

B.Sc. BOTANY
FIFTH SEMESTER [SPECIAL REPEAT]
PLANT BREEDING
BSB-504
[USE OMR SHEET FOR OBJECTIVE PART]

SET
A

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

(Objective)

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

- To keep materials in isolation to prevent the spread of diseases, etc. present in them to other materials is known as:
a. Segregation
b. Quarantine
c. Isolation
d. Composite
- Which of the following chemicals induces polyploidy in plants?
a. Colchicine
b. Formaline
c. 5-Bromouracil
d. Saffranine
- The first man-made cereal 'Triticale' has been developed from a cross between:
a. Wheat and Oat
b. Wheat and Maize
c. Maize and Rice
d. Wheat and Rye
- Euploidy is a chromosomal variation in.....
a. Size
b. Position of genes
c. Number
d. Structure
-aims to improve the various characteristics of plants so that they become more desirable agronomically and economically.
a. Plant tissue culture
b. Hybridization
c. Crossing over
d. Plant breeding
- Which of the following will be sterile?
a. Monoploid
b. Diploid
c. Triploid
d. Tetraploid
- An Agricultural Research Institute was established in Pusa in:
a. 1902
b. 1904
c. 1905
d. 1906
- Which of the following bacterium is considered as "a natural genetic engineer"
a. Agrobacterium tumefaciens
b. Agrobacterium radiobactor
c. Pseudomonas putida
d. Thermus aquaticus
- Which of the following have been developed by mutation?
a. Knol knol variety of castor
b. Aruna variety of Barley
c. Erectiferum variety of cabbage
d. Reimei variety of rice
- Father of Indian Green Revolution:
a. M.S. Swaminathan
b. Norman Borlaug
c. Gregor Mendal
d. Hardy Weinburg

11. The quickest method of plant breeding is:
 - a. Introduction
 - b. Selection
 - c. Hybridisation
 - d. Mutation Breeding
12. Which is true about heterosis?
 - a. Superiority of an F1 hybrid over its male parent
 - b. Superiority of an F1 hybrid over its female parent
 - c. Superiority of an F1 hybrid over both of its parents
 - d. None of the above
13. Who used the term heterosis for the first time?
 - a. Shull
 - b. Keith Downey
 - c. Thomas Andrew Knight
 - d. Niels Ebbesen Hansen
14.is when an organism is created with an abnormal number of chromosomes.
 - a. Aneuploidy
 - b. Diploid
 - c. Polyploidy
 - d. Haploid
15. Inbreeding increases the frequency of:
 - a. Homozygous
 - b. Heterozygous
 - c. Genetic diversity
 - d. Genetic linkage
16. Non-disjunction means:
 - a. Failure of homologous chromosomes to separate properly during cell division
 - b. Failure of formation of chromosomes
 - c. Failure of formation of centromere
 - d. Failure of formation of cytoplasm
17. Which of the following is not ionizing radiation?
 - a. X rays
 - b. UV rays
 - c. Cosmic rays
 - d. Alpha rays
18. Green revolution aims at:
 - a. Use of green manure
 - b. Grow more crops
 - c. High yield variety programme
 - d. All the above
19. Semi dwarf rice variety IR8 was developed in:
 - a. India
 - b. Taiwan
 - c. China
 - d. Philippines
20. Which of the following statements are true for Agrobacterium tumefaciens mediated gene transfer?
 - a. Vir genes are essential for gene transfer
 - b. T-DNA borders are essential for gene transfer
 - c. Both a and b
 - d. None of the above

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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| 1. What is hybridization? Describe in brief the various steps involved in hybridization. | 2+8=10 |
| 2. Give a list of central institutes for crop improvement. Briefly describe the organisation and functions of any two of the ICAR institutes. | 2+4+4=10 |
| 3. What is Ploidy? Discuss the different types of Ploidy. Highlight the role of Polyploidy in crop improvement and evolution with special reference to wheat. | 1+4+5=10 |
| 4. Define heterosis. Discuss the different types of heterosis. | 2+8=10 |
| 5. Describe the process of <i>Agrobacterium tumefaciens</i> mediated gene transfer with necessary diagrams of Ti-plasmid. | 8+2=10 |
| 6. Outlined a generalised procedure for mutatuion breeding with special reference to oligogenic characters. | 10 |
| 7. Explain Johanssen's pureline theory. Briefly describe the procedure for pureline selection. | 6+4=10 |
| 8. What are the factors affecting seed germination? Discuss seed viability test of seed testing technique. | 4+6=10 |

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