

S. V. K. P. & Dr. K. S. RAJU ARTS & SCIENCE COLLEGE (AUTONOMOUS)
PENUGONDA-534320, W. G. Dist., A.P.

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Model Paper

M.Sc., Botany: Semester – I

PAPER CODE: 19BOTT11: CRYPTOGRAMS AND GYMNOSPERMS

(With Effective from 2019-2020 Admitted Batch)

Time: Three Hours

Maximum Marks: 75

SECTION – A

Answer ALL questions

(15X4 = 60 Marks)

1. (a) Elaborate on the thallus diversity in Algae.

OR

- (b) Criteria used in classification of Algae with special reference to Fritsch classification

2. (a) Detail the development of Antheridium, Archegonium in the order Anthocerotopsida.

OR

- (b) Evolution of Sporophyte in Bryophytes.

3. (a) Describe salient features and classification of Pteridophyta

OR

- (b) Discuss the significance of Heterospory and seed habit.

4. (a) Give an account of Bennettitales.

OR

- (b) Give an account on structure and reproduction of Gnetales.

G. Jyoti



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SECTION - B

Answer any THREE

(3x5 =15 Marks)

5. Economic importance of algae
6. Protonema
7. Thallus types in Marchantiales
8. Stele in Pteridophytes
9. Geological periods
10. Cordaites

G. Jyoti



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Model Paper

M.Sc Botany Semester I

PAPER CODE:19BOTT12:MICROBIOLOGY

(With effective from the Admitted batch of 2019-20)

Time: Three Hours

Maximum Marks: 75

Section – A

Answer **ALL** Questions

(15 × 4 = 60 Marks)

1. (a). Give an account on Archae and Cyanobacteria.

OR

- (b). Discuss the cell wall walls of Bacteria and fungi.

2. (a). Write an account on microbial growth kinetics.

OR

- (b). Give an account on nutritional requirements of microbes with emphasis on nutrition in fungi.

3. (a). Give an account on reproduction in bacteria.

OR

- (b). Reproduction in fungi.

4. (a). Give an account on Plant-microbe interactions.

OR

- (b). Economic importance of microorganisms.

Section – B

Answer any **THREE**

(3 × 5 = 15 Marks)

5. Phylogeny of Fungi
6. Types of nutrient media
7. Synchronous culture
8. Recombination
9. Biosensors
10. Fermentor

G. Jayath



W. Trolo
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Model Paper

M.Sc., Botany: Semester – I

PAPER CODE:19BOTT 13: CELL BIOLOGY OF PLANTS

(With effective from 2019-2020 Admitted Batch)

Time: Three Hours

Maximum Marks: 75

Section A

Answer all Questions

(15 x 4 = 60)

1. (a) Describe the Non covalent interactions in relation to function of Nucleic acids and Proteins

OR

(b) Write about the structure and organization of Prokaryotic and Eukaryotic Cells.

2. (a) Give an account of different models of Plasma membrane, which model is more appropriate and why?

OR

(b) What is cytoskeleton? Explain in detail about the role of microtubules in motility and cell division.

3. (a) Write in detail about Genome organization of mitochondria and its function.

OR

(b) Give an account on structure and function of Golgi apparatus.

4. (a) Write in detail about principles, methodology and application of ESR and NMR.

OR

(b) Explain the working principles of Light Microscopy, SEM and TEM.

Section – B

Answer any THREE

(3 x 5 = 15 Marks)

5. Specialized Cell types
6. Structure and function of Plasmodesmata
7. Vacuole structure and function
8. Lysosomes
9. RNA editing
10. Freeze fracture Technique

G. Jyoti



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Model Paper

M.Sc., Botany: Semester – I

PAPER CODE:19B0TT14:CYTOLOGY&CYTOGENETICS

(With effective from the Admitted batch of 2019-20)

Time: 3 Hrs

Max Marks: 75

Section – A

15 X 4 = 60

.Answer four questions, choosing ONE from each Unit

1. (a) Explain the molecular organization of centromeres and telomeres

OR

(b) Give an account of chromosome banding and its applications

2. (a) Give a brief account of chromosomal structural aberrations and explain their meiotic behavior

OR

(b) Elaborate on Aneuploids and their significance in human genetics

3. (a) Give a brief account of the origin and production of autopolyploids

OR

(b) Give an account on molecular organization of nuclear genome

4. (a) Write briefly about cell cycle and its regulation

OR

(b) Write about the mechanism of apoptosis giving its significance

Section –B

3 X 5 = 15

Answer any THREE

5. Karyotype
6. Polytene chromosome
7. Robertsonian translocation
8. Trisomics
9. C value paradox
10. Cyclins and cdks

G. Jyoti



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Model Paper

M.Sc., Botany: Semester – II

PAPER CODE:19BOTT 21:

GENETICS

(With effective from 2019-2020 Admitted batch)

Time: Three Hours

Maximum Marks: 75

Section A

15x4=60Marks

Each question carries 15 marks.

