

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture, Summer 2018 - 19 Examination

Semester: 3

Date: 19/04/2019

Subject Code: 20102202

Time: 10:30am to 1:00pm

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. The process by which living organism give rise to the offspring of similar kind is known as _____.
2. Development of embryo either from synergids or antipodal cells is termed as _____.
3. The term self incompatibility was coined by _____ in _____.
4. Self incompatibility promotes _____.
5. Pure line theory was proposed by _____.
6. Transfer of pollen grain from _____ to _____ is called as pollination.
7. A population of genetically similar plants is called as _____.
8. Cross pollination taken place by wind is called as _____.
9. _____ and _____ are helping and protecting the sexual parts of flower.
10. Out crossing per cent in wheat is _____.

B. Multiple choice type questions. (Each of 1.00 mark)**(05)**

1. In cross pollinated species , mass selected variety is a mixture of several

| | |
|-------------------|---------------------------|
| a) . inbred lines | c) pure lines |
| b) heterozygotes | d) homo and heterozygotes |
2. The most effective method for the transfer of oligogenic character is

| | |
|----------------------|------------------------|
| a) bulk breeding | c) back cross breeding |
| b) pedigree breeding | d) disruptive mating |
3. Self pollination refers to

| | |
|-------------|--------------|
| a) allogamy | c) dichogamy |
| b) autogamy | d) herkogamy |
4. Self incompatibility can be overcome by

| | |
|------------------------|------------------------------|
| a) bud pollination | c) irradiation |
| b) delayed pollination | d) end of season pollination |
5. In flowering plants , male sterility was first reported by

| | |
|----------------------|------------------|
| a) koelreuter (1763) | c) allard (1960) |
| b) stout (1917) | d) duvick (1966) |
6. A homogeneous population includes

| | |
|-------------------|------------------------------|
| a) a pure line | c) F1 between two pure lines |
| b) an inbred line | d) all of the above |
7. Concept of diallel selective mating was developed by

| | |
|----------------------------|--------------------|
| a) mather and jinks (1971) | c) Russell (1978) |
| b) Jensen (1970) | d) Simmonds (1979) |
8. Mass selection is rarely used in

| | |
|-----------------------|---------------------------------|
| a) allogamous species | c) asexually propagated species |
| b) autogamous species | d) seed propagated species |

9. The term heterosis was coined by
 - a) shull (1914)
 - b) east (1908)
 - c) hull (1945)
 - d) davenport (1908)
10. The dominance hypothesis of heterosis was first reported by
 - a) east (1908)
 - b) shull (1914)
 - c) davenport (1908)
 - d) hull (1945)
11. The term overdominance was coined by
 - a) shull (1908)
 - b) east (1908)
 - c) bruce (1910)
 - d) hull (1945)
12. Inbreeding of cross pollinated species leads to increase in
 - a) homozygosity
 - b) population mean
 - c) heterozygosity
 - d) all of the above
13. Self pollination is a form of
 - a) Inbreeding
 - b) Outbreeding
 - c) Random mating
 - d) None
14. Development of embryo either from synergids or antipodal cells is referred as
 - a) parthenogenesis
 - b) androgenesis
 - c) apogamy
 - d) apospory
15. Asexual reproduction includes
 - a) autogamy
 - b) allogamy
 - c) apomixis
 - d) amphimixis
16. Self incompatibility was first reported in
 - a) Verbascum phoeniceum
 - b) Medicago sativa
 - c) Nicotiana glauca
 - d) Lycopersicon peruvianum
17. Gametophytic system of self incompatibility was first discovered by
 - a) Hughes and Babcock (1950)
 - b) Gerstel (1950)
 - c) Bateman (1952)
 - d) East and Mangelsdorf (1925)
18. Male sterile line is referred to as
 - a) A line
 - b) R line
 - c) B line
 - d) None of the above
19. The sources of male sterility include
 - a) spontaneous mutations
 - b) induced mutations
 - c) interspecific crosses
 - d) all of the above
20. Bulk breeding method was developed by
 - a) johannsen (1903)
 - b) shull (1908)
 - c) nilssonsehle (1908)
 - d) allard (1960)

Q.2 Do as Directed.

A. Define the following. (Any five)

(05)

1. Carpel
2. Self pollination
3. Pure Line
4. Heterosis
5. Homozygous
6. Male sterility
7. Mass Selection

B. Answer the following. (Any Five)

(05)

1. Enlist the types of breeding population. Explain Any One in Detail.
2. Enlist the types of Heterosis.
3. State the breeding methods for the plant breeding.
4. Briefly describe the major difference between mass selection and Pure line selection.
5. Summarize the various objectives and important of plant breeding.

6. Draw Net and clean diagram of flower.
7. Enlist the types of pollination in plant breeding.

Q.3 Write short notes. (Any five)

(15)

1. Cross pollination
2. Self Incompatibility
3. Mass Selection
4. Pure line selection
5. Genetic Male Sterility
6. Heterosis

Q.4 Long Questions

(15)

1. Mode of Reproduction
2. Male sterility
3. Explain in Detail: Bulk Method
4. Pollination