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GIET UNIVERSITY, GUNUPUR – 765022

B. Sc (AG) (Third Semester – Regular) Examinations, December – 2020

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 (10 x 0.5 = 5 Marks)

- The term over dominance was coined by _____
- The semi-dwarf wheat varieties were developed by _____
- The existence of multiple factors was demonstrated by _____ while studying inheritance of seed colour in oat
- _____ is the source of dwarfing gene in rice
- The first hybrid variety of cotton was _____
- The term heterosis was first used by _____
- _____ proposed the pure line theory
- The concept of progeny testing was developed by _____
- NRRI is situated at _____
- _____ is the most frequently used chemical for doubling of chromosome numbers in plants

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

(5 x 1 = 5 Marks)

- Acclimatization
- Heterosis
- Autopolyploidy
- Clone
- Gamma garden

Q3. Choose the most appropriate answer from the following

(10 x 0.5 = 5 Marks)

- Heterobeltiosis is estimated over
 - Mid parent
 - Check variety
 - Better parent
 - Popular hybrid
- Brassica juncea* is an amphidiploids between
 - B. nigra* and *B. oleracea*
 - B. nigra* and *B. campestris*
 - B. oleracea* and *B. campestris*
 - B. nigra* and *B. carinata*
- Mutagen EMS belongs to
 - Acridine dyes
 - Base analogues
 - Alkylating agent
 - Nitrous acid
- The first man made cereal Triticale is an
 - Autohexaploid
 - Allotetraploid
 - Allodiploid
 - Allohexaploid
- Gene for gene hypothesis was proposed by
 - Nelson
 - Van der Plank
 - Flor
 - Russell
- The tester used in recurrent selection for specific combining ability is

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- (i) Open pollinated variety (ii) Inbred line
 (iii) Land race (iv) Hybrid
- g Inbreeding of cross pollinated species leads to increase in
 (i) Homozygosity (ii) Heterozygosity
 (iii) Population mean (iv) Population variance
- h Synthetic variety is a mixture of
 (i) All possible crosses among inbreds of good gca (ii) Several pure lines
 (iii) Several open pollinated genotypes (iv) Several inbred lines
- i Concept of single seed descent method was developed by
 (i) Jensen (ii) Brim
 (iii) Goulden (iv) Johanssen
- j RFLP markers are
 (i) dominant (ii) co-dominant
 (iii) over dominant (iv) none of these

Q4. Write True or False against each statement

(10 x 0.5 = 5 Marks)

- General combining ability is associated with additive genetic variance.
- Environmental variation is non heritable
- Horizontal resistance is controlled by oligogenes
- Backcross method is used for transfer of cytoplasmic male sterility
- Pseudoheterosis is also known as luxuriance
- Testers used in reciprocal recurrent selection are the inbred lines
- Muller discovered mutagenic action of x-ray on barley
- Germplasm which is collected from foreign countries is referred to as direct introduction
- Recurrent parent donate desirable genes in backcrossing programme
- Four inbred lines are involved in development of double cross hybrids

PART – B

Attempt ANY FIVE questions. All question carries equal marks

(6 x 5 = 30 Marks)

- Describe the role of molecular markers in crop improvement.
- What is pureline theory? Explain the procedure of pureline selection.
- Define male sterility and describe different types of male sterility.
- Describe the procedure of backcross method for transfer of a recessive gene.
- Explain dominance hypothesis.
- What is A, B and R line? Explain three line systems of hybrid seed production.

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