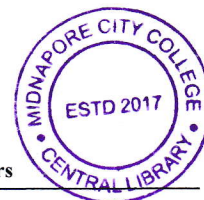


**PG AGRICULTURE**  
**M.Sc. Semester-II Examination, 2022**  
**Genetics and plant breeding (GPB)**  
**(THEORY)**  
**PAPER: GPB 201**  
**(MOLECULAR GENETICS)**



Full Marks: 50

Time: 2 Hours

**THEORY**

**1. Answer any five questions from the following:**

2×5 = 10

- a. Differentiate between nucleotide and nucleoside in molecular basis.
- b. Mention the principles of gene cloning.
- c. Clarify the importance of histone modification.
- d. Why amino acids are called zwitterion? Define C-terminal and N-terminal of polypeptide chain.
- e. Define restriction enzyme.
- f. Briefly describe repetitive sequence of DNA.
- g. Distinguish blunt and sticky end of DNA.

**2. Answer any five questions from the following:**

4×5 = 20

- a. Write short note on repetitive sequence. 4
- b. Give a brief note on gene silencing. 4
- c. Explain the basic principle of PCR. 4
- d. What is ribozyme? Describe its characteristic features. 1+3
- e. Schematically represent the DNA isolation procedure. 4
- f. Write short note on gene pyramiding.
- g. What is cytoplasmic male sterility? Clearly state its utilization in crop improvement. 2+2

**3. Answer any two questions from the following:**

10×2 = 20

- a. Define maternal inheritance. Mention different types of maternal inheritance with special reference to plant species. 2+8
- b. What is higher order of packaging of DNA? Define histone modification. Mention the molecular mechanism of histone methylation. 4+2+4
- c. Give a short note on IS element. Mention the AC-DC transposition mechanism. 4+6
- d. Define cDNA library. What is molecular marker? State its significance. Distinguish between RFLP and RAPD. 2+4+4

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