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SEMESTER END THEORY EXAMINATION

B.Sc. (Hons.) Horticulture

Semester	: II(New)	Term	: II	Academic Year	: 2020-21
Course No.	: H/BOT-123	Title	: Principles of Plant Breeding		
Credits	: 3(2+1)			Total Marks	: 80
Day & Date	Thursday 11/11/2021	Time	: 10.00-12.00		

Note:

1. Solve **ANY EIGHT** questions from **SECTION 'A'**.
2. Solve **ANY TWELVE** questions from **SECTION 'B'**
3. All questions from **SECTION 'C' are compulsory.**
4. Send the PDF file of answer sheet to the email-id of respective course teacher.

SECTION A

(Write the answers in 4-5 sentences only. Each question carries 4 marks.)

- Q.1 Describe briefly the various objectives of plant breeding.
- Q.2 Explain briefly the various mechanism that promote cross pollination in crop plants.
- Q.3 Give a brief account of various methods of overcoming self incompatibility.
- Q.4 What is genetic male sterility? Describe briefly merits and demerits of genetic male sterility.
- Q.5 Define heritability. Describe briefly two types of heritability.
- Q.6 What are the merits and demerits of pure line selection method.
- Q.7 Write a short note on (Any Two)
- a) Introduction b) Apomixis c) Mutations
- Q.8 Give brief comparison of pedigree and bulk methods of breeding.
- Q.9 Define heterosis. Describe briefly various types of heterosis.
- Q.10 What are the different steps followed in plant hybridization.?

SECTION B

(Write the answer in one sentence only. Each question carries 2 marks)

- Q11. Answer in one sentence/Do as directed/Define etc.(Solve any 12)
- Give the contribution of following scientists.
1. N. E. Borlaug 2. G. H. Shull 3. W. L. Johannsen 4. N. I. Vavilov
5. R. H. Painter 6. C. T. Patel 7. C. H. Goulden
- Define the following terms
8. Inbreeding 9. Autogamy 10. Domestication 11. Pureline
12. Clone 13. Mutagen 14. Transgenic

SECTION C

(Choose the correct options. Each question carries 1 mark.)

- Q12 Choose the correct options.
- 1 Indian Rice Research Institute is located at:
 - a) Hyderabad
 - b) Pune
 - c) Karnal
 - d) Cuttack
 - 2 Sum total of genes in a species is called
 - a) Gene pool
 - b) Genetic diversity
 - c) Gene bank
 - d) Gene variability
 - 3 Self pollination is associated with :
 - a) Homogamy
 - b) Dichogamy
 - c) Herkogamy
 - d) All of these
 - 4 Random mating is a form of:
 - a) Inbreeding
 - b) Outbreeding
 - c) Apomixis
 - d) All of these
 - 5 Gametophytic system of self incompatibility was first discovered by
 - a) Hughes and Babcock
 - b) Gerstel
 - c) East and Mangelsdorf
 - d) Bateman
 - 6 Cytoplasmic genic male sterility system includes:
 - a) A-line
 - b) B- line
 - c) R-line
 - d) All of these
 - 7 The most effective method for the transfer of oligogenic characters is :
 - a) SSD method
 - b) Bulk method
 - c) Pedigree method
 - d) Back cross method
 - 8 Selection in favor of both extreme phenotypes is referred to as:
 - a) Disruptive selection
 - b) Directional selection
 - c) Stabilizing selection
 - d) Cyclic selection
 - 9 The term recurrent selection was coined by:
 - a) Hayes and Garber
 - b) East and Jones
 - c) Jenkins
 - d) Hull
 - 10 Heterosis over the best commercial variety is referred to as :
 - a) Mean heterosis
 - b) Heterobeltosis
 - c) Average heterosis
 - d) Useful heterosis
 - 11 Triticale is obtained by crossing
 - a) Wheat X Sorghum
 - b) Tomato X Brinjal
 - c) Rice X Cotton
 - d) Wheat X Rye
 - 12 Heterosis can be fully exploited in the form of :
 - a) Hybrids
 - b) Composites
 - c) Multilines
 - d) Synthetics
 - 13 For induction of mutations in crop plants, X rays were first used by:
 - a) Muller
 - b) Mendel
 - c) Andrew Knight
 - d) Stadler

- 14 An inbred is used as a tester in
- a) Simple recurrent selection
 - b) Recurrent selection for gca
 - c) Recurrent selection for sca
 - d) Reciprocal recurrent selection
- 15 In crop plants clonal selection is used in
- a) Non flowering plants
 - b) Low seed setting species
 - c) Apomictic species
 - d) All of these
- 16 A cross between an inbred line and open pollinated variety is called
- a) Three way cross
 - b) Single cross
 - c) Topcross
 - d) Polycross
- 17 Vertical resistance is also known as
- a) Oligogenic resistance
 - b) Minor resistance
 - c) Quantitative resistance
 - d) Polygenic
- 18 Drought tolerance is associated with
- a) Small, waxy and thick leaves
 - b) Sunken and small stomata
 - c) Deep root system
 - d) All of these
- 19 A cross involving more than four inbred lines known as
- a) Top cross
 - b) Polycross
 - c) Multiple cross
 - d) Single cross
- 20 Norin 10 is the source of dwarfing gene in
- a) Rice
 - b) Barley
 - c) Maize
 - d) Wheat
- 21 Which technique can be useful in overcoming hybridization barrier?
- a) Shoot tip culture
 - b) Protoplast culture
 - c) Anther culture
 - d) Embryo culture
- 22 ---- sterility cannot be used in hybrid production of seed producing crops.
- a) GMS
 - b) CMS
 - c) Transgenic
 - d) CGMS
- 23 Most common example of allopolyploid crop is
- a) Apple
 - b) Wheat
 - c) Sweet potato
 - d) Potato
- 24 The chemical which is most commonly used for chromosome doubling is---
- a) GA
 - b) Colchicine
 - c) IAA
 - d) 2-4-D