

B.Sc. Semester - 5 (Remedial) (CBCS) Examination
Feb/Mar. -2021 (NEW COURSE)
Molecular Biology and Bio-Engineering (Core)

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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Q 1.

(a) Answer any one of the following.**(07 Marks)**

1. Discuss in detail the process of replication in prokaryotes.
2. Justify the statement with experimental evidence: "DNA as a genetic material".

(b) Attempt any one**(04 Marks)**

1. Discuss the experiment of T. H. Morgan conducted on *Drosophila melanogaster*.
2. Enlist names of all the three laws of inheritance proposed by the Mendel. Discuss any one law in detail citing suitable example.

(c) Attempt any three**(03 Marks)**

1. What is Gene?
2. What is Back cross in genetics?
3. What is the need of regulating the genes?
4. What is the function of Muton region of the gene?
5. _____ & _____ proved semi-conservative nature of DNA.

Q 2.

(a) Answer any one of the following.**(07 Marks)**

1. Write a detail note on: Process of translation in prokaryotes.
2. Discuss in detail: Process of transcription in prokaryotes.

(b) Attempt any one**(04 Marks)**

1. Discuss the phenomena of Attenuation citing suitable example.
2. State the general characteristics of genetic code.

(c) Attempt any three**(03 Marks)**

1. Enlist the name of post transcriptional modifications.
2. State the significance of A, P, and E site in 70S ribosome.
3. Draw neat and labelled diagram of lac operon
4. What is the function of operator sequence?
5. Name the enzyme responsible for joining amino acid with tRNA during translation process.

Q 3.

(a) Answer any one of the following.**(07 Marks)**

1. Write a detailed note on Recombination in terms of its basic mechanism, types and significance.
2. Discuss transposable elements in terms of working, types and significance.

(b) Attempt any one**(04 Marks)**

1. Discuss in brief, mechanism of DNA transfer through conjugation in Gram negative bacteria.
2. Write a detailed note on F-plasmid in terms of its structure and function.

(c) Attempt any three**(03 Marks)**

1. Enlist the names of method used to induce competence in the cell artificially.
2. What is abortive transduction?
3. State the significance of artificial transformation.
4. What is the role of Com P in developing natural competence?
5. _____ discovered the 1st transposable element.

Q 4.

(a) Answer any one of the following.

(07 Marks)

1. Write a detail note on Biochemical basis of mutation
2. Discuss Spontaneous frame-shift mutation in detail.

(b) Attempt any one

(04 Marks)

1. Discuss Excision repair mechanism in detail.
2. Write a brief note on chemical induced point mutation.

(c) Attempt any three

(03 Marks)

1. State the function of Rec A protein in SOS repair mechanism.
2. Enlist names of proteins involved in Mismatch repair system.
3. Which nitrogen base undergoes mutation frequently?
4. Define: Silent mutation
5. State the significance of mutation.

Q 5.

(a) Answer any one of the following.

(07 Marks)

1. Give the overview of Gene cloning process.
2. Discuss Restriction enzyme in terms of its type, biological role and application.

(b) Attempt any one

(04 Marks)

1. Enlist salient features of ideal vector.
2. Discuss one application of Genetic engineering in detail citing suitable example.

(c) Attempt any three

(03 Marks)

1. State the significance of MCS in the vector.
2. What is the role of YAC in genetic engineering?
3. What is the function of Linkers in Genetic engineering?
4. State the function of Alkaline phosphatase enzyme in Genetic engineering.
5. Which antibiotic resistance genes are present in pBR322?
