

## M.Sc Semester-2 Examination

407

Bioinformatics

April-2024

Time : 2-30 Hours]

: Classical and Molecular Genetics

Total Marks 70

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Q 1.I. Explain the main characteristics of mutations and its types. Mention the causative agents for mutations. (7)

II. What is meant by codominance? Explain the concept of codominance as seen in ABO blood grouping system. (7)

OR

I. Explain the significance of the events termed as linkage and crossing over. (7)

II. Explain the concept and applications of gene editing and genetic surgery. (7)

Q 2: I. Explain Enzymes involved in DNA replication process. (7)

II. Give an account on negative control of *lac* operon with diagram. (7)

OR

I. Describe the molecular events in the Transcription process. (7)

II. Explain the structural characteristics of various forms of DNA. (7)

Q 3: I. Write a note on Gene cloning and the role of vectors in gene cloning. (7)

II. Write a note on BIG DATA and its applications. (7)

OR

I. Explain steps involved in PCR. (7)

II. Write a note on RNA interference and explain types of RNA. (7)

Q4 I. Write a note on various Biosafety level labs. (7)

II. What is IPR? Give brief note on it. (7)

OR

I. Write a brief note on Bioethics. (7)

II. Write a note on DBT guidelines for approval of transgenics in India. (7)

Q5 Answer the following. (Any Seven) (14)

1. Define the terms: Chromosome, chromatids and centromere

2. What is meant by chromosomal duplication? Mention the main causes of the event.

3. Define Population Genetics and molecular genetics. Mention the differences.

4. Explain the term gene mapping. Mention the types of gene maps.

5. Define the terms: Test cross and Back cross.

6. Explain the concept of incomplete dominance.

7. PCR method was invented by \_\_\_\_\_.

8. Which agents affect the H-bond stability and reduce hybridization of probe to target DNA during blotting?

9. First restriction enzyme to be discovered was \_\_\_\_\_.

10. In R-M nomenclature First letter represents \_\_\_\_\_.

11. What is Trade mark?

12. Which of the following is the Symbol of Maharaja of Air India is

A. Copyright

B. Patent

C. Trademark

D. All of the above

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