

Annexure – 8

PERIYAR UNIVERSITY
Salem – 636 011.



**Periyar Institute of Distance Education
(PRIDE)**

**B.Sc., BOTANY
[NON-SEMESTER]**

**REGULATIONS AND SYLLABUS
Effective from the academic year 2007-2008**

PERIYAR INSTITUTE OF DISTANCE EDUCATION
[PRIDE]
DEGREE OF BACHLOR OF SCIENCE IN BOTANY
[NON-SEMESTER]

1. Eligibility for Admission:

A candidate who has passed Higher Secondary Examination in Academic or vocational stream with Botany(or)Biology under higher secondary board of examination, TamilNadu or an examination accepted as equivalent thereto by the syndicate subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the B.Sc degree examination of this university after a course of study of three academic years.

2. Duration of the Course:

The course for the degree of Bachelor of Science shall consist of three academic years.

3. Course of study.

The course of study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time.

I- YEAR

1. Language Paper I
2. English - Paper I
3. Major Core Paper I
4. Major Core Paper II
5. Allied Theory –Zoology
6. Major Practical-I
7. Allied Practical-Zoology

II-YEAR

8. Language – Paper II
9. English- Paper II
10. Major Core Paper – III
11. Major Core Paper-IV
12. Allied Theory – Chemistry
13. Major practical –II
14. Allied Practical - Chemistry

III-YEAR

15. Major Core Paper-V
16. Major Core Paper-VI
17. Major Core Paper-VII
18. Major Core Paper-VIII
19. Major Core Paper-IX
20. Major Practical-III
21. Major Practical-IV

4. Examination:

The theory examination shall be three hours duration to each paper at the end of each year. The candidates failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

The practical examination for UG course shall be conducted at the end of the year.

5. Passing Minimum:

The candidate shall be declared to have passed the examination if the candidate secures not less than 40 marks in the University examination in each theory and practical papers.

For the Practical paper, a minimum of 40 marks out of 100 marks in the University examination and the record notebook taken together is required to pass the examination. There is no passing minimum for the record notebook. However submission of a record notebook is a must.

6. Classification of Successful Candidates

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in First Class.

All other successful candidates shall be declared to have passed in the Second Class. Candidates who obtain 75% of the marks in the aggregate shall be declared to have passed the examination in First Class with Distinction provided they pass all the examinations prescribed for the course at the first appearance.

Candidates who pass all the examinations prescribed for the course in the first instance and within a period of three academic years from the year of admission to the course only are eligible for University Ranking.

7. Maximum Duration for the completion of the UG Programme:

The maximum duration for completion of the UG Programme shall not exceed three years.

8. Commencement of this Regulation:

These regulations shall take effect from the academic year 2007-08,i.e., for students who are to be admitted to the first year of course during the academic year 2007- 08 and thereafter.

9. Transitory Provision:

Candidates who were admitted to the UG course of study before 2007-08 shall be permitted to appear for the examinations under those regulations for a period of three years i.e., upto and inclusive of the examination of April/May 2010. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

Scheme of Examination:

The Scheme of Examinations for different years is as follows:

Sl.no	Paper	Title of the paper	Duration	marks
	I-YEAR			
1	Language Paper I		3	100
2	English - Paper I		3	100
3	Major Core Paper -I	Algae and Bryophytes	3	100
4	Major Core Paper-II	Fungi,Bacteria, Viruses,Lichens and Plant Pathology	3	100
5	Allied Theory- Zoology		3	100
6	Major Practical-I	Covering papers-I&II	3	100
7	Allied Practical-Zoology		3	100

	II-YEAR			
8	Language – Paper II		3	100
9	English- Paper II		3	100
10	Major Core Paper – III	Pteridophytes, Gymnosperms and Paleobotany	3	100
11	Major Core Paper – IV	Anatomy and Embryology of Angiosperms	3	100
12	Allied Theory: Chemistry		3	100
13	Major practical –II	Covering papers III&IV	3	100
14	Allied Practical -Chemistry		3	100
	III-YEAR			
15	Major Core Paper – V	Morphology, Taxonomy of Angiosperms and Economic importance	3	100
16	Major Core Paper- VI	Cytology, Genetics, Plant Breeding and Evolution	3	100
17	Major Core Paper-VII	Plant Physiology	3	100
18	Major Core Paper-VIII	Plant Ecology and Phytogeography	3	100
19	Major Core Paper-IX	Medicinal Botany	3	100
20	Major Practical-III	Papers covering V, VI.	3	100
21	Major Practical-IV	Papers covering VII, VIII&IX	3	100

Total marks

=2100

Minimum passing for each paper is **40** out of 100

Question Paper Pattern:

B.Sc., Botany Major and Allied.

Time: 3 hrs.

Max. Marks: 100.

Part-A: 10x2=20

(Answer all questions)

(Two Questions from each unit)

Part-B: 5x4=20

(Answer all Questions)

(One question from each unit with internal choice)

Part-C: 5x12=60

(Answer all Questions)

(One question from each unit with internal choice)

PAPER-I ALGAE AND BRYOPHYTES

UNIT – I

Introduction.Habit and habitat.Nutrition in Algae.Range of vegetative structure. Methods of reproduction in Algae.Classification of Algae by F.E.Fritch.

UNIT – II

Pigmentation in Algae.Flagellation in Algae.Life Cycles in Algae(Haplontic, Diplontic, Diplohaplontic).Economic importance of Algae:Agar-agar,SCP,Role of Algae in Medicine,Role of Algae in Agriculture,Food and Fodder.Algae in sewage disposal.

UNIT – III

A detailed study of the structure, reproduction and life cycle of the following genera:

Nostoc, Chlamydomonas, Cladophora, Ulva and Chara.

UNIT – IV

A detailed study of the structure, reproduction and life cycle of the following genera:

Caulerpa, Sargassum and Polysiphonia.

UNIT – V

General characters of Bryophytes. Classification of Bryophytes by Smith A short account on Economic importance of Bryophytes.

A detailed study of the structure, reproduction and life cycles of the following genera:

Riccia, Marchantia and Funaria.

PRACTICAL

A detailed study of the examples cited in the theory syllabus.

To make suitable micro preparations of the types prescribed in Algae and Bryophytes.

To observe and identify microscopic specimens and write illustrated and explanatory on them.

ALGAE :TEXT BOOKS:

1. Kumar, H.D, & Singh, H.N (1976) – A Text book of Algae, Affiliated East West Press Pvt. Ltd., New Delhi.
2. Palaniappan, S (1988) – Algakkal (in Tamil), T.K Publishing House, Chennai.
3. Sharma, O.P (1990) – Text Book of Algae, Tata Mc Graw Hill Publishing Co, Ltd., New Delhi.
4. Pandey, B.P (1993) – A Text Book of Botany – Algae, S. Chand & Co. (P) Ltd, New Delhi.
5. Vashishta, B.R (1993) – Botany for degree students – Algae, S. Chand & Co. Ltd., New Delhi.

REFERENCE BOOKS

1. Smith, G.M (1955) – Cryptogamic Botany (Vol. I – Algae, Fungi & Lichens), Mc Graw Hill Book Co, New York.
2. Trainor, F.A (1978) – Introductory Phycology, John Wiley.
3. Lee, R.E (1980) – Phycology, Cambridge University Press.
4. Kumar, H.D (1990) – Introductory Phycology, Affiliated East West Press (P) Ltd., New Delhi.
5. Kumareasn, V (1997) – Algae and Bryophytes, Saras Publications, Nagar coil, India.

