

PG-A-1493

MBOT-21X

**P.G. DEGREE EXAMINATION –
JULY 2022.**

Botany

(From CY 2020 to AY 2020 – CY 2021)

Second Year

PLANT PHYSIOLOGY

Time : 3 hours

Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions in 300 words

All questions carry equal marks.

1. Bring out the mechanism of water absorption by plants.
2. Explain the energy investing reactions of glycolysis.
3. Expound the β - oxidation of fatty acids with energetics.
4. Is phytochrome a plant hormone? - substantiate.

5. Compose the types and practical applications of photoperiodism.
6. Classify the types and applications of transpiration.
7. Simplify the theories on ascent of sap.
8. Compare and contrast C₃ and C₄ cycle.

PART B — (3 × 15 = 45 marks)

Answer any THREE questions in 1000 words.

All questions carry equal marks.

9. Elaborate the types, functions and importance of mineral nutrition's in plants.
10. Elucidate the mechanism of pigment system in higher plants.
11. Assign the mechanism of nitrogen metabolism.
12. Enumerate the physiology of plant growth regulators studied by you.
13. Discuss the causes, methods, factors and advantages of seed dormancy.

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M.Sc. DEGREE EXAMINATION —
JULY 2022.

Botany

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Second Year

CYTOLOGY AND PLANT GENETICS

Time : 3 hours

Maximum marks : 70

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions in 300 words

All questions carry equal marks

1. Sketches the stages of cell division.
2. Describe the structure and functions of chloroplast.
3. Expound the structure and types of giant chromosome.
4. Mention the Mendalian law of inheritance.
5. High light the role of physical and chemical mutagens in mutation.

6. Illustrate the ultra-structure of plant cell.
7. Identify the characteristics of mitochondrial genomes.
8. Compare and contrast prokaryotic and eukaryotic cell.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions in 1000 words.

All questions carry equal marks.

9. Explain the phases of cell cycle and write briefly on the controlling mechanisms.
10. Analyse the structure and functions of endoplasmic reticulum.
11. Compose the fine structure, types and importance of chromosome.
12. Discuss the factors and molecular mechanism of crossing over.
13. Elaborate the molecular basis of mutation.

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(From CY – 2020 onwards)

Second Year

ECOLOGY AND FORESTRY

Time : 3 hours

Maximum marks : 70

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions in 300 words.

All questions carry equal marks.

- 1. Describe the structure and functions of an Ecosystem.**
- 2. Define ecosystem and explain in detail about ecological pyramids.**
- 3. Asses the sources, effects and control of ozone layer depletion.**
- 4. Elucidate the methods for gene conservation in forestry.**

5. Bring out the techniques in forest management.
6. Compare and contrast autecology and synecology with suitable examples.
7. Explain with the help of a diagram the nitrogen cycle.
8. Simplify causes, effects and control measures of noise pollution.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions in 1000 words.

All questions carry equal marks.

9. Elaborate the methods of studying plant community.
10. Give an illustrated account on morphological characters of hydrophytes.
11. Write an essay on water pollution.
12. Classify the types of forest in India.
13. How can we conserve biodiversity in India? Explain in detail

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BIOPHYSICS AND BIOCHEMISTRY

Time : 3 hours

Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions in 300 words.

All questions carry equal marks

1. **Mention the laws of thermodynamics.**
2. **Explain the structure and functions of electrochemical cell.**
3. **Compose the role of buffer in biological system.**
4. **Assess the properties of lipids.**
5. **Simplify the mechanism of enzyme action.**

6. Elucidate the working mechanism and applications of bomb calorimetry.
7. Focus the types of isomerism.
8. Highlight the theories proposed for mechanism of enzyme substrate complex formation.

PART B — (3 × 15 = 45 marks)

Answer any THREE questions in 1000 words.

All questions carry equal marks.

9. Critically analyses the energy generation and energy transfer processes in biochemical reactions.
10. Elaborate principle, working mechanism and applications of pH meter.
11. Expound the types of bond in biological system.
12. Classify the amino acids based on side chain.
13. Organize the classification of enzymes according to IUB.

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P.G. DEGREE EXAMINATION –
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Botany

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Second Year

MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Time : 3 hours

Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions in 300 words

All questions carry equal marks

1. “DNA is the genetic material” — Discuss.
2. Explain the process of translation in prokaryotes.
3. How the stability of mRNA molecule have effect on gene regulation?
4. List the steps that are required in genetic engineering in biotechnology.

5. Briefly explain somatic hybridization and its application in plant breeding
6. Enumerate the salient features of genetic code.
7. Describe the relationship between genes and proteins.
8. Why is pre-mRNA splicing important in molecular biology?

PART B — (3 × 15 = 45 marks)

Answer any THREE questions in 1000 words.

All questions carry equal marks.

9. Briefly describe the process of DNA replication in *E.coli*.
10. Assign the process of regulation of gene expression in Lac Operon.
11. Express the mechanisms of mRNA surveillance in molecular biology.
12. Summarize the tools and techniques of Recombinant DNA technology.
13. Critically analyses the application of Plant Tissue culture in crop improvement.