Seat No. _____

HAL-003-2015011

Third Year B. Sc. (Sem. V) (CBCS)

(W.E.F. 2019) Examination

June - 2023

MB-503 : Molecular Biology and Genetic Engineering

(New Course)

Faculty Code : 003

Subject Code : 2015011

Time : $2\frac{1}{2}$ / Total Marks : **70**

1 (a) Answer specifically: **4**

(1) Define : Genetics.

(2) Who is known as father of Genetics ?

(3) Name any two enzymes which are used in DNA Replication.

(4) Give contribution of Hargovind Khurana.

(b) Answer in brief : (any 1 out of 2) **2**

(1) What are overlapping and Nested genes ?

(2) What is the meaning of semi conservative replication ?

(c) Answer in detail : (any 1 out of 2) **3**

(1) Rolling circle model.

(2) Give difference between DNA Replication in Prokayotes and Eukaryotes.

(d) Write notes on : (any 1 out of 2) **5**

(1) Mendel's Law of Inheritance.

(2) DNA Replication in *E coli*.

2 (a) Answer specifically : **4**

(1) Define : Translation.

(2) What is Shine Dalgarno sequence ?

(3) Write importance of mRNA.

(4) What are constitutive genes ?

(b) Answer in brief : (any 1 out of 2) **2**

(1) Show central dogma of life.

(2) What is capping ?

(c) Answer in detail : (any 1 out of 2)

(1) Discuss Post Translational modifications.

(2) Explain steps in RNA processing.

(d) Write notes on : (any 1 out of 2) **5**

(1) Lactose Operon.

(2) trnscription in prokayotes.

3 (a) Answer specifically : **4**

(1) Name types of Recombination.

(2) Transposons were discovered by _____.

(3) Naked DNA can be taken up into cells via the process of _____.

(4) Define : Abortive Transduction.

(b) Answer in brief : (any 1 out of 2) **2**

(1) What is Homologous recombination ?

(2) What is specialized transduction ?

(c) Answer in detail : (any 1 out of 2) **3**

(1) F'Conjugation.

(2) Transposable genetic elements.

(d) Write notes on : (any 1 out of 2) **5**

(1) Transduction

(2) Transformation

4 (a) Answer specifically : **4**

(1) What is Mutation Rate ?

(2) What is Frame shift mutation ?

(3) Give examples of chemical mutagen.

(4) Name error prone repair mechanism.

(b) Answer in brief : (any 1 out of 2) **2**

(1) What is Wobble Hypothesis ?

(2) What is Translocation ?

(c) Answer in detail : (any 1 out of 2) **3**

(1) Discuss Biochemical basis of mutation.

(2) What is Excision repair mechanism ?

(d) Write notes on : (any 1 out of 2) **5**

(1) Reversion and Ames Test.

(2) Mismatch repair and SOS.

5 (a) Answer specifically : **4**

(1) _____ is used to join vector and target DNA.

(2) What is BAC and YAC ?

(3) Give any two applications of genetic engineering.

(4) Enlist any four DNA tailoring enzymes.

(b) Answer in brief : (any 1 out of 2) **2**

(1) Draw labelled structure of pUC18.

(2) What is Shotgun technique ?

(c) Answer in detail : (any 1 out of 2) **3**

(1) Ti Plasmid

(2) Site Directed Mutagenesis

(d) Write notes on : (any 1 out of 2) **5**

(1) Isolation of DNA.

(2) Vectors of r-DNA technology.
