Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Agriculture

End Sem Examination Dec 2024

AG3CO17 Fundamentals of Plant Breeding

Programme: B.Sc. (Hons.) Branch/Specialisation: Agriculture

Duration: 3 Hrs. **Maximum Marks: 50**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	Centre of origin for the first time given by- (a) Griffth (b) Fisher (c) N.I. Vavilov (d) Mather	**1**	1	1	1	
	ii.	Pulses are enriched with- (a) Protein (b) Oil (c) Fiber (d) Sugar	**1**	2	1	1	
	iii.	Abiotic factors dealing with - (a) Temperature (b) Drought (c) Soil salinity (d) All of these	**1**	1	1	1	
	iv.	Pollination and fertilization takes place in an unopened flower bud is called- (a) Cleistogamy (b) Bisexuality (c) Homogamy (d) Dichogamy	**1**	1	1	2	
	v.	In maize 2n=20, how many chromosomes will be in endosperm- (a) 10 (b) 20 (c) 30 (d) 40	**1**	2	1	2	
	vi.	Father of green revolution in India is- (a) Charles Darwin (b) M.S. Swaminathan (c) Mendel (d) Hardy weiberg	**1**	1	1	3	
	vii.	Segregation takes place in- (a) F_2 generation (b) F_1 generation (c) M_1 generation (d) All of these	**1**	2	1	3	

P.T.O

	viii.	Mating between closely related individuals is called- (a) Intersex (b) Inbreeding (c) Para-sexuality (d) Bisexuality	**1**	1	1	3
	ix.	Alpha, beta and Gamma rays are called – (a) Physical Mutagens (b) Chemical mutagens (c) Polyploid (d) Diploid	**1**	1	1	4
	x.	Basic requirements for protection of a variety under PBR- (a) Distinctiveness (b) Uniformity (c) Stability (d) All of these	**1**	1	1	5
Q.2	i.	What is primary centre of origin?	**2**	1	1	1
	ii.	Explain in brief domestication, acclimatization and plant introduction.	**6**	2	1	1
OR	iii.	Write major objectives of plant breeding.	**6**	1	1	1
Q.3		Attempt any two-				
	i.	Explain mechanism that promote self pollination.	**4**	2	1	2
	ii.	What is male sterility? Explain different types of male sterility.	**4**	2	1	2
	iii.	What is apomixes? Write its types with examples.	**4**	2	1	2
Q.4	i.	Write the breeding methods utilised in self pollinated crops.	**2**	1	1	3
	ii.	Explain recurrent selection in respect to recurrent selection for GCA, SCA and reciprocal recurrent selection.	**6**	2	1	3
OR	iii.	Describe heterosis and inbreeding depression in detail.	**6**	2	1	3
Q.5	i.	What is heritability? Write its types.	**2**	1	1	4

	ii.	Define Hardy Weinberg law. Also write the factors affecting gene frequencies with suitable examples.	**6**	2	1	4
OR	iii.	Explain biotic and abiotic resistance in detail.	**6**	2	1	4
Q.6		Attempt any two-				
	i.	Write a note on plant breeders rights.	**4**	2	1	5
	ii.	Explain farmers rights.	**4**	2	1	5
	iii.	Define briefly intellectual property rights.	**4**	1	1	5

******

Marking Scheme
AG3CO17- Fundamentals of Plant Breeding

Q.1	i)	(c). N.I. Vavilov	**1**
	ii)	(a). Protein	**1**
	iii)	(d). All of these	**1**
	iv)	(a). Cleistogamy	**1**
	v)	(c). 30	**1**
	vi)	(b). M.S. Swaminathan	**1**
	vii)	(a). F_2 generation	**1**
	viii)	(b). Inbreeding	**1**
	ix)	(a). Physical Mutagens	**1**
	x)	(d). All of these	**1**
Q.2	i.	What is Primary centre of origin? Definition – 1 mark Features – 1 mark	**2**
	ii.	Explain in brief Domestication, Acclimatization and Plant introduction. Domestication – 2 marks Acclimatization – 2 marks Plant introduction – 2 marks	**6**
OR	iii.	Write major objectives of Plant Breeding. (1 mark for each objective)	**6**
Q.3			
	i.	Explain Mechanism that promote self pollination. Self pollination – meaning (1 mark) Mechanisms promoting self pollination (3 mark)	**4**
	ii.	What is male sterility? Explain different types of male sterility. Definition of male sterility (1 mark) Types of male sterility with its detailing (1 mark each)	**4**
OR	iii.	What is Apomixes? Write its types with examples. Apomixes (1 mark) Types of Apomixes with example (1 mark each)	**4**
Q.4	i.	Write the breeding methods utilised in self pollinated crops. (0.5 marks for each breeding method)	**2**
	ii.	Explain recurrent selection in respect to recurrent selection for GCA, SCA and reciprocal recurrent selection. Recurrent selection for GCA (2 marks) Recurrent selection for SCA (2 marks) Reciprocal recurrent selection (2 marks)	**6**
OR	iii.	Describe Heterosis and inbreeding depression in detail. Definition of heterosis – 1 mark Types of heterosis with example (1 mark each) (1+1+1) Definition of Inbreeding depression (1 mark) Formula of Inbreeding depression (1 mark)	**6**
Q.5			
	i.	What is heritability? Write its types. Definition of heritability (1 mark) Types of heritability (0.5 + 0.5 marks)	**2**
	ii.	Define Hardy Weinberg law. Also write the factors affecting gene frequencies with suitable examples. Definition of hardy Weinberg law (1 mark) Mathematical formula (1 mark) Factors affecting gene frequency with example (1 mark for each factor)	**6**
OR	iii.	Explain Biotic and abiotic resistance in detail. Biotic resistance (3 marks) Abiotic resistance (3 marks)	**6**
Q.6			
	i.	Write a note on Plant Breeders rights. Meaning of Plant Breeders rights (1 mark) Plant Breeders rights (1 mark for each breeders right)	**4**
	ii.	Explain Farmers rights. Meaning of Farmers rights (1 mark) Farmers rights (1 mark for each Farmers right)	**4**
OR	iii.	Define briefly Intellectual property rights. Definition of IPR. (1 mark) A note on intellectual property rights (3 marks)	**4**