Answer four questions, choosing ONE from each Unit

1. (a)What are genetic markers and elaborate on their types

OR

- (b)Explain multiple allelic inheritance and its significance

2. (a)Write about tetrad analysis and its significance

OR

- (b)Write an account on Recombination and its molecular mechanism

3. (a)Detail the DNA damage and the different repair mechanisms

OR

- (b)Describe the organization and importance of Multigene families

4. (a)Describe the genetic basis of mitochondrial and chloroplast related characters

OR

- (b)What are the different methods of gene mapping in bacteriophages

Section –B

5 X 3 = 15

Answer any THREE

5. Chi-square test

6. Three-point test cross

7. Holiday model

8. Site directed mutagenesis

9. Transposons

10. Male sterility

G. Jyoti



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Model Paper

M.Sc., Botany: Semester – II

PAPER CODE: 19BOTT22: MOLECULAR BIOLOGY OF PLANTS

(With effective from 2019-2020 Admitted Batch)

Time: Three Hours

Maximum Marks: 75

SECTION – A

Answer ALL questions.

(15 x 4 = 60 Marks)

1. (a) Describe the composition and structure of Proteins.

OR

- (b) Give detailed account on composition and structure of DNA.

2. (a) Describe the mechanism of DNA Replication

OR.

- (b) Explain the process and enzymes involved in Transcription and post transcription activities.

3. (a) Describe the mechanism of Translation.

OR

- (b) What is meant by Protein sorting? Discuss the process of targeting of proteins into chloroplasts.

4. (a) Give a critical account on regulation of gene expression in Eukaryotes.

OR

- (b) Write an essay on regulation of gene expression with special reference to Lac & Tryp operons.

Section – B

Answer any Three

(3 x 5 = 15 Marks)

5. Ramachandran plot
6. Okazaki fragments
7. Replication of ends of Chromosomes
8. Structure of tRNA
9. Gene silencing
10. Lytic and Lysogenic cycle

G. Jyoti



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Model Paper

M.Sc., Botany: Semester – II

**PAPER CODE :19BOTT23: PLANT DEVELOPMENTAL BIOLOGY AND
EMBRYOLOGY**

(With effective from the Admitted batch of 2019-20)

Time: 3 Hrs

Max Marks: 75 Marks

Section – A

15 X 4 = 60

Each question carried 15 marks.

Answer four questions, choosing ONE from each Unit.

1. (a) Give a concise account on plant Architecture.

OR

(b) Write an account on development and organization of root apex and different theories related to root apex.

2. (a) Write in detail about SAM and its cytological and molecular aspects.

OR

(b) Explain the origin and mechanism of differentiation of epidermis and mesophyll.

3. (a) Write an essay on the ultra structure of Tapetum and its functions.

OR

(b) Describe about development and Organization of the mature Embryo sac.

4. (a) Write in detail about double fertilization and triple fusion.

OR

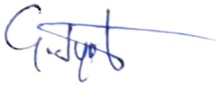
(b) Discuss about Polyembryony and mention its practical applications.

Section –B

3X 5 = 15

Each Answer any THREE

5. Plant cell division
6. Bulliform cells
7. Anatomy of Flower
8. Microsporogenesis
9. Epistase
10. Monocot embryo




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Model Paper

M.Sc Botany Semester II

PAPER CODE:19B0TT 24: MOLECULAR PLANT PATHOLOGY

(With effective from the Admitted batch of 2019-20)

Time: Three Hours

Maximum Marks: 75

Section – A

Answer **ALL** Questions

(15 × 4 = 60 Marks)

1. (a). Give an account on causal agents of plant diseases

OR

- (b). Discuss the process of colonization of pathogen in host

2. (a). Describe Host-Pathogen interactions

OR

- (b). Discuss the physiological changes in plants

3. (a). Give an account on viral diseases of plants

OR

- (b). Discuss symptoms, etiology, epidemiology and control measures of any one of the fungal diseases that you have studied.

