B.Sc. PLANT SCIENCE

REGULATIONS AND SYLLABI
(Effective from 2010-2011)

PONDICHERRY UNIVERSITY
PUDUCHERRY 605 014.

~~B.A./**B.Sc./**B.Com./M.A./M.Sc./M.Com. etc.,~~

REGULATIONS

Aim of the Course:

The Degree of **Bachelor of Science in Plant Science** aims to introduce the students to **various aspects of plant biology.** At the end of the course, the students are expected to have good working knowledge in **the field of Plant Science**.

Eligibility for Admission:

Candidates for admission to **B.Sc. Plant Science** shall be required to have passed **H.Sc. or 10+2 or equivalent course** conducted by the Government of **Tamil Nadu / Andhra Pradesh/ Kerala/ CBSE** with **Biology** as one of the subjects of study or an examination accepted as equivalent thereto and **35** percentage of marks in **Part III** (aggregate / Part – III), subject to such conditions as may be prescribed therefore.

Lateral Entry (if applicable)

~~Candidates who have passed Diploma in _____ in First Class (10+3 years of Study) are eligible to apply for the lateral entry to the 2nd year of the course subject to availability of seats, but limited to 10% of the sanctioned intake.~~

Duration of the course:

The Course shall be of **three** years duration spread over **Six** semesters. The maximum duration to complete the course shall be **Six** years **(including completion of arrears, if any).**

Eligibility for admission to Examination:

Seventy five (75) percentage of attendance for theory
Seventy five(75) percentage of attendance for Practicals
(i.e., % attendance required prescribed if any)

Medium:

The medium of instruction shall be **English**

Passing Minimum:

Passing eligibility & classification for the award of the Degree is as follows: **Passing Minimum – 40%; III Class – 40 to 50%; II Class – 50 to 60%; I Class – 60 to 75%; Distinction – above 75%**

PONDICHERRY UNIVERSITY

B.Sc. PLANT SCIENCE (MAIN AND ALLIED) – SEMESTER SYSTEM

Details of papers and scheme of examination (Effective from the academic year 2010-11)

	Duration of Exam	Maximum Marks
I B.Sc.		
FIRST SEMESTER		
Paper-I Algology & Lichenology	3 Hrs	100
Paper-II Mycology & Phytopathology	3 Hrs	100
Practical-I (Covering Papers I & II)	3 Hrs	40
SECOND SEMESTER		
Paper-III Bryology & Pterodology	3 Hrs	100
Paper-IV Gymnosperms & Palaeobotany	3 Hrs	100
Practical-II (Covering Papers III & IV)	3 Hrs	40
II B.Sc.		
THIRD SEMESTER		
Paper-V Anatomy of Angiosperms	3 Hrs	100
Paper-VI Development and Reproduction in Flowering Plants	3 Hrs	100
Practical-III (Covering Papers V & VI)	3 Hrs	40
FOURTH SEMESTER		
Paper-VII Diversity of Angiosperms and their Systematics	3 Hrs	100
Paper-VIII Cell Biology	3 Hrs	100
Practical-IV (Covering Papers VII & VIII)	3 Hrs	40
III B.Sc.		
FIFTH SEMESTER		
Paper-IX Plant Physiology	3 Hrs	100
Paper-X Plant Biochemistry and Biophysics	3 Hrs	100
Paper-XI Ecology and Utilization of Plants	3 Hrs	100
Paper-XII Genetics and Plant Breeding	3 Hrs	100
Paper-XIII Biostatistics and Computer Applications in Biology	3 Hrs	100
Practical-V (Covering Papers IX, X, XI, XII, XIII)	3 Hrs	70
SIXTH SEMESTER		
Paper-XIV Microbiology	3 Hrs	100
Paper-XV Molecular Biology	3 Hrs	100
Paper-XVI Plant Biotechnology	3 Hrs	100

Paper-XVII Medical Botany	3 Hrs	100
Paper-XVIII Group Project* OR Paper-XVIII Special paper (Optional) a. Marine Botany OR b. Biodiversity and Conservation	Project report 75 + Viva voce 25 3Hrs	100 100
Practical-VI (Covering Papers XIV, XV, XVI, XVII & XVIII). In case group project is opted Practical VI covers papers XIV, XV, XVI & XVII	3 Hrs	70