BRYOPHYTES:TEXT BOOKS

1. Parihar, N.S (1967) – An Introduction to Embryophyta, Vol I – Bryophyta. Central Book Depot, Allahabad.
2. Gupta, S. K. (1978) – Introductory Botany Vol II – Bryophyta, Pteridophyta and Gymnosperms. Kedar Nath Ram Nath Publishers, Meerut.
3. Ashok Bendre & Ashok Kumar (1983 – 84) – A Text Book of Practical Botany, Vol. I, Rastogi Publications, Shivaji Road, Meerut, India.
4. Palaniappan, S (1988) – Bryophyta (in Tamil), T.K Publishing House, Chennai.
5. Vashishta, B.R (1983) – Botany for degree students – Bryophyta, S. Chand & Co, New Delhi.

REFERENCE BOOKS

1. Chopra, G.L (1968) – A Class Book of Bryophyta, Hari Singh & Bros. Jnlunder.
2. Prem Puri (1981) – Bryophytes –morphology, growth and differentiation. Atma Ram & Sons, New Delhi.
3. Rashid, A (1998) – An Introduction to Bryophyta, Vikas Publishing (P) Ltd., New Delhi.

MODEL THEORY QUESTION PAPER

PAPER – I –ALGAE AND BRYOPHYTES

Time : Three Hours

Maximum : 100 Marks

PART-A-(10x2=20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Fresh water alga.
2. Reserve food.
3. Agar-agar.
4. Phycocyanin.
5. Eyespot
6. Nucule
7. Air bladder.
8. Rhizoids.
9. Columella.
10. Peristome

PART-B (5x4=20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

- 11 (a). Briefly describe the pigmentation in algae.
(or)
(b). List out the characteristic features of Chlorophyceae.
12. (a). Write notes on single cell protein (SCP).
(or)
(b). Explain how algae is used as Sewage disposal material.
13. (a). Describe the Ultra structure of Chlamydomonas.
(or)
(b). Describe the asexual reproduction in Cladophora.
- 14 . (a). Explain about heterocyst.
(or)
(b). Briefly describe the structure of Chara sex organs.
15. (a). Write a short account on Economic importance of Bryophytes.
(or)
(b). Describe the thallus structure in Riccia.

PART-C (5X12=60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a). Describe the general characters of various classes of Algae.
(or)

- (b). Write an essay on classification of algae by F.E. Fritsch.
17. (a). Write an essay on Economic importance of Algae.
(or)
(b). Describe how algae is used as Food and Fodder.
18. (a). Write an essay on structure and reproduction in Ulva.
(or)
(b). Describe the structure and reproduction in Chara.
19. (a). Discuss the life cycle of Sargassum with suitable diagrams.
(or)
(b). Write an essay on reproduction in Polysiphonia.
20. (a). Write an essay on classification of Bryophytes by Smith.
(or)
(b). Draw neat sketches of the sporophytes of Marchantia and Funaria and compare them.
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PAPER-II

FUNGI,BACTERIA,LICHENS,VIRUSES AND PLANT PATHOLOGY

Fungi

UNIT –I

General characteristics of fungi and classification.(C.J.Alexopoulos) . Economic importance of Fungi.

UNIT – II

A study of the occurrence, structure, reproduction and life cycle of the following genera:

Albugo, Saccharomyces, Puccinia and Polyporus.

Bacteria

UNIT – III

Bacteria – Classification (Bergey's 74), morphology, structure, growth, nutrition, reproduction and economic importance of bacteria.

Lichens and Viruses

UNIT – IV

Lichens: General characteristics, occurrence, classification, structure, reproduction and economic importance of lichens.

Viruses: General characteristics of Viruses, General account of Bacteriophages, Cynophages and Mycophages.

Plant Pathology

UNIT-V

Bacterial disease(Bacterial leaf blight-X.oryzae),Fungal disease(Tickka disease-Cercospora),Viral disease (Bunchy top of banana),Plant diseases control methods (physical,chemical and biological).

PRACTICALS

1. A detailed study of the examples cited in the theory part.
2. A general study of various types of Lichens.
3. To make suitable micro preparations of the types prescribed in Fungi and Lichens.
4. To observe and identify microscopic specimens and write illustrated and explanatory notes on them.

TEXT BOOKS

1. Alexanpoulos, C.J, (1962) Introductory Mycology. John Wiley.
2. Vashista, B.R. (1969) Botany for Degree students. Part II. Fungi. S.Chand and Co
3. Srivastava, J.P. (1970) An Introduction to Fungi, Central Book Depot, Allahabad.
4. Dube.,H.C. A Text Book of Fungi, Bacteria and Viruses, Vikas Publishing houses (P) Ltd., 1978.
5. Purohit, S.S. Viruses, Bacteria and Mycoplasma .Agro Botanical Publishers, Bicaner, India.
6. Sharma,O.P. Text Book of Fungi. Tata McGraw Hill Publishing Co., New Delhi.

REFERENCE BOOKS

1. Sistrom, W.R, (1962) Microbial life. Holt, Rinchart Winson.
2. Misra, A. and Agarwal, R.P. (1970) Lichens, A Preliminary Text, Oxford & TBH Publishing Co.
3. Webster, J. (1970) Introduction to Fungi. Cambridge University Press.
4. Ainsworth.G.C and Alfred,S. (1973)The Fungi (An advanced Treatise) Academic Press, New York.
5. Biswas, S.B and Biswas, A, (1976) An introduction to viruses, Vikas Publishing House Pvt. Ltd.
6. Pelzer. J, Chan, EcS, and Kriez, R. Microbiology Tata McGraw Hill, 1998, New Delhi.

QUESTION PAPER MODEL.

(For the candidates admitted from 2007-2008)

PAPER-II-FUNGI,BACTERIA,LICHENS,VIRUSES AND PLANTPATHOLOGY

Time: Three hours

Maximum Marks: 100

PART-A-(10x2=20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Mushroom.
2. Ascomycetes
3. Conidia
4. Budding
5. Basidiocarp
6. White rust
7. Litmus paper
8. T-Phage
9. Cercospora
10. Leaf blight

PART-B (5x4=20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) Give an account of the useful aspects of Fungi.

(Or)

(b) Give an account of the classification of Fungi proposed by Alexopoulos.

12. (a) Describe the structure and asexual reproduction in Albugo.

(Or)

(b) Describe structure and asexual reproduction in Saccharomyces.

13. (a) Give an account the structure and life cycle of Puccinia.

(Or)

(b) Write about the structure and fruit body of Polyporus.

14. (a) Mention about reproduction in Lichens.

(Or)

(b) Write about Mycoplasma.

15. (a) Write about Plant diseases caused by Viruses.

(Or)

(b) Mention about Plant Diseases caused by Bacteria.

PART-C (5X12=60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a) Give an account of variation in structure and mode of life in Ascomycetes.

(Or)

(b) Give an account of general characters of the class Basidiomycetes.

17. (a) Write an essay on the structure and reproduction in Saccharomyces.

(Or)

(b) Write in detail about the sexual reproduction in Albugo.