OR

4. (a). Give an account on transgenic and genetic manipulation approaches in plant disease management.

OR

- (b). Discuss plant disease management

Section – B

Answer any **THREE**

(3 × 5 = 15)

5. Koch Postulates
6. Phytoalexins
7. Disease signaling in plants
8. Citrus canker
9. Club root of Crucifers
10. IPM

G. Jyoti



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M.Sc Botany - III Semester Model

Question Paper: Paper - I

19BOTT31 Taxonomy of Angiosperms and Plant Resource Utilization

Time: 3 hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a). Discuss the different Species Concept
(OR)
(b). Give an account of International Code of Nomenclature
2. (a). What is APG System of classification. Discuss about its significance
(OR)
(b). Discuss Cronquist's classification with its merits and demerits
3. (a). Elaborate on the evolutionary tendencies in Tubiflorae
(OR)
(b). Discuss on the role of Phytochemistry in Taxonomy
4. (a). Explain the origin, evolution and cultivation of Rice
(OR)
(b). Give an account of cultivation practices in oil yielding crops with an example

Section B

Answer any Three

3x5=15

5. Taxonomic hierarchies
6. Cladistic analysis
7. Amentiferae
8. Micro anatomy
9. Indian Cotton
10. Withania

G. Jyoti



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M.Sc Botany - III Semester

Model Question Paper: Paper - II

19BOTVitroPlant Biology

Time: 3hours

Max. Marks: 75

Answer ALL questions.

Section-A

4X15=60

1. (a) .Give an account on various plant growth hormones and their role in plant growth and development.

(OR)

(b). What is sterilization? Explain different types of sterilization methods.

2. (a). What is somatic embryogenesis? Describe the various source of formation of somatic embryos and add note on the factors effecting it.

(OR)

(b). Describe the methods of Androgenetic and Gynogenic haploid production.

3. (a). Describe various methods used for culture and growth of single cell.
(OR)

(b). Define somatic hybridization .Enumerate achievements, limitations, merits and demerits of protoplast fusion studies.

4. (a). Elucidate the method of clonal propagation and gives its importance.
(OR)

(b). Give an account of somaclonal variations and its applications.

Section B

Answer any Three

3x5=15

5. Totipotency
6. Organogenesis
7. Secondary metabolites
8. Cybrids
9. Artificial seeds
10. Gerplasm conservation

G. J. L.



W. M. W.

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M.Sc Botany - III Semester

Model Question Paper

19BOTT33 Ecology and Phytogeography

Max. Marks: 75

Time: 3 hours

Answer ALL questions. All questions carry equal marks

Section-A

- 1 (a) Detail the population structure and characteristics.

(OR)

b) What is species interactions. Enumerate the different types

2. a) What are different quantitative characters used to characterize a plant Community

(OR)

b) Discuss the different methods employed to study a plant community

3. a) Give a brief account of structure and function of an Ecosystem

(OR)

b) Discuss the importance of Bio-geochemical cycles with the help of two edaphic elements

4. a) Give a detailed account of the basic principles of Phytogeography

(OR)

b) Give a detailed account of the basic principles of Phytogeography

Section B

Answer any Three

3x5=15

6. Biological spectrum
7. Litter fall
8. Primary production
9. Continental drift
10. Floristic regions

G. Iyer



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M.Sc Botany - III Semester

Model Question Paper: Paper - IV

19BOTT34 Plant Physiology

Max. Marks: 75

Time: 3 hours

Answer ALL questions.

All questions carry equal marks

Section-A

4X15=60

1. a). Write a detailed account on SPAC.
(OR)
(b). Describe the mechanism of mineral ion uptake by plants.
2. (a). What is phytochrome? Discuss its structure and role in the physiology of flowering.
(OR)
(b). Describe the types of seed dormancy and its relieving methods.
3. (a). Describe the biosynthesis of Gibberellins and their physiological effects in Plants
(OR)
(b) What is Brassinosteroid? Discuss the biosynthetic pathway of brassinosteroids.
4. (a). Different Biotic and abiotic stresses and explain the effects of various stresses on morphological, anatomical and biochemical changes in plants.
(OR)
(b). What are plant responses to water stress? Explain the mechanism of drought tolerance in plants.

