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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)**

B. Sc. (Ag.) (Fourth Semester - Regular) Examinations, April – 2026

GPB 222 - Basics of Plant Breeding



Time: 2 hrs

Maximum: 40 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A

(5 x 2 = 10 Marks)

Q.1. Answer **ALL** the questions

CO # Blooms
 Level

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|---|-----|----|
| a. Differentiate between macro-mutations and micro-mutations | CO4 | L3 |
| b. Differentiate between mass selection and pureline selection | CO2 | L2 |
| c. Differentiate between autopolyploid and allopolyploids, with examples. | CO4 | L2 |
| d. Define the terms: Pureline and Multiline varieties | CO2 | L1 |
| e. Briefly describe the types of epistatic genetic variance. | CO2 | L4 |

PART – B

(6 x 5 = 30 Marks)

Answer **any six** of the questions

CO # Blooms
 Level

- | | | |
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| 2. Define heterosis, luxuriance, and inbreeding depression. What are the types of heterosis, and how are they calculated? | CO3 | L3 |
| 3. What are mating systems? Briefly explain the different types of mating systems and their implications to the population structure. | CO2 | L4 |
| 4. Describe the bulk method in detail. Write its merits and demerits. | CO2 | L2 |
| 5. Describe the single seed descent method in detail. Discuss its merits and demerits. | CO2 | L3 |
| 6. What is recurrent selection? Describe the procedure of recurrent selection for GCA and explain how it differs from recurrent selection for SCA. | CO3 | L4 |
| 7. What is back cross breeding? Explain the procedure for transferring a recessive gene through backcross breeding. | CO2 | L3 |
| 8. What are clones? Describe their properties. Briefly explain the procedure of clonal selection. | CO4 | L2 |
| 9. What is mutation breeding? Describe the procedure for mutant selection in oligogenic and polygenic characters. | CO4 | L3 |

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