

B.Sc Sem.-3 Examination

CC-201

Biotechnology (New)

Basic Genetics & Mole Biology

October-2024

Time : 2-30 Hours]

[Max. Marks : 70

1. Discuss Mendel laws with examples.

14

OR

1(A). Write about Holliday model of genetic recombination.

7

1(B). Describe incomplete dominance and co-dominance with examples.

7

2. Explain briefly enzymes involved in prokaryotic replication?

14

OR

2(A). Explain Meselson and Stahl experiment.

7

2(B). Write about rolling circle model of DNA replication.

7

3. Describe the mechanism of prokaryotic transcription process.

14

OR

3(A). What is genetic code? Write its characteristics.

7

3(B). Explain elongation and translocation of translation.

7

4. Discuss different types of mutagens.

14

OR

4(A). Explain Ames test?

7

4(B). Describe excision repair mechanism with diagram.

7

5. Answer any seven of the following:

14

1. Define epistasis.

2. What is genetic linkage?

3. Write about multiple alleles.

4. What is replisome?

5. What is Ori C?

6. Name two factors affecting T_m of DNA.

7. What is promoter? Write about bacterial promoters.

8. What are stop codons?

9. How is transcription terminated?

10. What is photoreactivation?

11. What are morphological and conditional lethal mutants?

12. What is transition and transversion?

250

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Candidate's Seat No : _____

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Concepts in Biotechnology

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Q.1 What is recombination? Elaborate homologous recombination in detail. (14)

Or

Q.1 A. Write a short note on Di-hybrid cross in detail. (7)

Q.1 B Discuss Incomplete dominance and Co-dominance with one example of each. (7)

Q.2 Write a detailed note on Modes of DNA replication. (14)

Or

Q. 2A Give a brief account of DNA replication in prokaryotes. (7)

Q.2 B Describe Thermal properties of DNA and factors affecting melting temperature. (7)

Q.3 Elaborate translation in prokaryotes with illustrations. (14)

Or

Q.3A Write a note on Genetic code and its significance. (7)

Q.3 B Discuss structure and properties of prokaryotic RNA polymerase. (7)

Q.4 Write a note on physical and chemical mutagens in detail. (14)

or

Q.4A Explain Excision repair mechanism of DNA. (7)

Q.4 B Elaborate Ames test procedure and significance in detail. (7)

Q.5 Short Questions (Any seven) (14)

- 1) Give name of any two chemical mutagens.
- 2) What is the substrate for enzyme reverse transcriptase?
- 3) Difference between Vertical and Horizontal gene transfer.
- 4) Explain: "Genetic code are degenerate".
- 5) What is Lys mutant?
- 6) Which subunit of DNA pol does proofread?
- 7) What are post-replicative modifications?
- 8) Explain nitrous acid as mutagen.
- 9) Define test cross.
- 10) What is illegitimate recombination?
- 11) How is initiator tRNA different in prokaryotes and eukaryotes?
- 12) what is NHEJ joining?