18. (a) Give an account of on the life cycle of a heterosious fungus you have studied.

(Or)

(b) Describe the types, structure and uses of mycorrhiza.

19. (a) Enumerate the classification, types, morphology and uses of Lichens.

(Or)

(b) Write about the types and reproduction in various types of Phages.

20. (a) Give an account of the biological control measures of Plant diseases.

(Or)

(b) Give an account of chemical methods of control of Plant diseases.

PAPER-III

PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY

Pteridophytes

UNIT I

General characters of Pteridophytes. Classification (K.R.Sporne) Stellar Evolution in Pteridophytes. Homospory and Heterospory. Economic importance of Pteridophytes.

UNIT II

Detailed study of the following genera:

Lycopodium, Selaginella.

UNIT III

Adiantum and Marsilea.

Gymnosperms

UNIT IV

General characters of sporophytes and gametophytes of Gymnosperms. Classification(K.R.Sporne) of Gymnosperms. Detailed study of the following genera- Cycas and Pinus.

Paleobotany

UNIT V

Geological time scale. Types of Fossils. Brief study of the following fossils- Lepidodendron and Williamsonia.

PRACTICALS

Study of morphology, anatomy and structure of the spore bearing parts and gametophytes of the genera listed in the theory part.

Study of fossil slides listed in the theory part.

TEXT BOOKS

1. Vashishta.P.C 1972 Botany for Degree Students, Vol IV-Vascular Cryptogams (Pteridophyta), S.Chand & Co Pvt Ltd.
2. Vashista.P.C. 1976. Gymnosperms, S.Chand & Co Pvt Ltd, 1976.
3. Pandey.B.P.1977. A Text book of Bryophyta, Pteridophyta and Gymnosperms. K.Nath and Co., Meerut.
4. Parihar.N.S.1977. An introduction to Embryology. Vol-II. Pteridophyta and Gymnosperms. K.Nath and Co, Meerut.
5. Shukla.A.C and Misra.S.P 1982 Essentials of Palaeobotany, Vikas publishing house Pvt Ltd., Delhi.

REFERENCE

1. Smith, G.M. 1935. Cryptogamic Botany. Vol-III, Tata McGraw Hill Publishing Co., New Delhi.
2. Earnes, A.J.1936. Morphology of lower vascular plants. Tata McGraw Hill Publishing Co., New Delhi.
3. Arnolds, C.A.1947. An Introduction to Paleobaotany, McGraw Hill Book Co., New York.
4. Sporne, K.R.1977.The Morphology of Angiosperms. B.I. publications Pvt., Mumbai.
5. Sporne, K.R.1991.The Morphology of Gymnosperms. B.I. publications Pvt., Mumbai
6. Skula, A.C and Sharma. M.1992. Plant fossils. A link with the past, Birbal Shani Institute of Paleobotany, Lucknow, India.

Model Question Paper
Paper-III
PTERIDIOPHYTES, GYMNOSPERMS AND PALEOBOTANY

Time: Three hours

Maximum: 100 marks

PART-A(10X2=20)

Answer ALL questions:-

1. What are the differences between Homospory and Heterospory?
2. Write short notes on stele.
3. Write about Protocorm.
4. Explain rhizophore in Selaginella.
5. Describe the leaf of Adiantum.
6. Give an account of the root system of Marselia.
7. Explain monoxyletic wood in Gymnosperms.
8. Pollen grain of Pinus.
9. Fossil.
10. Williamsonia.

PART-B(5x4=20)

11 a) Bring about the salient features of Pteridophytes.

(Or)

b) Describe Solenostele.

12 a) Stellar system in Lycopodium.

(Or)

b) Parthenogenesis.

13 a) Describe the sorus in Adiantum.

(Or)

b) Write about the liberation of sori from Marsilea sporocarp.

14. a) Give an account of female gametophyte of Cycas.

(Or)

b) Bring out the salient features of Gymnosperm.

15 a) Types of fossils.

(Or)

b) Explain the stem structure of Lepidodendron.

PART-C(5X12=60)

16 a) What is meant by Heterospory? Give a brief account of heterospory.

(Or)

b) Give an account of classification of Pteridophytes given by K.R. Sporne.

17 a) Describe the different types of Gametophytes in Lycopodium.

(Or)

b) Give a brief account of the life history of Selaginella.

18 a) Write an essay on Adiantum.

(Or)

b) Life cycle of Marselia.

19 a) Give an account of classification of Gymnosperms by K.R. Sporne.

(Or)

b) Describe female strobili in Pinus

20 a) Give a detailed account on Geological time scale.

(Or)

b) Write an essay on Lepidodendron.

PAPER IV
ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Anatomy

UNIT-I

Meristems: Classification, distribution, structure, function.

Theories: Tunica-Corpus and quiescent centre.

Simple permanent tissues: Parenchyma, Collenchyma, Sclerenchyma, (fibres and sclereids), Transfer cells.

UNIT-II

Complex tissues: Xylem-tracheids, vessels, xylem fibres and xylem parenchyma. Secondary Xylem, Annual rings, Heart wood and sap wood.

Phloem: Sieve elements, companion cells, phloem fibres and phloem parenchyma. Secondary phloem: Laticifers.

Stomatal types: Ranunculaceous, cruciferous, caryophyllaceous, rubiaceous and graminaceous.

UNIT-III

Primary and secondary structure of dicot stem. Anomalous secondary growth in stems of Boerhaavia and Nyctanthes. Primary and secondary structure of dicot root. Primary structure of monocot stem and root. Structure of Dicot and Monocot leaf. Nodal anatomy- Uni, tri and multilacunar node.

Embryology of Angiosperms

UNIT-IV

Structure and development of anther. Structure of Pollen grain. Development of male gametophyte.

Types of ovules. Nucellus. Development of female gametophyte: Monosporic (Polygonum), Bisporic (Allium) and Tetrasporic (Peperomia).

UNIT-V

A brief account on pollination and fertilization.

Endosperm: Nuclear, Cellular, Helobial and Ruminant.

Development of Embryo in Dicot (Capsella-bursa-pastoris).

Development of Embryo in monocot (Najas). Polyembryony.

PRACTICALS

1. Study of simple and complex tissues by using permanent slides.
2. Study of primary structure and sectioning of Dicot stem, Dicot root, Monocot Stem and Monocot root.
3. Normal secondary thickening in Dicot stem and root.
4. Anomalous secondary structures- Boerhaavia, Nyctanthes (Permanent slides).
5. T.S of Anther at various stages of development.
6. Types of ovules. (Permanent slides).
7. Stages in Microsporogenesis and megasporogenesis.
8. Male gametophyte and female gametophyte(Permanent slides)
9. Embryo mounting (Tridax).

TEXT BOOKS

1. Pandey, B.P.(1978) Plant Anatomy, S.Chand and Co, New Delhi.
2. Vashista, P.C. (1968). A text Book of Plant Anatomy.
3. John Jothi Prakash, E. (1987). A Text Book of Plant Anatomy.
4. Bhojwani, S.S. and Bhatnagar.S.P. The Embryology of Angiosperms, Vikas Publishing House Pvt Ltd., New Delhi.
5. Dwivedi.J.N, 1988. Embryology of Angiosperms. Rastogi and Co., Meerut.