*Project to be valued by both examiners (internal and examiner)

ALLIED PLANT SCIENCE FOR ZOOLOGY MAIN/CHEMISTRY MAIN

Effective from the academic year 2010-11

FIRST SEMESTER		
Allied Plant Science – I	3 Hrs	75
Allied Plant Science Practical – I (Covering Allied plant Science Paper-I)	2 Hrs	25
SECOND SEMESTER		
Allied Plant Science – II	3 Hrs	75
Allied Plant Science Practical – II (Covering Allied plant Science Paper-II)	2 Hrs	25

PAPER – I ALGOLOGY & LICHENOLOGY

Course Objectives:

- To learn about the morphology of algae and lichens.
- To understand the diversity, complexity and the economic value of algae and liichens.

Theory:

Unit I : **9 Hrs**

General classification of Algae based on Fritsch system [In brief, general characters at class level only] General characters of Blue-green Algae - ***Nostoc*** – Occurrence – structure of *Nostoc* colony – Cell structure – Heterocyst structure and function - Reproduction – Vegetative reproduction – Asexual reproduction –Hormogones, Endospores and Akinetes - Life cycle of ***Nostoc.*** Differences between Prokaryotic and Eucaryotic algal cells.

Volvox – Occurrence-structure of coenobium, somatic cells and reproductive cells, co-ordination and division of labour – Reproduction – asexual reproduction, sexual reproduction- life cycle of ***Volvox*** .

Unit–II **7Hrs.**

General characters of Green algae – ***Oedogonium*** –Occurrence – structure of the Thallus – cell division-reproduction- vegetative,asexual and sexual methods –Life cycles of macrandrous and nannandrous species. ***Caulerpa*** – Thallus structure – Internal structure – Reproduction – Vegetative reproduction – Sexual reproduction - Diplontic Life cycle of ***Caulerpa***

Unit–III **7Hrs**

General characters of Brown algae – ***Ectocarpus*** – Occurrence – heterotrichous plant body – reproduction – asexual and sexual methods –fusion of gametes - alternation of generation, Life cycle of *Ectocarpus*.

Sargassum – Occurrence - Thallus structure – Internal structure – Reproduction – Vegetative, asexual and sexual reproduction – Isomorphic Diplohaplontic Life cycle of ***Sargassum.***

Unit-IV: **6Hrs**

General characters of Red algae – ***Polysiphonia*** – Occurrence - Thallus structure – cell structure – Reproduction – Vegetative, asexual and sexual reproduction – Triphasic Life cycle of ***Polysiphonia.*** Economic importance of Algae.

Unit-V: **7Hrs**

Lichens:-Morphology of the thallus –crustose, foliose, and fruticose – Fungal components - Algal components – symbiosis – vegetative reproduction: Fragmentation, Isidia and Soredia – sexual reproduction – Apothecium –Lichen as pollution indicators. Economic importance of Lichens.

Practicals:

1. Study of microscopic blue-green alga – *Nostoc* and Heterocyst –micropreparation.
2. Study of microscopic green alga –*Oedogonium* –micropreparation.
3. Study of the macroscopic green seaweed-*Caulerpa:* Morphological variations and anatomical study of the coenocytic thallus and rhizoids.
4. Study of the microscopic brown alga –*Ectocarpus* - Micropreparation.Study of the macroscopic brown kelp -*Sargassum:* Morphology and anatomical study.
5. Study of morphology of Rhodophyceae-*Polysiphonia:G*ametophyte, Sporophyte and Cystocarp
6. Study of external morphology of *Parmelia* and *Usnea*
7. L. S. of Lichen Apothecium.

Text books:

1.Sharma, O.P, 1986. Text book of Algae. Tata McGrew-Hill Pub. Com. Ltd, New Delhi.
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2. Sharma,O.P. 1992. Text book of Thallophytes. Tata McGraw Hill Pub. Com.Ltd., New Delhi.

3.Kumar, H.D. 1990. The Algae. Affiliated East-West Press Pvt. Ltd. New Delhi.

4.Hale, M.E. 1983. The Biology of Lichens, 3rd Ed., Edward Arnold (Publishers)Ltd., London.

