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22BOU412N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fourth Semester)

Branch - **BOTANY**

GENETICS AND PLANT BREEDING

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following characteristics of pea plants was not used by Mendel in his experiments? a) seed colour b) seed shape c) pod length d) flower position	K1	CO1
	2	The monohybrid phenotypic and genotypic ratio is same in the case of _____ a) Multiple allele b) Codominance c) Incomplete dominance d) Normal dominance recessive relation	K2	CO1
2	3	Lack of independent assortment of two genes is due to a) recombination b) crossing over c) linkage d) repulsion	K1	CO2
	4	Considering the concept of Multiple alleles, one organism can have _____ alleles. a) One b) Two c) Three d) Four	K2	CO2
3	5	What is a mutation? a) Any kind of variations b) The changes in the cytoplasm of the cell c) Permanent and Hereditary changes in the DNA d) The changes in the genetic material of the DNA	K1	CO3
	6	How many types of numerical changes are there in chromosomes? a) Two b) Three c) Four d) None of the above	K2	CO3
4	7	Mass selection is always based on a) Genotype b) Phenotype c) Progeny test d) Heritability	K1	CO4
	8	Who is the father of the Green revolution in India? a) M.S. Swaminathan b) Charles Darwin c) Herbert Boyer d) Stanley Cohen	K2	CO4
5	9	Which of the following is not an objective of breeding for improved nutritional quality? a) Improving protein content b) Improving Oil content c) Increasing soil content d) Improving vitamin content	K1	CO5
	10	Which variety of sugarcane was originally grown in North India? a) Saccharum barberi b) Saccharum officinarum c) Saccharum spontaneum d) Kalyan sona	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Briefly explain about incomplete dominance.	K5	CO1
		(OR)		
	11.b.	Interpret about the complementary genes.		
2	12.a.	Interpret the mechanism of crossing over.	K4	CO2
		(OR)		
	12.b.	What is linkage? Examine its types. Categorize the factors affecting Linkage.		
3	13.a.	Analyze the chromosomal translocation with suitable example.	K4	CO3
		(OR)		
	13.b.	Inspect the cytoplasmic male sterility in Maize.		
4	14.a.	Elaborate the procedure for hybridization.	K6	CO4
		(OR)		
	14.b.	Formulate the objectives of plant breeding.		
5	15.a.	How are sugarcane crop genetically improved?	K6	CO5
		(OR)		
	15.b.	Elaborate the genetic improvement of cotton production.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain about Dihybrid cross with suitable example.	K5	CO1
2	17	What are multiple allelic genes? Explain the blood groups in man as an example of multiple allelic genes.	K5	CO2
3	18	Interpret the plastids inheritance in *Mirabilis*.	K5	CO3
4	19	Discover the procedure for pure line selection.	K4	CO4
5	20	Discuss about the genetic improvement of wheat. crop.	K6	CO5

Z-Z-Z END