C 23312 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Botany

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

(2019 Admission onwards)

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. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *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.*

1. Comment on rare and out of danger red list categories.
2. Write a short account on air pollutants and its effects on man. What are the control measures ?
3. Explain the theory of glaciations.
4. What are the ecological features of marine environment ?
5. Differentiate between continuous and discontinuous types of plant distribution.
6. Write notes on remote sensing.
7. What are the impacts of industrialization ?

(4 × 2 = 8 weightage)

Part B

Answer any **four** *questions.*

8. Describe the habitat conditions of a desert biome. How it differs from a forest or grassland biome ?
9. What are the causes of extinction ?
10. Explain the theory of land bridges with examples. Why is it important ?
11. What is population density ? Explain the factors influencing the population density.
12. Describe the different forest types in India.
13. Explain *El Nino* and *La Nina*.
14. Define primary production. Write a brief account of net primary productivity of different kinds of ecosystems.

(4 × 3 = 12 weightage)

Part C

Answer any **two** *questions.*

15. What is social forestry ? Explain the scope, schemes and priorities of social forestry with especial reference to India
16. Explain pollution. Give an account of various kinds of pollution and its abatement.
17. Define phytochoria. Give an account of the phytogeographical regions of India.
18. Give an account of the major and minor forest products with special reference to Kerala.

(2 × 5 = 10 weightage)

C 23311 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Botany

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

(2019 Admission onwards)

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. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *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 Distinguish autopolyploidy and allopolyploidy with examples.

2 Define Hardy Weinberg principle. List out the factors that alter this equilibrium.

3 What is SPSS ? How can it be used for data analysis ?

4 Differentiate between type 1 and type 2 errors in research.

5 Describe the modern synthetic theory of evolution.

6 What is trisomy ? Discuss the different types of trisomy.

7 Discuss Cmp site transposon.

(4 × 2 = 8 weightage)

Part B

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

8 Describe the various methods of collection of data for research.

9 Discuss plant introduction as a method of plant breeding. List out major achievements.

10 What is geological time scale ? Describe the various eras and their significance in evolution.

11 Distinguish between CRD and RBD.

12 Discuss transgenic plants and related ethical issues.

13 Explain, in detail, the various theories of evolution.

14 Give an account on the methods adopted for conservation of genetic resources.

(4 × 3 = 12 weightage)

Part C

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

15 Discuss the methodology of mutation breeding. Emphasize on its merits and achievements.

16 Describe the theories and experimental evidences for the origin of life.

17 Give an account on the structure and significance of the special chromosomes that you have studied.

18 Explain extra nuclear inheritance with reference to mitochondria and chloroplast.

(2 × 5 = 10 weightage)

C 23310 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Botany

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

(2019 Admission onwards)

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. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *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.*

1. Explain the role of cyclins and cyclin dependent kinases in cell cycle.
2. Describe the cellular changes during aging.
3. Explain the structure and role of sigma factor and rho factor in transcription.
4. Write notes on repetitive DNA and the significance.
5. Describe excision repair mechanisms in prokaryotes.
6. Write notes on RIA and ELISA.
7. Explain the principle of PAGE and its applications.

(4 × 2 = 8 weightage)

Part B

Answer any **four** *questions.*

8. Explain the molecular processes of apoptosis and the proteins regulating apoptosis.
9. Correlate genes and cancer. Add a note on the role of carcinogens.

Turn over

10. Write notes on : a) gene expression during cell cycle and b) mitotic inducers.

11. Explain DNA replication in prokaryotes.

12. Describe post transcriptional events.

13. Describe charging of tRNA and the formation of initiation complex in prokaryotes and eukaryotes during translation.

14. Describe the promoter sites for initiation of transcription in prokaryotes and eukaryotes. Compare the promoter sites with enhancer and silencer sites in eukayotes, using suitable examples.

(4 × 3 = 12 weightage)

Part C

Answer any **two** *questions.*

15. Write an essay on cellular differentiation and the molecular mechanisms of cellular differentiation.

16. Write a detailed account of chromatin organization from DNA to chromosome. Add a note on euchromatin and heterochromatin.

17. Write an essay on different methods of gene regulation in eukaryotes.

18. Explain the basic principle of colorimetry and spectrophotometry and its application in biological research. Make a comparison between the two.

(2 × 5 = 10 weightage)