

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2024 (Old Course)****MOLECULAR BIOLOGY AND BIO- ENGINEERING (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que-1 (A) Answer the following. (Any One). (07)
- 1) Describe in detail about any one DNA replication model.
 - 2) Explain in detail Mendelian law of segregation.
- Que-1 (B) Answer the following. (Any One). (04)
- 1) Write in brief about gene structure and draw it.
 - 2) Brief note on law of Inheritance.
- Que-1 (C) Answer the following. (Any Three) (03)
- 1) What is replication?
 - 2) State two functions of DNA polymerase III.
 - 3) What is polycistronic gene?
 - 4) _____ is the universal genetic material.
 - 5) Define gene.
- Que-2 (A) Answer the following. (Any One) (07)
- 1) A detailed note on the trp operon.
 - 2) Explain post translational modification.
- Que-2 (B) Answer the following. (Any One) (04)
- 1) Write about structural component and their role in lac operon.
 - 2) Write and draw the structure of ribosome.
- Que-2 (C) Answer the following. (Any Three) (03)
- 1) _____ is the start codon and it codes for amino acid _____.
 - 2) Draw the structure of L-arabinose.
 - 3) State the importance of post transcriptional modification.
 - 4) What is wobble hypothesis?
 - 5) What is gene expression?
- Que-3 (A) Answer the following. (Any One) (07)
- 1) Describe Specialized transduction in detail.
 - 2) Justify: Conjugation requires cell to cell contact.
- Que-3 (B) Answer the following. (Any One) (04)
- 1) Short note on transposable element.
 - 2) Write a note on Homologous and site-specific recombination.
- Que-3 (C) Answer the following. (Any Three) (03)
- 1) Define illegitimate recombination.
 - 2) What is competence?
 - 3) Explain abortive transduction.
 - 4) _____ type replication observed in DNA transfer in conjugation.
 - 5) Define electroporation.
- Que-4 (A) Answer the following. (Any One) (07)
- 1) What are mutagens? Write detailed note on its types.
 - 2) Write about any two DNA repair mechanism.

- Que-4 (B) Answer the following. (Any One) (04)
- 1) Explain with example – Spontaneous and induced mutation.
 - 2) Write a note on Ames's test.
- Que-4 (C) Answer the following. (Any Three) (03)
- 1) What is point mutation?
 - 2) Define mutation rate.
 - 3) What is Phenomic lag?
 - 4) Full form of SOS in DNA repair.
 - 5) What is reversion mutation?
- Que-5 (A) Answer the following. (Any One) (07)
- 1) Describe in detail about pBR322.
 - 2) Explain recombinant molecule detection by colony hybridization
- Que-5 (B) Answer the following. (Any One) (04)
- 1) Write a short note on Molecular chaperon.
 - 2) Discuss any technique of genetic manipulation of plant cell.
- Que-5 (C) Answer the following. (Any Three) (03)
- 1) Define genetic engineering.
 - 2) Name any two reagents used in DNA isolation.
 - 3) Define - Site directed mutagenesis.
 - 4) Example of any two vectors.
 - 5) State any two applications of genetic engineering.
