

M.Sc. (Final) DEGREE EXAMINATION,  
DECEMBER 2007.

Second Year

Botany

Paper V — DEVELOPMENT BIOLOGY OF ANGIOSPERMS AND ETHANOBOTANY

Time : Three hours  
100 marks

Maximum :

Answer any FIVE questions from Section A.

Each question carries 8 marks.

Also answer ALL the questions from Section B.

Each question carries 15 marks.

SECTION A — (5 × 8 = 40 marks)

1. Structure and function of Obturator.
2. Helobial Endosperm.
3. Anomalous secondary growth in Dracaena.
4. Hydrophytic Roots.
5. Ethnobotanical museums.
6. Biodiversity in sacred groves.
7. Scope of Ethnobotany.
8. Germplasm centres.

SECTION B — (4 × 15 = 60 marks)

9. (a) Give an account of the development of Tetrasporic embryosacs you have studied with suitable diagrams.  
Or  
(b) Write an account of the self Incompatibility and enumerate the measures to overcome it.
10. (a) Define Meristem and classify them. Give in brief about the theories concerned with shoot apical meristem in angiosperms.  
Or  
(b) Write an essay on the structure and functions of Xylem.
11. (a) Write an essay on the scope and history of traditional medicine.  
Or  
(b) What is a sacred grove? Enumerate the various measures for the conservation of the sacred groves.
12. (a) Give a brief account of the secondary metabolites and explain their role in the establishment of alternate medicine.  
Or  
(b) State the objectives of Ethnobotany and explain its significance in strengthening the modern medicine.

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Paper VI — MICROBIOLOGY, MYCOLOGY AND PLANT DISEASES

Time : Three hours  
100 marks

Maximum :

SECTION A — (5 × 8 = 40 marks)

Answer any FIVE of the following.

All questions carry equal marks.

1. Chaemotrophic bacteria.
2. Flagellation in bacteria.
3. Basidium.
4. Types of mushrooms.
5. Toxins.
6. Plant disease indexing.
7. T.M.V.
8. Epidemiology and control of damping off vegetables.

SECTION B — (4 × 15 = 60 marks)

Answer ALL questions.

9. (a) Describe the ultra structure of bacterial cell.  
Or  
(b) Describe the transmission of plant viruses and its control methods.
10. (a) Write an account on the economic importance of fungi.  
Or  
(b) What are the characters of Deuteromycotina and how they are evolved over Basidiomycotina.
11. (a) Describe in detail the symptoms caused by plant pathogenic fungi and bacteria.  
Or  
(b) Describe the role of enzymes in plant pathology.
12. (a) Describe the symptoms, etiology, epidemiology and control methods of blast

disease of rice.

Or

- (b) Write an account on the biological control of plant diseases.

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Paper VII — CELL BIOLOGY AND MOLECULAR BIOLOGY

Time : Three hours  
100 marks

Maximum :

SECTION A — (5 × 8 = 40 marks)

Answer any FIVE of the following.

All questions carry equal marks.

1. Principle and design of electron microscopy.
2. Composite transposons.
3. Structure and functions of mitochondria.
4. Golgi complex.
5. Avery, McCleod and Mccarthy's experiment.
6. Polyprotein genes.
7. DNA double helix model.
8. Salient features of genetic code.

SECTION B — (4 × 15 = 60 marks)

Answer ALL the following.

9. (a) Give an account on structure and components of cell wall and their synthesis.

Or

- (b) Explain different models of plasma membrane.

- 10 (a) What is signal transduction? What are the factors involved in receptor-ligand interactions?

Or

- (b) Give an account on origin and role of oncogenes in triggering cancer.

11. (a) Give details of Benzer's experiments that led to the discovery of fine structure of gene.

Or

- (b) Give an account on methods of recombination in Bacteria.

12. (a) What are the major enzymes and proteins involved in DNA replication?

Or

- (b) Give details of the structure and mechanism of gene regulation in prokaryotes.

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Paper VIII — PLANT BIOTECHNOLOGY

Time : Three hours  
marks

Maximum : 100

SECTION A — (5 × 8 = 40 marks)

Answer any FIVE of the following.

All questions carry equal marks.

1. Concept of Biotechnology.
2. Isolated Microspore culture.
3. Hairy Root Culture.
4. Electrofusion.
5. Differences between Genomic and cDNA libraries.
6. *Taq* polymerase.
7. Co-culture technique.
8. Insertional inactivation.

SECTION B — (4 × 15 = 60 marks)

Answer FOUR of the following.

9. (a) Explain the pathways of Somatic Embryogenesis.  
Or  
(b) Explain the methods of induction and selection of mutants for abiotic stress.
  10. (a) Describe the methodology for the production of Somatic Hybrids.  
Or  
(b) Discuss the relative merits and demerits of in vitro production of secondary metabolites.
  11. (a) Describe the various types of vectors used for cloning plant genes.  
Or  
(b) Explain the major steps in the production of rDNA molecules.
- (a) Distinguish between RFLP and RAPD. With the help of suitable examples explain their use in crop improvement programs.  
Or (b) Describe the various direct gene transfer methods.