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**GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA,
GUNUPUR
(GIET UNIVERSITY)**

B. Sc. (Ag.) (Sixth Semester Regular) Examinations, April - 2025
PBG - 325 - Crop Improvement-II (*Rabi crops*)

Time: 2 hrs

Maximum : 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure. (0.5 x 10 = 5 Marks)

- a. The term ideotype was first proposed by _____ in 1968 working on wheat.
- b. Sugarcane Breeding Institute (SBI), is situated at _____.
- c. The concept of gene for gene hypothesis was first developed by _____ in 1951 based on his studies on linseed.
- d. Chromosome number of *Brassica juncea* is $2n=$ _____.
- e. Source of CMS in Sunflower is _____.
- f. Scientific name of Berseem is _____.
- g. Potato belongs to the family _____.
- h. Inflorescence of Sunflower is known as _____.
- i. _____ number of stamens are present in flowers of mustard.
- j. Wheat is a _____ pollinated crop.

Q. 2. Define (or) Explain the following in one or two sentences. (1 x 5 = 5 Marks)

- a. Crop Ideotype
- b. Primary gene pool
- c. Vertical Resistance
- d. Abiotic stress in crop plants
- e. Boom and bust cycle

Q3. Match the following (0.5 x 10 = 5 Marks)

Column – A

Column – B

- | | |
|---------------------------|---|
| (a) Sick plots | (i) Compositae |
| (b) U triangle | (ii) Brassicaceae (Cruciferae) |
| (c) <i>Avena sativa</i> | (iii) $2n=42$ |
| (d) Field pea | (iv) Screening for resistance to soil borne pathogens |
| (e) Ray florets | (v) Fabaceae |
| (f) Rape seed and mustard | (vi) $2n=14$ |
| (g) Chickpea | (vii) Evolution of Brassica species |
| (h) Bread Wheat | (viii) Poaceae |
| (i) Sunflower | (ix) <i>Cicer arietinum</i> |
| (j) Lentil | (x) Sterile |

Q4. Write True or False against each statement

(0.5 x 10 = 5 Marks)

- a. Ideotype breeding is a quick process.
- b. Conservation of germplasm away from its natural habitat is called ex situ germplasm conservation.
- c. Seeds which can be dried to low moisture content of 5% and stored at a low temperature without losing their viability are known as recalcitrant seeds.
- d. Cryopreservation is a technique that ensures safe, long-term conservation of genetic resources of plant species.
- e. Sonoro-64 and Larma Rojo- 64 are dwarf rice varieties were imported from Mexico.
- f. The cultivated potato *Solanum tuberosum* is a hexaploid with $2n=6x=72$.
- g. In Participatory plant breeding, farmers are involved in the selection process.
- h. For resistance breeding, normally backcross breeding method is followed.
- i. Ray florets are present in inner whorl of capitulum in sunflower.
- j. DRS-1 is the name of a popular castor hybrid.

PART – B

Attempt ANY FIVE questions. All question carries equal marks

(6 x 5 = 30 Marks)

5. Describe different steps followed in Ideotype Breeding.
6. Describe different kinds of plant germplasm.
7. Write notes on different methods of breeding for disease resistance.
8. Explain different hybridization methods in Sugarcane.
9. What are the different breeding objectives in Sunflower crop.
10. What are the different breeding methods followed for improvement of wheat crop.

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