(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2026

(First Semester)

Branch – **BOTANY**

PLANT GENETICS & 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	The tendency of an offspring to resemble its parent is known as (i) Variation (ii) Heredity (iii) Resemblance (iv) Sibling	K1	CO1
	2	The crossing of F1 to either of the parents is known as (i) Test cross (ii) Back cross (iii) F1 cross (iv) Multiple cross	K2	CO1
2	3	Mechanism of crossing over occurs during (i) Pachytene of prophase (ii) Second meiotic division (iii) Before synopsis (iv) Diplotene	K1	CO2
	4	An exception to Mendel's Law is ? (i) Independent assortment (ii) Linkage (iii) Dominance (iv) Purity of gametes	K2	CO2
3	5	Philadelphia chromosome is formed due to (i) inversion (ii) deletion (iii) duplication (iv) translocation	K1	CO3
	6	The central block of the composite transposable element consists a gene for (i) Tranposase (ii) Antibiotic resistance (iii) Integrase (iv) Lactamase	K2	CO3
4	7	Which of the following selection methods is best for heterozygous populations (i) Pure line selection (ii) Clonal selection (iii) Mass selection (iv) Inbreeding	K1	CO4
	8	Which of the following is the most likely genetic cause of heterosis? (i) Homozygosity (ii) Inbreeding (iii)Dominance and Overdominance (iv) pure line selection	K2	CO4
5	9	What is the effect of a mutation that causes a frame shift? (i) Substitution of one amino acid (ii) No change in the protein (iii) A change in the reading frame of the genetic code (iv) Formation of a silent mutation	K1	CO5
	10	The movement of a genes into or out of a population is known as (i) Genetic drift (ii) Gene flow (iii) Natural selection (iv) Non-random matting	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.	Explain the Mendel's law of inheritance.	K2	CO1
		(OR)		
	11.b.	Illustrate the difference between co-dominance and incomplete dominance with suitable genetic examples.		
2	12.a.	Categorize the major concepts underlying the chromosome theory of linkage.	K3	CO2
		(OR)		
	12.b.	Apply the concept of horizontal gene transfer to justify its role in plants.		
3	13.a.	Discuss the extra chromosomal inheritance with suitable examples.	K6	CO5
		(OR)		
	13.b.	Elaborate the significant role of transposable elements in genome evolution.		
4	14.a.	Evaluate the objectives of plant breeding.	K5	CO4
		(OR)		
	14.b.	Elucidate the concept of hybrid vigour and explain its importance.		
5	15.a.	Distinguish the various types of mutation breeding and explain their applications.	K4	CO3
		(OR)		
	15.b.	Examine the scope, objectives and limitations of plant breeder's rights.		

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	Illustrate the gene interaction with suitable examples.	K2	CO1
2	17	Evaluate the mechanisms of sex determination in *Drosophila* and plants.	K5	CO4
3	18	Analyse the different types of polyploidy and discuss their effects, importance and applications.	K4	CO3
4	19	Elaborate on the various types and techniques of hybridization.	K6	CO5
5	20	Elucidate the Hardy & Weinberg law and explain its applications.	K5	CO5

Z-Z-Z END