BACHELOR OF SCIENCE (CBCS-2018 COURSE)
T. Y. B. Sc. Sem-V : WINTER :- 2021
SUBJECT: MICROBIOLOGY : GENETICS OF PROKARYOTES

Day : Thursday
Date 27-01-2022

W-18433-2021

Time : 02:00 PM-05:00 PM
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) Describe in brief the natural transformation system in *H.influenzae* .

b) What is F plasmid? Explain structure and role of F plasmid in bacterial gene transfer.

c) Define the term transduction. Explain specialized transduction mediated by λ phage.

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

a) What are transposons? Describe structure of IS elements. Write mechanism of insertion of IS elements.

b) Explain the structure of trp operon and add a note on two control mechanisms that regulates tryptophan biosynthesis.

c) Explain the regulation of lac operon w.r.t.
   i) Repressor
   ii) cAMP.

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

a) Describe structural organization of arabinose operon and its functioning.

b) Write the structure of composite transposon and explain mechanism of inside-end transposition.

c) Explain in brief genetic exchange by conjugation in Gram Negative bacteria

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

a) Write the flow chart to describe steps involved in Artificial transformation.

b) Draw the diagram to represent the eclipse phase of transforming DNA.

c) Write the U-tube experiment to demonstrate the transforming principle is DNA.

d) Define the term 'transposition' and explain with a suitable diagram replicative transposition.

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

a) HFT & LFT phages

b) Lac mutants

c) Positive regulation of gene expression

d) Enzymes involved in transposition

e) Griffith's experiment

*****