

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

/ (CBCSS)

Botany

BOT 4E 02 (3)—GENETIC ENGINEERING

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*
3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Part A

Answer any four questions.

Each question carries 2 weightage.

1. Give four main differences between prokaryotic and eukaryotic Translation.
2. What is Nested-PCR ?
3. How the Virulence trait of *Agrobacterium tumefaciens* is transferred ?
4. What are opines ?
5. What is the role of ligase in rDNA technology ?
6. What are the differences between AFLP and RFLP ?
7. What is a gene gun ?

(4 × 2 = 8 weightage)

Part B

Answer any four questions.

Each question carries 3 weightage.

8. What is T_m value ? and how it is significant in PCR ?
9. Give an brief account for transgenic plants with an example ?

Turn over

10. What is palindromic sequence ?
11. Differentiate between exonuclease and endonuclease ?
12. Give a brief account on agarose gel electrophoresis.
13. What is the use of Antibiotic resistance marker genes in cloning ?
14. Explain Genetic Engineering ?

(4 × 3 = 12 weightage)

Part C

*Answer any two questions.
Each question carries 5 weightage.*

15. Explain Southern Blotting in detail ?
16. Discuss the advantages and disadvantages of *Agrobacterium* mediated gene transfer ?
17. Give an account of RT-PCR and its applications.
18. How genetically engineered micro-organisms are useful in preventing pollution ?

(2 × 5 = 10 weightage)

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Botany

BOT 4E 02—2 PATHOLOGY OF PLANTATION CROPS AND SPICES

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
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I. Write a short answers on any *four* of the following :

- 1 Write the basic principle of plant pathology
- 2 Write the general symptoms of bacterial diseases.
- 3 What is systemic fungicide. Write an example.
- 4 Write the symptoms and control measures of stem bleeding in coconut
- 5 Explain the principle of biological control.
- 6 Write the general symptoms of fungal diseases.
- 7 How systemic protection different from that of surface protectants ?

(4 × 2 = 8 weightage)

II. Write a short essays on any *four* of the following :

- 8 Write the mode of action of bactericides.
- 9 Explain the mode of action and application of antibiotics in plant protection.
- 10 Write the mode of action of plant protection chemicals.
- 11 Write a brief account on the abnormal leaf fall in Rubber.

Turn over

- 12 Write the mode of action of bacterial biopesticides.
- 13 Briefly explain disease triangle.
- 14 Write the mode of application of biocontrol agents in plants.

(4 × 3 = 12 weightage)

III. Write an essays on any *two* of the following :

- 15 Write an essay on the major pests in crop plants.
- 16 Give an account on the active principles and mode of action of botanicals as plant protectants.
- 17 Write an account on the integrated pest and disease management in crops.
- 18 Write the symptoms, causative organism and control measures of two diseases found in ginger.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
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Botany

BOT 4E 01 (6)—GENETIC AND CROP IMPROVEMENT

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
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Section A

I. Write short answer on any *four* of the following. Each question carries 2 weightage :

- 1 Explain the gene bank and its importance.
- 2 Write the limitations for the improvement of plantation crops.
- 3 Define Acclimatisation.
- 4 What is certified seed ?
- 5 What is the full form of CGIAR ? What are its functions ?
- 6 Differentiate primary and secondary centre of origin.
- 7 Explain the term often cross-pollinated species

(4 × 2 = 8 weightage)

Section B

II. Write short essay on any *four* of the following. Each question carries 3 weightage :

- 8 Give an account on the different types of mating systems in plants.
- 9 Briefly explain the process of selection in crop improvement.

Turn over

- 10 Write the procedure for plant introduction.
- 11 Briefly explain the breeding techniques in wheat.
- 12 What is DNA recombinant technology ? How is it applicable to crop improvement.
- 13 Write a short account on how IPR relevant in crop improvement programmes.
- 14 Write the applications of distant hybridization in crop improvement.

(4 × 3 = 12 weightage)

Section C

III. Write an essay on any *two* of the following. Each question carries 5 weightage :

- 15 Write an essay on the farming system and sustainable agriculture.
- 16 Write the procedure for the breeding of biotic stress resistance crop.
- 17 Give an account on the application of polyploidy in crop improvement.
- 18 Write an account on the *in situ* conservation.

(2 × 5 = 10 weightage)

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BOT 4E 01 3—PLANT TISSUE CULTURE

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Part A (Short Answer Type)

I. Answer any *four* questions. Each question carries 2 weightage :

- 1 Write about WPM.
- 2 Write about additives in tissue culture media.
- 3 What are synthetic seeds and how are they produced ?
- 4 What is endosperm culture ? Mention the significance.
- 5 Explain in vitro secondary metabolite production.
- 6 Point out problems normally faced in marketing TC plants.
- 7 Write about importance of endophytes in tissue cultured plants.

(4 × 2 = 8 weightage)

Part B (Short Essay Type)

II. Answer any *four* questions. Each question carries 3 weightage :

- 8 Write a note on issues faced in commercial production of tree species through tissue culture.
- 9 Explain bioreactor technology and its importance.

Turn over

- 10 Describe the components in MS media.
- 11 Explain the hardening procedure for tissue cultured plants.
- 12 Write an account on tissue culture ventures in India.
- 13 Explain the procedure and importance of haploid culture.
- 14 Explain commercial tissue culture of orchids in India.

(4 × 3 = 12 weightage)

Part C (Essay Type)

III. Answer any *two* questions. Each question carries 5 weightage :

- 15 Elaborate the importance of cell culture and tissue culture.
- 16 What is virus indexing of tissue cultures plants ? Explain the methodology and importance.
- 17 Explain the importance of tissue culture as a biotechnological tool for propagation and protoplast culture.
- 18 'PGRs have great importance in tissue culture'. Substantiate. Write about major components of tissue culture media.

(2 × 5 = 10 weightage)

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**BOT 4E 01 (2)—ENVIRONMENTAL BIOLOGY AND BIODIVERSITY CONSERVATION
(2019 Admissions)**

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Part A

I. Write short answer on any *four* of the following :

- 1 Write the importance of mangrove ecosystem.
- 2 Explain Databases on biodiversity.
- 3 What is climate disruption.
- 4 Write short answer on ecological foot print.
- 5 Explain Coevolution.
- 6 What is Eco restoration ?
- 7 Write short note on the genetic diversity of a population.

(4 × 2 = 8 weightage)

Part B

II. Write short essay on any *four* of the following :

- 8 Write the role of wild species in biodiversity conservation.
- 9 Give a short account on the forest biome.
- 10 Briefly explain the phenomenon of desertification.

Turn over

- 11 Briefly explain the importance of ocean ecosystem.
- 12 Write a short account on Rio Conference (1992).
- 13 Give a brief account on the role of NGOs in biodiversity conservation.
- 14 Give an account on the *ex situ* conservation.

(4 × 3 = 12 weightage)

Part C

III. Write an essay on any *two* of the following :

- 15 Write an essay on disaster management.
- 16 Give an account on the agrodiversity of cultivated taxa.
- 17 Write a brief account on the causes and consequences of loss of biological diversity.
- 18 Give an account on the Ramsar sites of Kerala.

(2 × 5 = 10 weightage)