DBL-003-1015011 Seat No. _____

Third Year B. Sc. (Sem. V) (CBCS)
(W.E.F. 2016) Examination
June - 2022
Microbiology : MB-503
(Molecular Biology & Genetic Engineering)
(Old Course)

Faculty Code : 003
Subject Code : 1015011

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Attempt any five of ten questions.
(2) Right side figures indicate total marks of the question.
(3) All questions carry the same marks.

1 (a) Answer specifically : **4**
(1) What is Cistron ?
(2) The Double helical structure of DNA was given by _____
(3) Define : Allele
(4) The radioactive isotopes used in the experiment by Hershey and Chase are _____.

(b) Answer the following : **2**
Name models of DNA Replication.

(c) Answer the following : **3**
Discuss : Griffith's Experiment of Transformation.

(d) Write a note on : **5**
Mendel's law of Inheritance.

2 (a) Answer specifically : **4**
(1) One gene one Enzyme hypothesis was given by _____.
(2) DNA is replicating by semi conservative model was proved by _____.
(3) _____ is the smallest unit of genetic material.
(4) Why Mendel selected pea plant ?

(b) Answer the following : **2**
Draw labelled structure of Gene.

(c) Answer the following : **3**
What is the Rolling circle model ?

(d) Write a note on : **5**
Process of DNA Replication.

3 (a) Answer specifically : **4**
(1) What is Gene ?
(2) What are exons ?
(3) Who gave the concept of operon ?
(4) Define : Gene Regulation.

(b) Answer the following : **2**
What is RNA slicing ?

(c) Answer the following : **3**
Explain : Post Translational modifications.

(d) Write a note on : **5**
Transcription and post Transcriptional control

4 (a) Answer specifically : **4**
(1) Define : Transcription.
(2) What are Ribosomes ?
(3) Who gave fine structure of Gene ?
(4) Non coding segment of DNA or RNA which does not code for any protein is called _____

(b) Answer the following : **2**
What is Genetic code ?

(c) Answer the following : **3**
Explain : Translation

(d) Write a note on : **5**
The Lac operon

5 (a) Answer specifically : **4**
(1) Define : Transformation.
(2) What is Electroporation?
(3) Transposons were discovered by _____.
(4) Only specific portions of the host DNA is picked up in _____ transduction.

(b) Answer the following : **2**
State various types of Recombination.

(c) Answer the following : **3**
Transposons

(d) Write a note on : **5**
Conjugation in Gram Positive and Negative Bacteria.

6 (a) Answer specifically : **4**
(1) Enlist various methods of gene transfer.
(2) Direct contact between cells is _____method of Gene Transfer.
(3) Define : Holliday Junction
(4) What is inverted repeat ?

(b) Answer the following : **2**
Write Davis U-Tube experiment.

(c) Answer the following : **3**
Write a note on Generalized and Specialized Transduction.

(d) Write a note on : **5**
Transformation as a method of Gene Transfer

7 (a) Answer specifically : **4**
(1) Define : Mutation.
(2) What are Phenotypic Mutations ?
(3) Who discovered Ames Test ?
(4) Write any two base analogues.

(b) Answer the following : **2**
How intercalating agents cause mutation ?

(c) Answer the following : **3**
Explain Photo reactivation.

(d) Write a note on : **5**
Spontaneous and induced mutations

8 (a) Answer specifically : **4**
(1) What is frame shift mutation ?
(2) Give examples of chemical Mutagen.
(3) Define : Mutagenesis
(4) Name error prone repair mechanism.

(b) Answer the following : **2**
What is mutation rate ?

(c) Answer the following : **3**
Explain : Ames Test

(d) Write a note on : **5**
Various Repair mechanisms.

9 (a) Answer specifically : **4**
(1) What is Plasmid ?
(2) What is BAC and YAC ?
(3) What is Bioliastics ?
(4) Cleavage of DNA at specific site along molecule is done by _____ enzyme.

(b) Answer the following : **2**
What are molecular chaperons ?

(c) Answer the following : **3**
Describe : Detection of recombinant molecules.

(d) Write a note on : **5**
Vectors of Recombinant DNA technology

10 (a) Answer specifically : **4**
(1) Define : Genetic Engineering.
(2) Name enzymes used in rDNA Technology.
(3) Define : Cosmid
(4) What is Blue white screening ?

(b) Answer the following : **2**
Write any two applications of genetic engineering.

(c) Answer the following : **3**
Site Directed Mutagenesis.

(d) Write a note on : **5**
Genetic manipulations of Prokaryotes