SECTION-B

Answer any THREE

3×5=15

5. Stomatal physiology.

6. Photoperiodism,

7. Vernalization,

8. Elicitors

9. Hormone receptors

10. Heat stress

G. S. P.



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M.Sc Botany - IV Semester Model

Question Paper: Paper - I

19BOTT41Genetic Engineering of plants and Microbes

Max. Marks: 75

Time: 3hours

Answer ALL questions.

All questions carry equal marks

Section-A

4X15=60

1. (a)What are Restriction enzymes? What is their role in rDNA technology?

(OR)

(b) What is Bacterial transformation? Discuss how to recognize transformation.

2.(a) Distinguish between Northern and Southern blotting techniques.

(OR)

(b)Write down the types and applications of PCR techniques.

3. (a) What is Microarray Technique? Explain the principles and applications.

(b)Describe the methods of Gene transfer in plants.

4(a) What are Transgenic plants? Discuss the Fungal and Insect tolerant transgenic.

(OR)

(b). Give an account of applications of Bioinformatics in Genetic Engineering and

Their importance

Section – B

Answer any Three

3 x 5 = 15

5. BAC s
6. FISH
7. RFLP
8. Microarray
9. Golden Rice
10. Barnase – Barstar

G. Iyer



G. Iyer

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M.Sc Botany - IV Semester Model

Question Paper: Paper - II

19BOTT42 Evolution and Plant Breeding

Max. Marks: 75

Time: 3 hours

Answer ALL questions. All questions carry equal marks

4X15=60

Section-A

1. (a) Describe the concept of origin of life.
(OR)
(b). What is Natural selection ? Discus.
2. (a). Write in detail about Hrdy-Weinberg law.
(OR)
(b). Discus about isolation mechanisms and their role in speciation.
3. (a). Explain molecular Evolution.
(OR)
(b). Correlate heterosis and hybrid vigour in plants.
4. (a). Diffrentiate between Binomial and normal distribution with sample data.
(OR)
(b). Give an account on types of errors and levels of significance.

Section B

Answer any Threo

3x5=15

5. Neo Darwinism
6. Co evolution
7. Molecular markers
8. Back cross method
9. Chi-square test
10. Anova

G. Jyoti



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M.Sc Botany - IV Semester

Model Question Paper: Paper - III

19BOTT43Environmental Biology and Biodiversity

Time: 3 hours

ax. Mmarks: 75

Answer ALL questions.

All questions carry equal marks

Section-A

4X15=60

1. (a) Discuss on the impact of Ecological perturbations on plants and ecosystem.
(OR)
(b). Role of Green house gases in climate change.
2. (a). Elaborate on the factors affecting soil formation.
(OR)
(b). Enumerate the types and source of Pollution and its effect on Ecosystem.
3. (a). Define biodiversity and discuss on the importance of its studies.
(OR)
(b). Discuss about the World centers of domesticated plants.
4. (a). Distinguish between the different strategies of conservation.
(OR)
(c). Illustrate the principles of Remote sensing and its application in biodiversity Conservation.

Section B

Answer any Three

3x5=15

5. Climate classification
6. Humus
7. Hot spots
8. IUCN Categories of threat
9. BSI
10. Sustainable Development



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M.Sc Botany - IV Semester

Model Question Paper: Paper - IV

19BOTT44Plant Metabolism

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

4X15=60

Section-A

1. (a) Describe Michaelis – Menten equation and Write down its significance.

OR

- (b) Write about signal transduction in higher plants.

2. (a) Describe the mechanisms of electron and proton transport structure, synthesis & function of ATP.

OR

- (b) Write a detailed account on C3, C4 and CAM plants in relation to physiological and Ecological considerations

3. (a) Describe Glycolysis and TCA cycle.

OR

- (b) Give an account on structure & function of storage and membrane lipids.

4. (a) What is diazotrophication and write a detailed account on symbiotic Nitrogen fixation.

OR

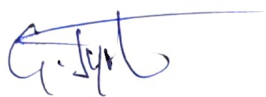
(b) Describe the mechanism of sulphate uptake, transport and assimilation.

Section – B

Answer any FIVE

3x5=15

5. Allosteric enzymes
6. Photosynthetic pigmentation
7. Pentose phosphate pathway.
8. Structural lipids.
9. Biosynthesis of Amino Acids.
10. Sulphate uptake



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