PAPER – II MYCOLOGY & PHYTOPATHOLOGY

Course Objectives:

- To understand the diversity, complexity and the economic value of fungi.
- To learn the etiology, symptoms and transmission of some plant diseases.

Theory

UnitI: 8Hrs

General Classification of Fungi based on Alexopoulos system [In brief, general characters at class level only] – General characters of Myxomycetes – ***Plamodiophora*** - Occurrence – somatic structure – reproduction – Life cycle .General characters of Zygomycetes –***Mucor*** – Occurrene – somatic structure – asexual and sexual reproduction – Life cycle.

Unit–II: 8Hrs

General characters of Hemiascomycetes – ***Saccharomyces*** - Occurrence – culture - somatic structure – Nutrition – Asexual reproduction- budding,fission – Sexual reproduction – Life cycle of *S. cerevisiae* and *S. ludwigii.* General characters of Discomycetes – ***Peziza*** – Occurrence – somatic parts – Asexual and sexual reproduction – mature ascocarp – Life cycle.

Unit-III: 9Hrs

General characters of Basidiomycetes – ***Agaricus*** - Occurrence –Mycelium – Asexual reproduction – Sexual reproduction – Mature fruiting body (sporophore) – Anatomy of the fruiting body – development of the Basidium – discharge and germination of Basidiospores - Life cycle of ***Agaricus.*** General characters of Deuteromycetes – ***Colletotrichum***. - Occurrence –vegetative structure - Mycelium – Asexual reproduction –Economic importance of Fungi.

Unit-IV: 6Hrs

General principles and concepts in phyto pathology – classification of plant diseases based on symptoms Host pathogen interaction - Defence mechanism - Control methods: Quarantine – chemical control (pesticide – fungicide – antibiotics) – tolerance and immunity .

Unit-V: *6Hrs*

Diseases:- symptoms, causative organism, disease cycle and control of following diseases

a] *Phytophthora infestens* (Late blight of Potato)
b] *Pythium debaryanum* (damping off disease)
c] *Helminthosporium oryzae* (Leaf spot disease of rice)
d] *Puccinia graminis* var. *tritici* (Black rust)

Practicals:

1.Identification and micropreparation *of Plasmodiophora, Mucor* and *Saccharomyces*
2.Identification and micropreparation of Peziza, *Agaricus* and *Colletotrichum*
3 Study of diseased plant materials

Text books:

1.Gupta.J.S.1986 Text book of Fungi – Oxford and IBH Publishing Co.Pvt.Ltd. Ltd. New Delhi.
2. Alexopoulos,J and Mims,M. 1993. Introductory Mycology –Wiley Eastern Ltd. Delhi.
3. Pandey,B.P.,1997. Plant pathology. S.Chand and Co.,New Delhi
4. Mehrotra, R.S., 1980. Plant Pathology, Tata McGrew-Hill pub. company Ltd, New Delhi

PAPER – III BRYOLOGY & PTERIDOLOGY

Course Objectives:

- To understand the diversity and complexity of amphibians of plant kingdom.
- To learn about the vascular cryptogams.

Theory

Unit-I **8Hrs**

General Classification of Bryophytes based on Rothmaler [In brief, general characters at class level only] - Resemblances of bryophytes with Thallophytes (algae) – Differences between Thallophytes and Bryophytes - ***Marchantia*** – Occurrence –external features of adult gametophyte – Internal structure – Reproduction - Asexual reproduction – structure of Gemma – Sexual reproduction – structure of Antheridiophore and Archegoniophore – Sporophyte structure – Life history. *(*Need not study the development of sex organs)

Unit-II **9Hrs**

Anthoceros – Occurrence – External features of adult gametophyte – Internal feature – Reproduction – Vegetative reproduction – fragmentation, tubers – Sexual reproduction – Antheridial chamber,structure of mature antheridium, dehiscence of the antheridium, antherozoid – structure of mature Archegonium – Sporophyte –structure of mature Sporogonium, dehiscence of the capsule - Life history. *(*Need not study the development of sex organs) – Features common with Pteridophytes .

Funaria - Occurrence – External features of adult gametophyte – Internal feature – Reproduction – Vegetative reproduction – buds, protonema, gemma, tubers – Sexual reproduction –Male shoot, structure of mature antheridium, female shoot, structure of mature Archegonium –fertilization - Sporophyte –structure of mature Sporogonium, dehiscence of the capsule - Life history. *(*Need not study the development of sex organs).

