C 4711 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Botany

BOT 2C 06—PLANT ECOLOGY, CONSERVATION BIOLOGY, PHYTOGEOGRAPHY AND FOREST BOTANY

(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 Discuss the minor forest products obtained from Kerala forests.

2. Write a note on global trends in primary productivity.

3. What are the various sources of land pollution ? Write the harmful effects of metal pollutants on human health.

4. Explain biotic potential and carrying capacity of a population.

5. Describe age and area hypothesis.

6. What is deep ecology ? Why is it important ?

7. Write notes on environmental risk assessment.

(4 × 2 = 8 weightage)

Part B

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

8. Give an account on the zonation and communities in Marine habitat.
9. What is green house effect ? How green house effect occurs in nature ? Mention the relative contribution of major green house gases.
10. Define Endemism. Explain different types of endemism and factors responsible for endemism.
11. 'Forests are important natural resource'. Comment and discuss the status of forest cover in India.
12. Write an account on the need, merits and scope of bioremediation.
13. Discuss the biodiversity at national and local level.
14. Discuss the Wildlife Preservation Act (1972). How it helps to protect the wildlife in India ?

(4 × 3 = 12 weightage)

Part C

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

15. Give an account on the different patterns of plant distribution with examples.
16. Define water pollution. Give an account of various types of water pollution. What are the major sources of water pollution ? Suggest methods of control.
17. Give an account on the role of government and NGOs engaged with environment management programme at global, national and regional level.
18. What is conservation of biodiversity ? Describe different strategies of conservation of biodiversity.

(2 × 5 = 10 weightage)

C 4710 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Botany

BOT 2C 05—CYTOGENETICS, GENETICS, BIOSTATISTICS, PLANT BREEDING AND EVOLUTION

(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

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

1 What is QTL mapping ?

2 Discuss translocation heterozygotes.

3 Write a short note on B chromosomes.

4 Define Germplasm. What are the methods by which it can be conserved ?

5 With an example of achievement, discuss breeding for stress resistance.

6 Explain the central tendencies for analysis of data.

7 Distinguish between euploidy and aneuploidy. What is its effect on the phenotype ?

(4 × 2 = 8 weightage)

Part B

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

8 What are retrotransposons ? Discuss their significance in evolution.

9 List out and explain the steps involved in designing an experiment.

Turn over

10 Discuss the techniques of chromosome microdissection and microcloning.

11 Discuss IPR and the farmer's right act.

12 Analyse the role of mtDNA in inheritance.

13 What is Hardy Weinberg law ? How can the Hardy Weinberg equilibrium be altered ?

14 With examples, discuss selection as a plant improvement technique.

(4 × 3 = 12 weightage)

Part C

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

15 Discuss the role of molecular markers in plant breeding. Critically evaluate transgenic plants.

16 With examples, discuss any five types of mobile genetic elements.

17 What are chromosomal aberrations ? Give an account on the structural chromosomal aberrations and their role in evolution.

18 Describe the methods of tabulation and presentation of data in research.

(2 × 5 = 10 weightage)

C 4709 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2021

(CBCSS)

Botany

BOT 2C 04—CELL BIOLOGY, MOLECULAR BIOLOGY AND BIOPHYSICS

(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. Explain how DNA replication is suppressed between meiosis I and meiosis II.
2. What is apoptosis? Briefly describe intrinsic pathway.
3. Explain the process of termination of transcription in prokaryotes.
4. Describe the regulation of *trp* operon when tryptophan levels are high in the cell.
5. What do you understand by C value paradox ? Discuss the hypothesis proposed to explain the paradox and give their relative merits and demerits.
6. Write notes on freeze drying and its application.
7. What are buffers ? Give an account on the functions of buffers in biological system and its use in biological research.

(4 × 2 = 8 weightage)

Part B

Answer any **four** *questions.*

Each question carries 3 *weightage.*

8. Describe the check points in cell cycle.
9. Define aging. Discuss the causes of aging.
10. Write about metastasis and malignant transformation.
11. Write a detailed description about post transcriptional modification of mRNA.
12. Explain the structure of lac operon and regulation by cAMP.
13. Describe the molecular mechanisms of mutation.
14. Describe the structure of three RNA polymerases known in eukaryotes and compare them with that of prokaryotic RNA polymerase. Discuss the function of these eukaryotic RNA polymerases.

(4 × 3 = 12 weightage)

Part C

Answer any **two** *questions.*

Each question carries 5 *weightage.*

15. Describe the organization of chromatin and chromosomes in eukaryotes with the help of diagrams.
16. What biochemical events take place in cells before cellular divisions occur ? Compare the cytogenetic view of chromatin in interphase of mitosis and meiosis.
17. Explain the role played by DNA repair mechanisms in ensuring the fidelity of DNA.
18. Discuss the principle of centrifugation. Write about different types of centrifuges and its applications.

(2 × 5 = 10 weightage)