

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov - 2023 (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 Morgan's experiment.
 2. Explain – Law of Segregation.
 3. Enlist any two characteristics of model organism of Morgan's experiment.
 4. What is central dogma?
- Que.1(B) Answer in brief. (any one out of two) (03)
1. Brief note on Mendel's first law of inheritance.
 2. Structure of a gene – draw and explain.
- Que.1(C) Write a note on. (any one out of two) (07)
1. A detailed note on two directional replications in bacteria.
 2. Rolling circle DNA replication.
- Que.2(A) Objective type questions. (04)
1. Define Wobble hypothesis.
 2. Name any two of the stop codons.
 3. Tryptophan is a positive control mechanism. (True/False)
 4. Draw the structure of ara-operon substrate.
- Que.2(B) Answer in brief. (any one out of two) (03)
1. What is post translational modification? State its importance.
 2. Write in short about structure and functions of ribosomes.
- Que.2(C) Write a note on. (any one out of two) (07)
1. Explain in detail: lac operon.
 2. A detailed note on transcription in bacteria.
- Que.3(A) Objective type questions. (04)
1. What is recombination?
 2. Define transformation.
 3. Illegitimate recombination – explain.
 4. Draw the diagram of transduction mechanism.
- Que.3(B) Answer in brief. (any one out of two) (03)
1. What is competence? State importance in bacterial transformation.
 2. Explain – Homologous recombination.
- Que.3(C) Write a note on. (any one out of two) (07)
1. Transposable elements are also known as jumping gene – Justify.
 2. Conjugation – explain in detail.
- Que.4(A) Objective type questions. (04)
1. Write any two examples of chemical mutagens.
 2. What is induced mutation?
 3. Explain phenotypic lag.
 4. Base duplication is one of the types of point mutation. (True/False)

- Que.4(B) Answer in brief. (any one out of two) (03)
1. Amorphic, hypo-morphic, and hypermorphic mutation.
 2. SOS repair.
- Que.4(C) Write a note on. (any one out of two) (07)
1. Explain photo reactivation in detail.
 2. Ames's test – explain in detail.
- Que.5(A) Objective type questions. (04)
1. Restriction endonuclease - define.
 2. State two difference between adaptors and linkers.
 3. Importance of DNA ligase in genetic engineering.
 4. Restriction endonucleases are part of bacterial defence system. (True/False)
- Que.5(B) Answer in brief. (any one out of two) (03)
1. Enlist six features of an ideal vector.
 2. Ti plasmid.
- Que.5(C) Write a note on. (any one out of two) (07)
1. Elaborate on steps of c-DNA library preparation.
 2. Describe in detail about blue-white screening.
