BACHELOR OF SCIENCE (CBCS-2018 COURSE)
T. Y. B. Sc. Sem-V : WINTER- 2022
SUBJECT : MICROBIOLOGY : GENETICS OF PROKARYOTES

Day : Wednesday | Time : 03:00 PM-05:00 PM

Date : 14-12-2022 | **W-18433-2022** | Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.

Q.1 Attempt **ANY TWO** of the following : **(12)**

a) Write structure and regulation of arabinose operon.
b) Define the term transduction and describe it types.
c) Give comparison of natural transformation in *S. pneumoniae* and *H. influenzae.*

Q.2 Attempt **ANY TWO** of the following : **(12)**

a) Explain in brief Genetic exchange by conjugation in Gram Positive bacteria.
b) Explain -" lac operon is a negatively regulated inducible operon".
c) Write J. Shapiro's model to explain the replicative transposition mechanism.

Q.3 Attempt **ANY TWO** of the following : **(12)**

a) Describe the term leader region. Write characteristic of trp leader region and its significance in regulation of tryptophan biosynthesis.
b) Write the structure and example of composite transposon. Explain the outside end transposition.
c) Write the role of F-pili in bacterial conjugation system. Write the transfer replication of an F plasmid.

Q.4 Attempt **ANY THREE** of the following : **(12)**

a) Draw schematic diagram to represent course of competence development and write the environmental factors those induce competence.
b) What are Hfr cells? Write the characteristics of Hfr clones
c) Elaborate on - specialized transducing phages are good cloning vehicles.
d) Explain the operon model as described by Jacob and Monod.

Q.5 Write short notes on **ANY FOUR** of the following : **(12)**

a) Artificial transformation
b) IS elements
c) Lac mutants
d) Positive regulation of an operon
e) Differential translation of genes in lac MRNA.

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