Unit-III **7Hrs**

Outline classification of Pteridophytes by G.M. Smith [In brief, general characters at class level only] –Resemblances with Bryophytes- ***Psilotum*** – external features of sporophytes – internal features of aerial stem and Synangium – morphological nature of sporoangium-bearing structures. ***Lycopodium*** –Occurrence - External features of the adult sporophyte, internal features, Steles of various species – Life cycle – vegetative reproduction, asexual method, strobilus, sporangia- gametophytes of different species – mature antheridium and archegonium – morphological nature of the Protocorm – Life cycle.

Unit-IV **6Hrs**

Equisetum - Occurrence - External features of the adult sporophyte, internal features-node and internode of the stem,– RhizomeLife cycle – vegetative reproduction, asexual method, strobilus,sporangia,spores- Gametophyte – mature prothallus-sex-organs-antheridium and archegonium – embryo- Life cycle.

Unit-V **5Hrs**

Marsilea - Occurrence - External features of the adult sporophyte, internal features-rhizome,petiole,leaflet,– Life cycle – vegetative reproduction, asexual method, structure of mature Sporocarp, morphological nature of sporocarap,dehiscence- Gametophyte – germination of microspore and megaspore – embryo- Life cycle.

Practicals:

1. Study of external and internal stuructue of *Marchantia,Anthoceros and Funaria.*
2. Study of the external and internal structure of *Psilotum* and *Lycopodium* stem and structure of cone
3. Study of the external and internal structure of *Equisetum* stem and structure of cone
4. Study of the external and internal structure of *Marsilea* rhizome and petiole

Text books:

1. Watson, E.V. 1979. The structure and Life of Bryophytes, B.I. Publications, New Delhi.

2. Sharma, O.P. 1990. Text book of Pteridophyta. MacMillan India Ltd. New Delhi.

3. Pandey.B.P. 1998. College Botany Vol.II. S. Chand and company Ltd. New Delhi.

PAPER – IV GYMNOSPERMS AND PALAEOBOTANY

Course Objectives:

- To understand the diversity of gymnodperms
- To learn the preserved vestiges of plant life of the geological past.

Theory:

Unit-I **9Hrs**

Outline classification of Gymnosperms – K.R. Sporne [In brief, general characters at class level only] – resemblances with the Pteridophytes – differences from the Pteridophytes –***Cycas*** – external features of the adult sporophyte – internal features of normal root and coralloid root – internal structure of stem before secondary growth and after secondary growth - anatomy of rachis and leaflet - Reproduction – male cone, microsporophyll, microsporangia and dehiscence. Megasporophyll, megasporangium (structure of Ovule),. Male and Female Gametophytes –young sporophyte – life cycle - economic importance. (Need not study the developmental stages of the sex organs)

Unit-II **8Hrs**

Pinus - external features of the adult sporophyte – internal features of root – primary and secondary structure – anatomy of young stem, secondary growth in stem – anatomy of leaf (needle) - Reproduction – male cone, microsporophyll, microsporangia and dehiscence. Megasporophyll, morphological nature, structure of Ovule,. Pollen grains and embryo sacs - male and female gametophytes –young sporophyte – structure of seed – life cycle - economic importance. (Need not study the developmental stages of the sex organs)

Unit-III **7Hrs**

Ephedra - external features of the adult sporophyte – internal features of young stem and old stem - Reproduction – male flowers, microsporangia – female strobilus, female flowers, megasporangia, male gametophyte – female gametophyte – young sporophyte – structure of seed - life cycle - economic importance. (Need not study the developmental stages of the sex organs)

Unit-IV **6Hrs**

General account of fossils and fossilization – factors and theories of preservation – kinds of preservation: Compressions, coal balls, impressions, incrustations (Casts), petrifactions (mineralized plants), compactions (Mummified plants), ambers. Geological time scale, computation of age of fossils (radio carbon dating).

Unit-V **5Hrs**

A detailed study of external, internal morphology and reproduction in the following fossils – *Rhynia*, *Lepidodendron* and *Williamsonia*

Practicals:

1. Study of the internal structure of the leaflet of *Cycas*
2. Study of the internal structure of *Pinus* stem and needle leaf
3. Study of the *Pinus* male and female cone
4. Study of male and female flowers of *Ephedra*
5. Study of the structure of *Rhynia, Lepidodendron, Williamsonia* and *Sewardiana* with the help of fossils.

