

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2025 (NEW 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) Objective type questions. (04)
- 1) _____ is the model organism in Mendel's experiment.
 - 2) Explain – Law of Independence assortment.
 - 3) Why pea plant was selected by Mendel?
 - 4) State the role of DNA Polymerase III.
- Que.1(B) Answer in Brief. (Any one out of two) (03)
- 1) What is gene? State its role.
 - 2) Draw and explain the structure of DNA.
- Que.1(C) Write a Note on. (Any one out of two) (07)
- 1) Write in detail about the process of replication.
 - 2) Rolling circle DNA replication.
- Que.2(A) Objective type questions. (04)
- 1) What is transcription bubble?
 - 2) Name the start codon and its amino acid.
 - 3) What is post transcriptional modification?
 - 4) Where protein synthesis takes place?
- Que.2(B) Answer in Brief. (Any one out of two) (03)
- 1) What is rho dependent termination?
 - 2) Write in short about elongation step in transcription.
- Que.2(C) Write a Note on. (Any one out of two) (07)
- 1) Explain in detail: tryptophane operon.
 - 2) A detailed note on translation.
- Que.3(A) Objective type questions. (04)
- 1) What is homologous recombination?
 - 2) Define transposable elements.
 - 3) Competence – explain.
 - 4) Draw the diagram of transduction mechanism.
- Que.3(B) Answer in Brief. (Any one out of two) (03)
- 1) What is site specific recombination?
 - 2) Explain – Artificial transformation.
- Que.3(C) Write a Note on. (Any one out of two) (07)
- 1) Write in detail about transformation in *S. pneumoniae*.
 - 2) Transduction – explain in detail.
- Que.4(A) Objective type questions. (04)
- 1) What is prion mutation?
 - 2) Define reversion mutation.
 - 3) Write any two examples of physical mutagens.
 - 4) Why Ames's test is used?

- Que.4(B) Answer in Brief. (Any one out of two) (03)
- 1) What is Phenotypic effect?
 - 2) Explain chemical mutagens with one example.
- Que.4(C) Write a Note on. (Any one out of two) (07)
- 1) Biological mutagenesis.
 - 2) Explain any two DNA repair mechanism.
- Que.5(A) Objective type questions. (04)
- 1) Restriction endonuclease III.
 - 2) State two characteristics of cosmid.
 - 3) Importance of phenol and chloroform in DNA extraction.
 - 4) What is cDNA?
- Que.5(B) Answer in Brief. (Any one out of two) (03)
- 1) Write the difference between adaptors and linkers.
 - 2) State the characteristics of YAC.
- Que.5(C) Write a Note on. (Any one out of two) (07)
- 1) Elaborate on steps of genomic library construction.
 - 2) Describe in detail about T_i plasmid.