REFERENCE

1. Fahn, A.1982. Plant Anatomy. (3rd edition). Pergoman Press, Oxford.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin Cummings Publishing Co. Inc., Mehlo Park, California, USA
3. Esau, K. 1960. Plant Anatomy, Wiley Eastern Private Limited. New Delhi.
4. Maheswari, P.1971. An Introduction to the Embryology of Angiosperms. Tata McGraw Hill Publishing Co., Ltd., New Delhi.
5. Swamy, B.G.L., and Krishnamurthy, K.V.From flower to fruit. Tata McGraw. Hill Publishing Company Limited. New Delhi.

(For the candidates admitted from 2007-2008 onwards)

B.Sc DEGREE EXAMINATION,

Paper – IV – ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Time: Three hours

Maximum: 100

Marks

PART - A – (10X2=20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Describe parenchyma.
2. What are meristems.
3. Explain annual rings.
4. Describe the structure of sieve elements.
5. Describe collateral vascular bundle.
6. What are vessels.
7. Explain velamen tissue.
8. Describe an anatropous ovule.
9. What is triple fusion.
10. Explain suspensor.

PART – B – (5X4=20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) Write about classification of meristems.

(Or)

- (b) Explain transfer cells.

12. (a) Give an account on Heart wood and sap wood.

(Or)

- (b) Write about phloem tissue.
13. (a) Bring out the primary structure of stem.
(Or)
(b) Write about the internal structure of aerial root.
14. (a) Explain Tapetal types.
(Or)
(b) Describe the nucellus tissue.
15. (a) Write about endosperm haustoria.
(Or)
(b) Explain Dicot embryo.

PART – C – (5X12=60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a) Give an account on sclerenchma, fibres and sclereids.
(Or)
(b) Write an essay on structure and theories regarding meristems.
17. (a) Write about Xylem.
(Or)
(b) Explain Stomatal types with suitable example.
18. (a) Write an essay on nodal anatomy.
(Or)
(b) Describe anomalous secondary growth in stems of Nyctanthus and Boerhaavia.
19. (a) Explain the structure & development of male gametophyte.
(Or)

- (b) Describe the embryo sacs of Polygonum, & Allium.
20. (a) Write about endosperm.

(Or)

- (b) Write an essay on Polyembryony.
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PAPER – V
MORPHOLOGY ,TAXONOMY OF ANGIOSPERMS AND
ECONOMIC IMPORTANCE

Morphology

UNIT-I

The Plant body [parts]

Root: Types and Modifications

Stem: Types, Aerial and Underground Stem Modifications

UNIT-II

Leaf: Phyllotaxy, Simple and Compound leaves, Leaf parts: Leaf base, Stipule, Petiole, Lamina. Modifications of leaf.

Inflorescence: Types – Racemose , Cymose and special types.

UNIT-III

Fruit: Types, Outline classification of fruits. Structure of Follicle, Lomentum Berry, Pepo, Sorosis .

UNIT-IV

Bentham & Hooker's system of classification and its merits and demerits.A detailed study of the following families and their economic importance:

Annonaceae,Capparidaceae,Rutaceae,Myrtaceae and Cucurbitaceae.

UNIT – V

Asteraceae,Apocynaceae,Acanthaceae,Amarantaceae,and Poaceae.

PRACTICAL

1. Study of the morphology of angiosperms as in Theory part, with the help of suitable examples.

2. Description of plants in technical terms.
3. Dissection of vegetative and floral parts of plants belonging to the above families.
4. Study of the Botany of the economic plants in the theory part.
5. Herbarium (minimum of 20 Herbarium sheets of weeds and common plants of Angiosperms) with the proper field note book shall be submitted at the Practical Examination.

TEXT BOOKS

1. Gupta, S.K (1978) – Introductory Botany Vol IV – Taxonomy, Embryology and Economic Botany. Kedar Nath Ram Nath, Meerut.
2. Muneeswaran, A (1986 – 87) – A Text Book of Botany, Brighton Book House, Madras.
3. Pandey, P.B (1989) – Taxonomy of Angiosperms (Systematic Botany), S. Chand & Co. Ltd., Ram Nagar, New Delhi.
4. Vashista, P.C (1997) – Taxonomy of Angiosperms, S. Chand & Co., New Delhi.
5. Palaniappan, S. (2000) – Angiospermgalin Vagaippadu (in Tamil), V.K Publishing House, Chennai.
6. Palaniappan, S. (2002) – Thavarapura Amaippial (in Tamil), V.K Publishing House, Chennai.

REFERENCE BOOKS

1. Gangulee, H.C., Das, K.S & Datta, C.T (1964) – College Botany – Vol. I, Basant Panchami, Calcutta.
2. Narayanaswamy. R.V and Rao, K.N. (1976) – Outlines of Botany, S.Viswanathan Printers and Publishers, Chennai.
3. Ashok Bendre and Ashok Kumar (1984) – A Text Book of Practical Botany – Vol. II, Rastogi Publications, Shivaji Road, Meerut.
4. Sivarajan, V.V (1993) – Introduction to Principles of Plant Taxonomy, Oxford & IBH Publishing Co., New Delhi.

5. Naik, V.N (1996) – Taxonomy of Angiosperms, Tata McGraw Hill Publishing Co., (P) Ltd, Delhi.

TEXT BOOKS

1. Rao, K.N & Krishnamurthy, K.V (1976) – Angiosperms, S. Viswanathan, Pvt. Ltd, Madras
2. Pandey, B.P (1997) – Taxonomy of Angiosperms, S. Chand & Co., (P) Ltd., New Delhi.
3. Vashista, P.C (1997) – Taxonomy of Angiosperms, S. Chand & Co., (P) Ltd., New Delhi.
4. Singh, V & Singh, D.K (1983) – Taxonomy of Angiosperms, Rastogi Publications, Meerut.
5. Palaniappan, S (2000) – Angiospermgalin Vagaippadu (in Tamil), V.K. Publishing House, Chennai.

REFERENCE BOOKS

1. Lawrence, G. H. M (1953) – Taxonomy of Vascular Plants, Oxford & IBH Publishes, New Delhi.
2. Narayanaswamy, R.V & Rao, K. N (1976) – Outlines of Botany, S. Viswanthan Printers & Publishers, Madras.
3. Ashok Bendre and Ashok Kumar (1984) – A Text Book of Practical Botany – Vol. II, Rastogi Publications, Shivaji Road, Meerut.
4. Mathews, K.M, (1987 – 90) – Flora of Tamil Nadu and Carnatic (1 – 4 Vols.) Rapinat Herbarium, Trichy – 1.
5. Naik, V.N (1996) Taxonomy of Angiosperms, Tata McGraw Hill Publishing Co., (P) Ltd, Delhi

Economic Botany

TEXT BOOKS

1. Verma, V (1974) – A Text Book of Economic Botany, Emkay Publications, New Delhi.

2. Govind Prakash & Sharma, S.K (1975) – Introductory Economic Botany, Jai Prakash Nath & Co., Meerut.
3. Pandey, B.P (2000) – Economic Botany, S. Chand & Co., New Delhi.

REFERENCE BOOKS

1. Hill, A.W (1952) – Economic Botany, McGraw Hill Book Co., New York.
2. Sen, S (1992) – Economic Botany, New Central Book Agency, Calcutta.

