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GIET UNIVERSITY, GUNUPUR – 765022
B. Sc. (Ag.) (Third Semester) Examinations, February – 2023
PBG-212– Fundamentals of Plant Breeding

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. Father of hybrid cotton is _____.
- b. Colchicine is derived from _____ plant.
- c. Genetic constitution of multiline is _____ and heterogenous.
- d. Crossing between two different species is known as _____.
- e. In CGMS system R line can restore _____.
- f. Raphanobrassica was developed by crossing between _____.
- g. Characters governed by one or few genes and less influenced by environment is known as _____.
- h. Inbreeding depression is the characteristics of _____ pollinated crops.
- i. Contribution of genotypic variation to the phenotypic variation is called _____.
- j. Random drift can be arise due to _____.

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

- a. NBPGR
- b. Non-preference
- c. Core collection
- d. Heterosis
- e. Drought escape

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

Column – A		Column – B	
(a)	Homozygous and homogenous	(i)	Hybrids
(b)	Homozygous and heterogenous	(ii)	Purelines
(c)	Heterozygous and heterogenous	(iii)	multilines
(d)	Heterozygous and homogenous	(iv)	Synthetic variety
(e)	Rice	(v)	Auto tetraploid
(f)	Pearlmillet	(vi)	Auto triploid
(g)	Pusa gaint berseem	(vii)	Self pollination
(h)	Haploid	(viii)	Cross pollination
(i)	Seed less watermelon	(ix)	x
(j)	Monoploid	(x)	n

Q4. Write True or False against each statement

(0.5 x 10 = 5 Marks)

- a. The character is controlled by number of genes is known as oligogenic character.
- b. Back cross method can be utilised for the transfer of polygenic traits only.
- c. Pedigree method can be used for isolation of good transgressive segregants.
- d. Reciprocal recurrent selection helps in improving two populations simultaneously.
- e. SNP is a sequence based DNA marker.
- f. Synthetic varieties need to be replaced every year.
- g. The cross between inbred line and an open pollinated variety (OPV) is known as top cross.
- h. Inbred lines can be developed in cross pollinated crop by using pedigree method.
- i. Mixing seeds of 6-10 numbers of isogenic lines is known as multiline.
- j. An ideal DNA marker should be dominant in nature.

PART – B

Attempt ANY FIVE questions. All question carries equal marks

(6 x 5 = 30 Marks)

5. Write down SSD method with detailed steps along with merit and demerits.
6. What is self-incompatibility? Discuss the heteromorphic system of self-incompatibility?
7. Blast resistance in rice is governed by a recessive gene. A breeder aims to transfer blast resistance gene into a widely cultivated susceptible variety. Discuss the method by which the aim can be achieved with all the detailed steps?
8. What is male sterility and describe about CGMS system of male sterility? How it is useful in hybrid seed production?
9. Describe the RRS method of population improvement. Define the end result of this method.
10. Triticale is the first man made cereal. Why and how?

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