

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture Winter 2018-19 Examination

Semester: 3

Date: 22/10/2018

Subject Code: 20102202

Time: 10:30 am to 1:00 pm

Subject Name: Fundamentals of Plant Breeding

Total Marks: 50

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A. Fill in the blanks. (Each of 1.00 marks)****(05)**

1. Development of embryo either from synergids or antipodal cells is termed as _____
2. Fertilisation of ovules by pollen grain of same flowers refers to _____
3. Multiplication of plants without the fusion of male and female gametes is known as _____
4. _____ self incompatibility is controlled by genotype of pollen producing plants.
5. Self incompatibility was first reported in _____
6. The pollen sterility which is caused by nuclear genes is referred to as _____
7. The restorer line is represented as _____
8. A true breeding population is known as _____
9. Crossing F1 with either of its parents is referred as _____
10. Record of the ancestry of an individual selected plants for its various generations is known as _____

B. Multiple choice type questions. (Each of 1.00 mark)**(10)**

1. Self pollination refers to

a) Allogamy	c) Dichogamy
b) Autogamy	d) Herkogamy
2. Self incompatibility can be overcome by

a) Bud pollination	c) Irradiation
b) Delayed pollination	d) End of season pollination
3. In flowering plants, male sterility was first reported by

a) Koelreuter (1763)	c) Allard (1960)
b) Stout (1917)	d) Duvick (1966)
4. A homogeneous population includes

a) Pure line	c) F1 between two pure lines
b) An inbred line	d) All of the above
5. Concept of diallel selective mating was developed by

a) Mather and jinks (1971)	c) Russell (1978)
b) Jensen (1970)	d) Simmonds (1979)
6. Mass selection is rarely used in

a) Allogamous species	c) Asexually propagated species
b) Autogamous species	d) Seed propagated species
7. The term heterosis was coined by

a) Shull (1914)	c) Hull (1945)
b) East (1908)	d) Davenport (1908)
8. The dominance hypothesis of heterosis was first reported by

a) East (1908)	c) Davenport (1908)
b) Shull (1914)	d) Hull (1945)
9. The term overdominance was coined by

- a) Shull (1908) c) Bruce (1910)
 b) East (1908) d) Hull (1945)
10. Inbreeding of cross pollinated species leads to increase in
 a) Homozygosity c) Heterozygosity
 b) Population mean d) All of the above
11. Abbreviation of CMS _____
 a) Cytoplasmic male sterility c) Cytoplasmic genetic male sterility
 b) Genetic male sterility d) None
12. Absence of functional pollen in flowering plants is called _____
 a) Self incompatibility c) Heterosis
 b) Male sterility d) Inbreeding depression
13. Pure line theory was given by _____
 a) Johnson c) Shull
 b) East d) None of the above
14. Potato is a modified form of _____
 a) Stem c) Flowers
 b) Leaves d) Roots
15. Onion is a modified form of _____
 a) Stem c) Flowers
 b) Leaves d) Roots
16. Production of embryo from an egg cell is called _____
 a) Parthenogenesis c) Apospory
 b) Apomixis d) Apogamy
17. The word apomixis means _____
 a) Asexual c) Sexual
 b) Without mixing d) None
18. Crossing of F_1 to its recessive parents _____
 a) Back cross c) Test cross
 b) Top cross d) Poly cross
19. Heterosis seen in _____ generation.
 a) F_3 c) F_2
 b) F_5 d) F_1
20. Inter-specific crossing means, crossing between the _____
 a) 2 varieties c) 2 generas
 b) 2 species d) None

Q.2 Do as Directed.

A. Define the following. (Any five)

(05)

1. Pedicel
2. cross pollination
3. Pure Line
4. Heterosis
5. Homozygous
6. Male sterility
7. Backcross Selection

B. Answer the following. (Any Five)

(05)

1. Briefly describe the major difference between mass selection and Pure line selection.
2. Summarize the various objectives and important of plant breeding.
3. Draw Net and clean diagram of flower.
4. Enlist the types of pollination in plant breeding.
5. Enlist the types of breeding population. Explain Any One in Detail.
6. Enlist the types of Heterosis.

7. State the breeding methods for the plant breeding.

Q.3 Write short notes. (Any five)

(10)

1. Pure line selection method in self pollinated crops and its merits and demerits.
2. Explain Genetic Male Sterility its merits and demerits.
3. Define heterosis and explain dominance and overdominance theories.
4. Vegetative reproduction method.
5. Self Incompatibility and its types.
6. Mass Selection and merits and demerits.

Q.4 Attempt any Three/Long Questions/Example

(15)

1. Explain in Detail: Bulk Method
2. Explain the mechanisms to promote cross and self Pollination
3. Explain the Mode of Reproduction in plants
4. Explain the types of Male sterility and its advantage and disadvantage.