Model Question Paper

Paper-V- Morphology, Taxonomy of Angiosperms and economic Importance

Time: Three Hours

Maximum

PART-A(10X2=20)

1. Write short notes on tap root system.
2. Prop root
3. Explain stipule.
4. Types of fruits.
6. Explain Berry.
7. Genera Plantarum.

8. Economic importance of Annonaceae.
9. Spike inflorescence in Amaranaceae
10. Glumes.

PART-B(5x4=20)

11.a) Briefly describe the parts of a plant.

(Or)

b) Give an account of aerial stem modifications.

12.a) With examples describe different leaf types.

(Or)

b) Describe the parts of a flower.

13.a) Give an account of classification of fruits.

(Or)

b) Explain the structure of a sorosis fruit.

14.a) Write about the merits and demerits of Bentham and Hooker's system of classification.

(Or)

b) What are unique features of the androphore of Capparidaceae.

15.a) Write any five economically important plants in Asteraceae with their binomials.

(Or)

b) With examples write about the economic importance of Poaceae.

PART-C(5X12=60)

16.a) Describe the various types of tap root modification

Or

b) Write an essay on underground modifications.

17.a) With suitable examples describe leaf phyllotaxy.

(Or)

b) Describe in detail the various types of special types of inflorescences.

18.a)With examples give an account of classification of fruits.

(Or)

b)Write notes on i)Legume

ii)Lomentum

iii)Pepo

19.a)Give an account on Bentham and Hooker's system of classification.

(Or)

b)Give a detailed account of the family Myrtaceae.

20.a)Describe the floral characters of Asteraceae and add a note on its economic importance.

(Or)

b)Write an essay on Amarantaceae.

PAPER VI
CYTOLOGY , GENETICS, PLANT BREEDING AND EVOLUTION

Cytology

UNIT - I

Ultrastructure of a plant cell, cell wall, plasma membrane(Fluid-Mosaic model) cell organelles – endoplasmic reticulum, golgi complex, chloroplast, mitochondria, nucleus, and ribosomes.

UNIT – II

Chromosomes – morphology and structure, polytene, giant chromosomes, salivary gland and lamp brush chromosomes. Nucleic acids – DNA and RNA, DNA structure, replication, RNA structure and types. Cell division - mitosis and meiosis.

Genetics

UNIT – III

Monohybrid and Dihybrid cross – Mendelian laws – Incomplete dominance, complementary factor and epistasis, multiple factor hypothesis, multiple alleles Polygenic inheritance.

UNIT – IV

Linkage, crossing over, mapping of genes on chromosomes, sex linkage - Drosophila (eye colour) and humans (colour blindness), cytoplasmic inheritance (plastid inheritance). Sex determination in plants, changes in chromosome structure, number and behaviour, polyploidy types. Population genetics, Hardy- Weinburg principle.

Plant Breeding and Evolution

UNIT-V

Principles and objectives of Plant Breeding, Selection methods of Plant Breeding (Pure line, Clonal, Mass) , Hybridization: Types of hybridization, Heterosis, Hybrid Vigour.

Theories of Lamark, Charles Darwin.

PRACTICAL

1. Study of the structure of plant cell organelles and polytene and giant chromosomes from electron micrographs and standard publications.
2. Study of mitosis by squash technique.
3. Simple problems of monohybrid and dihybrid ratios and gene interactions.
4. Construction of chromosome map-3 point test cross.

TEXT BOOKS

1. Rastogi, S.C. 1992 -Cell biology- Tata Mc Graw Hill Publishing Co,New Delhi.
2. Sundararajan, S. 2000 - Cytology, Anmol Publication (P) Ltd., New Delhi.
3. Singh S.P. & Tomar B.S.1996 - Cell biology, Rastogi Publications, Meerut.
4. Gupta, P.K. 2000 - Genetics-Rastogi Publications, Meerut.
5. Meyyan, R.P. 2000 – Genetics- Saras Publication, Nagercoil
6. Shukla,R.S&P.S.Chandel(1996).Cytogenetics,Plant Breeding and evolution S.Chand & Co.,

REFERENCE BOOKS

1. De Robertis, E.D.P & De Robertis, E.M.F., 1980-Cell and Molecular Biology-Holtsauders International Editions, Philadelphia & Tokyo.
2. Nair, P.G.K. &Prabhakara Achar, K. 1993- A Text book of Cell Biology konark publishers, New delhi.
3. Winchester, A.M. 1958 - Genetics Oxford & IBH Publishing house,New Delhi.
4. Stickberger, M.W. 1976 – Genetics, Mac Millan Publishing Co., Inc., New York.
5. Gardner, E.J. & Snusted, D.P.1984 - Principles of Genetics, John wiley & Sons. New York.

Model Question Paper.

PAPER VI

CYTOLOGY GENETICS ,PLANTBREEDING AND EVOLUTION

Time: Three hours

Maximum: 100 Marks

PART – A (10 x 2 = 20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. What is plasmodesmata?
2. Define cristae.
3. What are the components in a nucleotide?
4. What is synopsis?
5. What are alleles?
6. What is phenotype?
7. Define crossing over.
8. What is linkage?
9. Clone.
10. Emasculation.

PART – B (5 x 4 = 20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) Explain the fluid mosaic model of plasma membrane.

(Or)

- (b) Describe the ultrastructure of chloroplast?

12. (a) Write short notes on polytene chromosome.

(Or)

- (b) Write a brief account on double helix structure of DNA.

13. (a) Describe Mendel's law.

(Or)

(b) What do you know about epistasis?

14. (a) What is crossing over? Explain its significance.

(Or)

(b) Explain cytoplasmic inheritance with an example.

15. (a) Write about Hybrid Vigour.

(Or)

(b) Write about Lamarkism.

PART – C (5 x 12 = 60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a) Write an account on the structure and function of nucleus.

(Or)

- (b) Write short notes on
- i) mitochondria.
 - ii) Ribosomes.

17. (a) Describe the process of meiosis I.

(Or)

(b) Write an essay on DNA replication.

18. (a) Discuss – multiple alleles.

(Or)

(b) What is incomplete dominance? Explain with an example?

19. (a) What is gene map? Explain with an example?

(Or)

(b) Give a detailed account on sex linkage.

20. (a) Write an essay on the principles and objectives of Plant Breeding.

(Or)

(b) Write about Pure line selection and Mass selection.

PAPER-VII

PLANT PHYSIOLOGY

UNIT-I

Movement of materials: Imbibition, Diffusion, Osmosis. A brief account on absorption of water and minerals. Transpiration: types, mechanism of stomatal movement. . Guttation. Role of macro(N,P,K) and micro(B,Mn,Mg,Zn) elements.

UNIT-II

Photosynthesis: Photosynthetic pigments, Emerson's enhancement effect, Absorption Spectrum, Cyclic and non-cyclic electron transport .

Dark reaction. Calvin cycle. Hatch and Slack cycle.

Respiration: Aerobic and anaerobic respiration, Glycolysis, Krebs's cycle, Electron transport system . Respiratory Quotient.

UNIT-III

Nitrogen metabolism: Sources of nitrogen, nitrogen fixation, nitrogen cycle, reductive amination and transamination, Protein synthesis.

Enzymes: Nomenclature, Classification (old system), Mode of action, factors affecting enzyme activity.

