



BCH-003-1015011

Seat No. _____

B. Sc. (Sem. V) (W.E.F. 2016) Examination

August - 2021

MB-503 - Microbiology

(Molecular Biology & Genetic Engineering)

(Old Course)

Faculty Code : 003

Subject Code : 1015011

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : Answer any five questions out of ten.

- 1 (a) Answer the following in short. 4
- (1) Write law of dominance.
 - (2) Write contribution of Gregor Mendel in the field of genetics.
 - (3) What is alleles ?
 - (4) What is Genotype ?
- (b) Answer in brief : 2
Write Mendel's law of inheritance.
- (c) Answer in detail. 3
Explain complementation test.
- (d) Write in detail. 5
DNA Replication.
- 2 (a) Answer in short : 4
- (1) What do you mean by Okazaki Fragments ?
 - (2) What is Phenotype ?
 - (3) Write Mendel's law of segregation.
 - (4) Write contribution of George Beadle and E.L. Tatum in the field of genetics.
- (b) Answer in brief : 2
Write about incomplete dominance.
- (c) Answer in detail. 3
Write about gene structure and architecture.
- (d) Answer in detail. 5
Write about 'DNA is the universal genetic material' with giving experimental example.

- 3 (a) Answer in short. 4
 (1) What is central dogma of life ?
 (2) What is operon ?
 (3) What are constitutive gene ?
 (4) What is Genetic code ?
- (b) Answer in brief. 2
 Enlist post translational modification.
- (c) Answer in detail. 3
 Explain RNA splicing.
- (d) Write a note on: 5
 Transcription process.
- 4 (a) Answer in short: 4
 (1) What is transcription ?
 (2) Which codons are used as termination codon ?
 (3) _____ are non coding nucleotide present on RNA.
 (4) $T\Psi C$ loop of t-RNA has _____.
- (b) Answer in short : 2
 What is tailing process in post-transcriptional modification ?
- (c) Answer in short : 3
 Explain structure of tRNA.
- (d) Answer in detail : 5
 Explain in detail : Lac Operon
- 5 (a) Answer in short : 4
 (1) What is Recombination ?
 (2) Naked DNA can be taken up into cells via the process of _____.
 (3) Conjugation process is _____ and _____ mediated.
 (4) 'U' tube experiment is given by _____.
- (b) Answer in brief : 2
 Explain specialized transduction.
- (c) Answer in short : 3
 Explain transposable elements.
- (d) Answer the question : 5
 Explain : Conjugation

- 6 (a) Answer the questions : 4
- (1) _____ is use as mediator/vector in transduction process.
 - (2) Who isolated the substance responsible for the transformation of pneumococci and determined it as DNA ?
 - (3) Artificial competence in E.coli is induced by _____ and/or _____
 - (4) What are Hfr strains ?
- (b) Answer in brief : 2
List 3 types of bacterial genetic recombination seen in nature.
- (c) Answer in short : 3
Explain $F^+ \times F^-$ mating.
- (d) Answer in detail : 5
Explain transduction.
- 7 (a) Answer the questions : 4
- (1) What is mutation ?
 - (2) What is lethal mutation ?
 - (3) Enlist the types of mutation.
 - (4) Write equation for mutation rate.
- (b) Answer in brief : 2
What is photo reactivation ?
- (c) Answer in detail. 3
Explain Ames test
- (d) Answer in detail. 5
Write a note on DNA repair mechanism.
- 8 (a) Answer in short. 4
- (1) What is morphological mutations ?
 - (2) What is deletion in structural chromosomal mutation ?
 - (3) What is aneuploidy ?
 - (4) Write name of biological mutagens.

- (b) Answer in brief : 2
 Explain transition and transversion.
- (c) Answer in detail. 3
 Explain phenotypic effect of mutation.
- (d) Answer in detail. 5
 Write in detail about mutation at Gene level.
- 9** (a) Answer in detail. 4
 (1) Give full form of REN.
 (2) Give types of REN.
 (3) What is Ti plasmid ?
 (4) Give any two names of REN.
- (b) Answer in brief : 2
 What are BAC and YAC ?
- (c) Answer in detail. 3
 Explain Gene cloning.
- (d) Answer in detail. 5
 Write a note on application of genetic engineering.
- 10** (a) Answer in short. 4
 (1) Define vectors.
 (2) What are molecular chaperons ?
 (3) What is full form of PUC 19 ?
 (4) What is genetic engineering ?
- (b) Answer in brief. 2
 Discuss role of REN in genetic manipulation.
- (c) Answer in brief : 3
 Write about expression of foreign DNA in Genetic engineering.
- (d) Answer in detail : 5
 Explain molecular chaperones.