Marks:40]**

Please check whether you have got the right question paper.

N.B: **1. All question are compulsory.**
2. Figures to the right indicate full marks.

I) MCQ 10

Ql) What is the transduction process?
a. The genome is transferred from one bacterium to another bacterium
b. The part of the DNA is transferred by bacteriophage from one bacterium to another
c. The plasmid is transferred from one bacterium to another
d. The part of the DNA molecule is transferred into the RNA molecule

Q2) The gene transfers in microorganisms occur via the transposons or 'jumping genes', these are also a
a. RNA molecule
b. Genome
c. Plasmids
d. DNA molecule

Q3) Which of the following organisms has the smallest genome?
a. H. influenzae
b. M. genitalium
c. M. tuberculosis
d. None of these

Q4) Which gene in a plasmid is indispensible for it to participate in conjugation?
a. Pilli forming gene
b. Origin of replication
c. Sex determining gene
d. Origin of transfer

Q5) The term cistron, refers to:
a. region in tRNA molecule
b. codon
c. region of DNA that codes for a single polypeptide chain
d. ribosomal protein

Q6) Direct repeats in the IS element are present ____ _
a. Within the transposon
b. Upstream the inverted repeat
c. Within the inverted repeat
d. Downstream the inverted repeat

Q7) When the same region, or locus, of a chromosome has two (or more) slightly different DNA sequences in different chromosomes or individuals of the same species, these are described as:

a. Satellite DNA
b. Dispersed repetitive DNA
c. polymorphs
d. moderately repetitive DNA

Q8) The E. coli ligases uses NAD+, and the ligase enzyme from bacteriophage T4 uses:

a. Cacl2
b. ATP
c. Mn2+
d. NAD+

Q9) ---------- the first plasmids discovered,when Shigella and Escherichia coli strains Resistant to a number of antibiotics were isolated from the fecal flora of patients in Japan in the late 1950s.

a. F- plasmid
b. R - plasmid
c. Col plasmid
d. virulence plasmid

QlO) Conjugation can't take place between _____ _

a. F- and F+
b. F' and F
c. HFR and F
d. HFR and F+

II) Answer anyone of the following 6

a. Enlist different types of plasmids and Write a short note on plasmid incompatibility.

OR

b. What is the'difference between repressible and inducible operon and explain the regulation of tryptophan operon by attenuation

III) Answer any4 of the following 24

Enlist the types of mobile genetic elements present in bacteria and

a. Explain the Holliday model for homologous recombination.
b. Explain the mechanism of lac operor when both glucose and lactose both are present in the medium
c. Describe in details Transposons
d. Define transformation, Outline different steps involving natural transformation in *Bacillus subtilis*
e. Write a note on Plasmid curing

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