UNIT-IV

Carbohydrates: Classification- monosaccharides (Glucose, Fructose)

Disaccharides (Maltose, Sucrose)

Polysaccharides (starch, cellulose).

Proteins: Types and Structure of Proteins (globular and conjugated).

Lipids: composition of lipids- saturated and unsaturated fatty acids; Break down of fatty acids (alpha oxidation).

UNIT-V

Growth: Plant growth regulators-auxins, gibberellins, cytokinins, ethylene, abscisic acid-their physiological effects and their role.

Plant movements-Geotropism, Phototropism, Thigmotropism.

PRACICALS

[Experiment to be performed and recorded by the students individually]

1. Determination of Osmotic Pressure of Rhoeo leaf/Onion leaf plasmolytic method.
2. Effect of temperature and chemicals on membrane permeability.
3. Determination of water absorption and transpiration ratio of twigs.
4. Effect of light intensity on transpiration using Ganong's Potometer.
5. Separation of plant pigments by paper chromatography.
6. Effect of intensity of light on O₂ evolution during photosynthesis using Wilmott's bubbler.
7. Measurement of rate of respiration in germinating seeds/flower buds using simple Respiroscope.

Demonstration Experiments;

[Experiments to be demonstrated only but to be recorded by the students.]

1. Potato Osmoscope.
2. Anaerobic respiration.
3. Geotropism
4. Fermentation-khune's

TEXT BOOKS

1. Pandey, S.N. 1991-Plant Physiology, Tata McGraw Hill Publishers(P)Ltd, New Delhi.
2. Verma, S.K.1999-A Text Book of Plant Physiology, S.Chand and Company Ltd.New Delhi.
3. Malik, C.P. 1999- Plant Physiology, Kalyani Publishers, Ludhiana.
4. Jain, V.K,2000.Fundamentals of Plant Physiology. S.Chand and Co., New Delhi.

5. Gill, D.S. 2000 - Plant Physiology, S.Chand and Co., New Delhi.

REFERENCE BOOKS

1. Srivastava, H.N. 1990-Plant Physiology, Pradeep Publications, Jalandhar. 144008.
2. Devlin, K.M. (1969) Plant Physiology, Reinehart and Winston and Affiliated East West Press (p) Ltd, New Delhi.
3. Nogle, G.R., and Fritz, G.J., 1982-Introductory Plant Physiology. Prentice Hall of India Private Ltd.
4. Salisbury, F.B. and Ross, C.W. 1986-Plant Physiology, CBS Publishers and Printers, New Delhi.
5. Subodh Kumar Gupta, 1982-Plant Physiology, Shoban Lal Nagin Chand and CO., Educational Publishers, New Delhi.

(For the Candidates admitted from 2007 – 2008 onwards)

B.Sc., DEGREE EXAMINATION

B.Sc., Botany

PAPER -VII - Plant Physiology

Time: Three hours

Maximum: 100 Marks

PART-A(10 x 2 = 20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Foliar Nutrition.
2. Root Pressure.
3. R.Q.
4. Oxidative phosphorylation.
5. Denitrification.
6. Rhizobium.
7. Cellulose
8. Globular Protein
9. Tetrazolium Technique
10. Seed dormancy.

PART-B (5 x 4 = 20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) How Plants get water? What are the physical forces involved in it?

(Or)

(b) What are the various theories involved in the absorption of elements.

12. (a) Explain Krebs's cycle.

(Or)

(b) Write about photophosphorylation.

13. (a) Write about biological Nitrogen fixation.

(Or)

(b) What is meant by amination? Write about reductive amination and transamination..

14. (a) Write about derived lipids.

(Or)

(b) List out the factors affecting enzyme activity.

15. (a) Write about the role of ethylene in plant metabolism.

(Or)

(b) Write about the nature of Abscissic acid and its role on Plants

PART-C (5 x 12 = 60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a) List out micronutrients. Add a note on their role and deficiencies in plant.

(Or)

(b) Write an essay on the various theories proposed to explain the absorption of water and minerals

17. (a) Write in detail about Dark reaction.

(Or)

(b) Write about Electron transport system and oxidative phosphorylation

18. (a) Write about Protein synthesis.

(Or)

(b) Describe Nitrogen cycle.

19. (a) Write about the nature, properties and mode of action of enzymes.

(Or)

(b) Write in detail about carbohydrates.

20. (a) Write about the nature and physiological activities of auxins and gibberellins.

(Or)

(b) Write an essay on tropisms in plants.

PAPER-VIII

PLANT ECOLOGY AND PHYTOGEOGRAPHY

Plant Ecology

UNIT – I

Definition, Basic concepts, The environment: climatic, edaphic and biotic factors.

UNIT – II

Ecosystem – Definition, Components of ecosystem-Abiotic and Biotic , Components -Pond Ecosystem, Forest Ecosystem. Ecological niches, Food chain, Food Web, ecological pyramids (Pyramid of number, pyramid of biomass and pyramid of energy).

UNIT – III

Vegetation – Plant succession: Definition, Hydrosere and xerosere. Plant adaptations-Hydrophytes, Xerophytes Mesophytes, Halophytes and Epiphytes.

UNIT – IV

Pollution: Causes of Pollution, Water pollution, Air pollution, soil pollution and noise pollution.

Phytogeography

UNIT – V

Approaches to phytogeography – The chief phytogeographical regions of India, Vegetations of India-Evergreen forest, Deciduous forest, Mangrove forest-Forest types in Tamil Nadu.

PRACTICALS

Study of the morphological and structural adaptations of locally available hydrophytes, mesophytes, xerophytes, halophytes, parasites and epiphytes to correlate to their particular habitat.

REFERENCE BOOKS:

1. Sharma, J.P.2004Environmental Studies, Laxmi Publications(p) Ltd.New Delhi.
2. Willings W.D,1964 Plants and Ecosystem, Wasworth Publishing Co.,.
3. Daubenmire R.F,1973 Plant and Environment. John Willey.
4. Gopal, B and Bhardwaj,1979 Elements of Ecology, Vikas Publishing House Pvt. Ltd.
5. Kellman, C.M,1980 Plant Geogrpahy, Methuen.

TEXT BOOKS

1. Sharma, P.D1990 Ecology and Environemt, Rastogi Publications,Meerut.
2. Shukla, R.S and Chandel.P.S Plant Ecology and Soli Science, S. Chand & Company Ltd.,
3. Vasishta, P.C,1979 Plant Ecology, Vishal Publication,.
4. Verma, V,A 1981Text Book of plant Ecology, Emkay Publication.
5. Ambasht R.S.,1978 The Book of Plant Ecology, Students friends Co.,Varanasi-5

Model theory Question Paper

B.Sc., Degree Examination

Botany

Paper-VIII- Plant Ecology and Phytogeography

Time : 3 Hours

Maximum : 100 Marks

PART-A(10 x 2 = 20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Rain fall
2. Soil microorganisms
3. Food web
4. Ecosystem
5. Sunken stomata
6. Peat moss
7. Air Pollution
8. Acid rain
9. Bio-diversity
10. Scrub vegetation

PART-B (5 x 4 = 20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) Write briefly about the effect of wind on plants

(Or)

- (b) Define thermoperiodism

12. (a) How grazing by animals influence vegetation?

