

Reg. No.										
-------------	--	--	--	--	--	--	--	--	--	--

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



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

- Centre of origin of Sunflower is _____.
- Hexaploid Triticale is developed from the cross of Triticum turgidum and _____.
- Ovary is inferior in _____ florets of sunflower.
- Sugarcane is a _____ pollinated crop.
- Conservation of germplasm away from its natural habitat is called _____.
- The sum total of genes in a crop species is referred to as its _____.
- The varieties developed by systematic breeding effort, which were popular earlier and now have been replaced by new varieties are known as _____.
- Horizontal resistance is governed by _____ genes.
- _____ is a biological model which is expected to perform or behave in a predictable manner within a defined environment.
- Superiority of F_1 over better parent is known as _____.

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

- Emasculation
- Plant genetic resources
- Boom and bust cycle
- Recalcitrant seeds
- Secondary gene pool

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

Column - A

- Field pea
- Sunflower
- Self pollinated crop
- Cross pollinated crop
- Berseem
- Mustard
- Chick pea
- Oats
- Hexaploid wheat
- Lentil

Column -B

- Trifolium alexandrinum*
- $2n = 14$
- Avena sativa*
- Six stamens
- Style is at right angle to ovary
- $2n = 42$
- Cross pollinated crop
- Mass Selection
- Pureline selection
- 10 stamens

Q4. Write True or False against each statement (0.5 x 10 = 5 Marks)

- Progenitor of *Avena sativa* is *Avena sterilis*.
- Ideotype breeding is a quick process.
- For development of composite varieties, parents must have good general combining ability.

- d. In Participatory Plant Breeding (PPB) farmers are directly involved in the selection process, focusing on traits important to local conditions.
- e. Sugarcane belongs to Poaceae family.
- f. Lentil belongs to Asteraceae family.
- g. The edible husk less grains of oats are known as groats.
- h. Heterobeltiosis is referred to as superiority of F1 over mid parent.
- i. Source of CMS in Sunflower is *Helianthus petiolaris*.
- j. Heritability denotes the proportion of phenotypic variance that is due to genotype.

PART – B

Attempt ANY FIVE questions. All question carries equal marks

(6 x 5 = 30 Marks)

- 5. Describe the Genetic evolution of common wheat (*Triticum aestivum*).
- 6. Explain the anthesis and pollination behaviour in sunflower.
- 7. Write a note on breeding objectives in chickpea
- 8. Describe the main features of ideotype breeding.
- 9. What is gene for gene hypothesis? Explain it with suitable example.
- 10. Describe different breeding methods in potato crop.

--- End of Paper ---