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

B. Sc (AG) (Third Semester) Examinations, February - 2022

PBG-212- Fundamentals of Plant Breeding

Maximum : 50 Marks

AY - 23

The figures in the right hand margin indicate marks.

<u>PART – A</u>

Q.1. Fill in the blanks with suitable word / figure.

- a. NBPGR is situated at _____
- b. Pureline theory was given by _____
- c. Hybrid varieties are genetically ______ and _____.
- d. The parent used only once in back cross breeding is known as _____
- e. In male sterile lines hybrid seeds are harvested from _____ line
- f. SSD method of breeding was given by _____
- g. Genetic variation within a pure line is due to _____
- h. Bulk method of breeding takes _____ years.
- i. When embryos develop directly from nucellus, integument, and chalaza, it is known as _____
- j. Mixtures of lines each of which is resistant to all prevalent races of the disease is known as

Q.2. Define (or) Explain the following in one or two sentences.

- a. Half-sib
- b. Synthetic variety
- c. Parthenogenesis
- d. Stabilising selection
- e. Centre of origin

Q3. Match COLUMN-A with COLUMN-B

Column – A

- (a) Fairchild's mule
- (b) Pureline
- (c) Multilines
- (d) Opening of flower after pollination
- (e) Production of functional pollen grain
- (f) Kalyan Sona
- (g) Self-pollination
- (h) Koelreuter
- (i) Opening of flower
- (j) Lerma Rojo

(0.5 x 10 = 5 Marks)

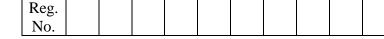
Column – B

- (i) Self-incompatibility
- (ii) Self-pollinated crop
- (iii) Carnation X Sweet william
- (iv) Male sterility
- (v) Homozygous and homogenous
- (vi) Chasmogamy
- (vii) Secondary introduction
- (viii) Autogamy
- (ix) Primary introduction
- (x) Anthesis

 $(0.5 \times 10 = 5 \text{ Marks})$

(1 x 5 = 5 Marks)

Time: 2 hrs



Q4. Write True or False against each statement

- a. Polyploidy can never be induced by colchicine treatment.
- b. Hardy Weinberg Law explain inheritance of qualitative characters.
- c. Natural mutations are very frequent in nature.
- d. The cross between F1 and the recessive parent is known as back cross.
- e. GCA is tested for Composites varieties.
- f. In cross pollinated crop mass selection population is homozygous and heterogenous.
- g. The proportion of phenotypic variation in a population due to environment is known as heritability.
- h. In pedigree method each progeny cannot be traced back to the F2 plant from which it developed.
- i. Combination of numbers of lines each having resistance gene for different pathotypes is known as vertical resistance.
- j. In pedigree breeding natural selection is operated till F6-F7 generation

PART – B

Attempt <u>ANY FIVE</u> questions. All question carries equal marks.

 $(6 \times 5 = 30 \text{ Marks})$

- 5. Write down about pedigree method of selection in details with flow chat. Examplify how pedigree records are maintained.
- 6. Describe about transferring a dominant trait using back cross breeding method.
- 7. What is recurrent selection? Enlist the types of it and explain recurrent selection for gca.
- 8. What is male sterility and describe about CGMS system? How it is useful in hybrid seed production
- 9. Describe the role of polyploidy in crop evolution/improvement with examples.
- 10. Enlist the types of self-incompatibility? Discuss the homomorphic system of self-incompatibility.

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