- (Or)
(b) Illustrate the pyramid of biomass.
13. (a) What are phylloclades? Mention their ecological importance
(Or)
(b) What is aquatic plant community? Give three types of it.
14. (a) Describe about noise pollution
(Or)
(b) Described about soil pollution.
15. (a) What is evergreen forest? Give examples.
(Or)
(b) Explain any one theory describing plant distribution on earth

PART-C (5 x 12 = 60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16. (a) Give an account of the effects of temperature on plants.
(Or)
(b) Write an account of Edaphic factors.
17. (a) Describe, in details, the structure of a model ecosystem.
(Or)
(b) Explain the succession which begins from a pond.
18. (a) Explain the adaptations of Xerophytes
(Or)
(b) Explain the adaptations of Hydrophytes
19. (a) Give an account on the causes and control measures of water pollution.
(Or)
(b) Give an account on the causes and control measures of air pollution.
20. (a) Write an essay about the Mangrove and scrub vegetation in Tamilnadu.
(Or)
(b) Enumerate the salient features of evergreen and deciduous forests.

PAPER-IX :MEDICINAL BOTANY

Unit I

History of medicinal plants. A general account on different surveys of different systems of medicines. Indian systems of medicines- Siddha and Ayurvedha systems.

Unit II

Classification of crude drugs .Morphological and histological studies,chemical constituents,therapeutic and other pharmaceutical uses of roots (colchicum and Rauwolfia). Drugs from bark (Cinchona). Drugs from stem of wood (Ephedra).

Unit III

Drugs from leaves (Adathoda,Eucalyptus, Ocimum),Drugs from flower (Eugenia). Drugs from fruits and seeds (wood apple,Gooseberry and poppy seeds). Under ground stem (Ginger,Curcuma).

Unit IV

A detailed account of the following:drugs acting on the central nervous system, drugs used in disorders of gastrointestinal tract , cardio vascular drugs and muscular system.

Unit V

A short account on ethanobotany.Cultivation of medicinal plants in India. Medicinal plant biotechnology.Plant tissue culture as source of biomedicine. Drug adulteration. Methods of drug evaluation.

PRACTICALS

1. Morphology and anatomy of medicinal plants listed above.
2. Identification of medicinal plants and their useful parts.

REFERENCE BOOKS

1. Dhavan, B.N.1986. Ayurvedic Research on Medicinal plants in India INSA New Delhi.
2. Gokhale, S.B., C.K Kokate and A.P Purohit. Pharmacognosy Nirali Prakashan.
3. S.K Jain . 1987. A manual of Ethanobotany. Scientific Publishers- Jodhpur.
4. S.S. Handa & V.K. Kapoor. Pharmacognosy.
5. Agarwal,1985 Drug Plants in India, Kalyari. Publeshers, Ludhiyana
6. Medicinal Plants-Jain-2001-National Book Trust- New Delhi.

TEXT BOOKS

1. Arumugan. K.R. and N. Muruges Text Book of Pharmacognosy Sathya publishers.
2. Bhattacharjee , S.K., 1998. Hand book of medicinal plants, Pointer publishers, jaipur.
3. Purohit and vyas, 2004. Medicinal plant cultivation, Agrobios publication. Jodhpur.
4. Wallis. T.E. Text Book of Pharmacognosy C.B.S. Publishers and Distributors.
5. Jain., 2001. Medicinal Plants, National Book Trust,New Delhi.
6. Muligai Maruthuvam (Tamil) 1995 Thirugnanum. Selvi Pathipakam. Trichy.

(For the Candidates admitted from 2007 – 2008 onwards)

B.Sc., DEGREE EXAMINATION

B.Sc., Botany

PAPER -IX- MEDICINAL BOTANY

Time : 3 Hours

Maximum: 100 Marks

PART-A (10 x 2 = 20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Siddha
2. Ayurvedha
3. Reserpine
4. Ephedrin
5. Ocimum
6. Eucalyptus oil
7. Psychoactive drug
8. Nux vomica
9. Cardio vascular drugs
10. Biomedicine

PART-B (5 x 4 = 20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

- 11 (a) Briefly discuss about unani system of medicine
(Or)
(b). Discuss the history of medicinal plants
12. (a). Discuss the drugs obtain from roots
(Or)
(b). Discuss the drugs obtained from barks
- 13 (a). What are the medicinal uses of Adathoda
(Or)
(b). Briefly explain the uses of Ocimum
- 14 (a). What are the drugs used for central nervous system

(Or)

(b). How will you cure the gastrointestinal disorders by using plant drugs

15 (a). Briefly explain breeding methods applied in medicinal herbs

(Or)

(b). What are the drug adulteration

PART-C (5 x 12 = 60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 500 words

16 (a). Explain the classification of crude drugs and chemistry of drugs

(Or)

(b). Explain the Indian system of medicines

17 (a). Briefly discuss the method of extraction of drugs from roots

(Or)

(b). Briefly discuss the method of extraction of drugs from barks

18 (a). i). Drugs from flower

ii). Drugs from fruits and seeds

(Or)

(b). i). Drugs from underground stem

ii). Drugs from leaves

19 (a). Explain the drugs acting on the central nervous system

(Or)

(b). Explain the drugs acting on the cardio vascular system

20 (a). Discuss the cultivation methods of medicinal plants in India.

(Or)

(b). Explain the methods of drug evaluation

B.Sc ALLIED BOTANY

UNIT-I

Leaf- Phyllotaxy-Types of leaves– -Inflorescence –Racemose and Cymose.
Terminology with reference to flower description.

Bentham and Hooker's system of classification. Study of the following families and their economic importance – Leguminosae, Rubiaceae, Lamiaceae and Arecaceae.

UNIT-II

Ultra structure of a plant cell and brief outline of the following organelles – endoplasmic reticulum, mitochondria, chloroplast and nucleus.

Genetics – Mendal's mono and dihybrid cross .

UNIT-III

Simple permanent tissues – Parenchyma, Collenchyma, Sclerenchyma. Complex permanent tissues – Xylem and Phloem.Internal structure of Primary Dicot stem and primary dicot root.Dicot leaf(Mesophytic leaf)

Structure and development of anther, ovule, fertilization. structure and development of dicot empryo (capsella type).

UNIT - I V

Structure and life history of the following genera – Oedogonium,Albugo,Funaria, Lycopodium and Cycas.

UNIT-V

Plant Physiology: Osmosis, absorption of water. Photosynthesis - Light reaction, Calvin cycle. Respiration – Glycolysis, Krebs cycle.

Ecology:Morphological and anatomical adaptations in Hydrophytes and Xerophytes.

BOOKS:

1. Fuller H.J. and Trippo O, 1949, College Botany, Henry Holt & CO.
2. Ganguly A.K, 1975 , General Botany Vol I (1971) & Vol II, The New Book Stall, Calcutta.
3. Rao, K.N.Krishnamurthy, K.V and Rao G.S, 1979, Ancillary Botany, S.Viswanathan Pvt. Ltd., Madras.
4. Palaniappan, S. 1985, Thavaraviyal Thunaippadam(Tamil), Mohan Padippagam, Chennai.
5. Pandey B.P, 1986, Text Book of Botany (College Botany) Vol I and II, S.Chand and co. New Delhi.

PRACTICAL:

1. To describe in technical terms plants belonging to any of the families prescribed and identify the family.
2. To identify the plant family and morphology of the parts used for the following plant specimens.
 1. Annona – Fruit
 2. Arachis hypogea – Ground nut
 3. Dolichos biflorus – Horse gram
 4. Cicer arietinum – Bengal gram
 5. Pisum sativum – Pea
 6. Phaseolus mungo – Blackgram
 7. Phaseolus radiatus – Greengram
 8. Tamarindus indica – Fruit
 9. Abrus precatorius – Seed
 10. Acacia concinna – Soapnut
 11. Coffea arabica – Seeds
 12. Ocimum sanctum – Plant
 13. Mentha viridis – Plant
 14. Phoenix sylvestris – Date fruit
 15. Areca catechu – Nut
 16. Cocos nucifera - Kernal

3. To make suitable micropreparations, describe and identify materials of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms prescribed.
 4. To describe simple experimental set-up in plant physiology section of the syllabus.
-

MODEL QUESTION PAPER-ALLIED BOTANY

Time: Three hours

Maximum: 100 Marks

PART-A (10 x 2 = 20)

Answer ALL the questions

All questions carry equal marks

Draw diagrams wherever necessary.

Each answer should not exceed 50 words

1. Epigynous Flower
2. Define phyllotaxy.
3. Power house of a cell
4. Kinds of endoplasmic reticulum
5. Define meristem.
6. What is tapetum?
7. Cap cell
8. Conidia
9. Osmosis
10. Floating Hydrophyte.

PART-B (5 x 4 = 20)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 200 words

11. (a) Describe different types of phyllotaxy

(OR)

(b) Write down the economic importance of Arecaceae.

12. (a) Briefly explain the functions of ribosomes.

(OR)

(b) Describe incomplete dominance.

13. (a) Write short notes on the structure and functions of Parenchyma

(OR)

(b) With suitable diagram explain the internal structure of a dicot leaf

14. (a) Describe asexual reproduction in Albugo.

(OR)

(b) Describe the structure of capsule in Funaria.

15. (a) Describe the process of absorption of water.

(OR)

(b) Give an account of Glycolysis.

PART-C (5 x 12 = 60)

Answer ALL questions

All questions carry equal marks

(One question from each unit with internal choice)

Each answer should not exceed 1000 words

16. (a) Describe the Racemose inflorescence.

(OR)

(b) Write the distinguishing characters and economic importance of the family Lamiaceae.

17.a) Describe the structure of an Eukaryotic Nucleus

(Or)

b) Explain Mendel's Dihybrid Cross.

18.a) Describe the structure and development of Dicot embryo.

(Or)

b) With suitable diagrams explain the primary structure of dicot stem.

19.a) Explain gametophytic generation in Lycopodium.

(Or)

b) Describe the reproduction in Cycas.

20.a) Explain the Light reaction in Photosynthesis.

(Or)

b) Give an account of the morphological and anatomical adaptations in Hydrophytes.

**B.Sc Botany Allied Practical
Model Question Paper**

Time : 3 Hrs

Max.marks : 100

Practical : 90

Record : 10

1. Refer A & B to their families giving reasons (Diagrams not necessary) (14)
2. Identify the plant, family and morphology of the parts used for C,D,E,F and G. (15)

3. Cut transverse sections of H & I. Stain and mount in Glycerine. Identify giving reasons. Draw diagrams. Submit the slides for valuation. (24)
 4. Write critical notes on J, K, L, M, N, O. Draw diagrams. (30)
 5. Comment on the set up P. (07)
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KEY

1. For A and B – Any 2 plants prescribed in the syllabus. Reasons 5, Identification – 2
 $7 \times 2 = 14$
 2. For C, D, E, F and G – Any 5 specimens given in the practical syllabus.
 $3 \times 5 = 15$
 3. For H and I – Slide – 4
 Identification – 2
 Reasons – 4 $12 \times 2 = 24$
 Diagrams – 2
 4. Notes 4 , Diagram 1 for J, K, L, M, N, O $5 \times 6 = 30$
 5. Physiology Experiment P = 07
- 90

Question paper pattern for Major Practical Examinations
[Practical Papers- Model for I, II and III year Major]

MAJOR PRACTICAL-I
(FOR THEORY PAPERS I, II)

Time: 3Hrs

Maximum : 100marks

Practical : 90 marks
Record : 10 marks

1. Cut transverse sections of A, B and C. Stain and mount in glycerin .Identify giving reasons.Draw diagrams. Leave the slides for valuation. (51)
2. Draw diagrams and write notes of interest on D, E, F, and G. (24)
3. Name the genus, group and morphology of given part of H, I and J. (Diagrams not Necessary) (9)
4. Identify and write notes on economic importance of K and L. (6)

MAJOR PRACTICAL-II
(FOR THEORY PAPERS III, IV)

Time: 3Hrs

Maximum : 100 marks

Practical : 90 marks

Record : 10 marks

1. Cut transeverse sections of A, B and C. Stain and mount in glycerin. Identify giving reasons.Draw diagrams. Leave the slides for valuation. (36)
2. Make a suitable micropreparation of D. Identify giving reasons.Draw diagrams. Leave the slides for valuation. (10)
3. Dissect and mount any one of the stages of the given material E. (Diagram and notes not necessary) (8)
4. Name the genus, group and morphology of given part of F and G. (6)
5. Write notes on H,I,J,K and L (30)

KEY

- A. Angiosperm- Anatomy-Vegetative part.
- B. Pteridophyte- Anatomy-Vegetative part

- C. Gymnosperm- „ „
- D. Reproductive part – Pteridophyte (or)Gymnosperm.
- E. Embryo-dicot-Tridax
- F&G. Macroscopic-Pteridophyte (or) Gymnosperm.
- H, I, J, K and L. Permanent slides (Anatomy, Embryology, Pteridophytes, Gymnosperms, Fossil slides.)

MAJOR PRACTICAL-III
(FOR THEORY PAPERS V, VI)

Time: 3Hrs

Maximum: 100 marks

Practical : 80 marks

Herbarium:10 marks

Record :10 marks

1. Refer A and B, to their respective families. Point out the characters on which the identification is based at each level. (Diagrams not necessary) (16)
2. Make acetocarmine preparations of C (*squash*) (any one stage) draw diagrams. (8)
3. Describe D in technical terms. Draw diagrams of the floral parts only. Construct the floral diagram. Give the floral formula (16)
4. Construct chromosome map with the data provided (16)
5. Solve the given genetic problems E and F. (12)
6. Spot at sight G and H (Name of the Genus and the Family) (4)
7. Write the name of the Genus, species, Family and morphology of the useful Parts of I&J (8)

MAJOR PRACTICAL-IV
(FOR THEORY PAPERS VII,VIII,IX)

Time: 3Hrs

Maximum: 100 marks

Practical : 90 marks

Record : 10mks

1. Outline the procedure, apparatus and materials required for investigating the physiological problem. A, assigned. Set up the experiment. Tabulate the data obtained and report the results. Leave the set up for valuation. (20)
2. Based on morphological and anatomical characters, assign, B and C to their respective probable habitats. Draw suitable diagrams. Submit slides for valuation. (20)
3. Draw and comment on the set up D (10)
4. Critically comment on E, F, G and H (medicinal botany 4 spotters) (20)
5. Identify and write notes on I,J,K&L. (20)

[I,J-Physiology

K,L-Ecology]