Text books:

1. Pandey.B.P. 1998. College Botany Vol.II. S. Chand and company Ltd. New Delhi.
2. Vashista. P.C. 1989. Gymnosperms. Vol. V., S.Chand and comp. Ltd. New Delhi.
3. Sporne, K.R. 1965. The morphology of Gymnosperms. B.I. Publications . New Delhi.
4. Arnold, C.A. 1947. An Introduction to Palaeobotany. McGraw-Hill Book Comp. New York.

BLUE PRINT OF QUESTION PAPER FOR B.Sc. PLANT SCIENCE MAIN

(Effective from the academic year 2010-11)

Time – 3 hrs

Max. Marks – 100

Section – A

Answer **all** the questions. Each answer should not exceed 30 words.

Two questions from each unit (10 x 2 = 20 marks)

1. Unit I
2. Unit I
3. Unit II
4. Unit II
5. Unit III
6. Unit III
7. Unit IV
8. Unit IV
9. Unit V
10. Unit V

Section – B

Answer any **eight** questions. Each answer should not exceed 200 words.

Two questions from each unit (8 x 5 = 40 marks)

11. Unit I
12. Unit I
13. Unit II
14. Unit II
15. Unit III
16. Unit III
17. Unit IV
18. Unit IV
19. Unit V
20. Unit V

Section – C

Answer any **four** questions. Each answer should not exceed 600 words.

One question from each unit (10 x 4 = 40 marks)

21. Unit I
22. Unit II
23. Unit III
24. Unit IV
25. Unit V

PONDICHERRY UNIVERSITY
BLUE PRINT OF PRACTICAL QUESTION PAPER
FOR B.Sc. PLANT SCIENCE MAIN
(Effective from the academic year 2010-11)

Practical Paper – 1 (Algology, Lichenology, Mycology & Phythopathology)

Time – 3 Hrs. Max Marks – 40.

1. Make suitable micro preparations of **A, B & C**. Leave the slide for valuation. Identify with reasons.
(Preparation-2, Identification-1, Reasons-2 marks) **(3x5=15 Marks)**

2. Draw labeled sketches and identify giving reasons **D, E & F**.
(Identification-1, Diagram-1, Reasons-2marks) **(4x3=12 Marks)**

3. Identify **G** giving reasons. **(1x3=03 Marks)**

Total for Practical = **30 Marks.**
Record Marks = **10 Marks.**
Total = **40 Marks.**

KEY

A = Alga	(Section)	
B = Fungus	(Section)	
C = Phythopathology	(Section)	
D = Alga	(Slide/Specimen)	
E = Fungus	(Slide/Specimen)	
F = Phythopathology	Slide/Specimen)	
G = Lichens	(Slide/Specimen)	

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Practical Paper – 11 (Bryology, Pteridology, Gymnosperms & Paleobotany)

Time – 3 Hrs. Max Marks – 40.

1. Make suitable micro preparations of **A, B & C**. Leave the slide for valuation. Identify with reasons.
(Preparation-2, Identification-1, Reasons-2 marks) **(3x5=15 Marks)**

2. Draw labeled sketches and identify giving reasons **D, E & F**.
(Identification-1, Diagram-1, Reasons-2marks) **(4x3=12 Marks)**

3. Identify **G** giving reasons. **(1x3=03 Marks)**

Total for Practica l = **30 Marks.**
Record Marks = **10 Marks.**
Total = **40 Marks.**

KEY

A = Bryophyte	(Section)	
B = Pteridophyte	(Section)	
C = Gymnosperm	(Section)	
D = Bryophyte	(Slide/Specimen)	
E = Pteridophyte	(Slide/Specimen)	
F = Gymnosperm	Slide/Specimen)	
G = Paleobotany	(Slide/Specimen)	

PONDICHERRY UNIVERSITY
Allied Plant Science for B.Sc.,Zoology Main– Paper - I
(Effective from the academic year 2010-11)

Theory:

Unit I
General characters of bacteria and study of structure and reproduction of *Escherichia coli* and *Xanthomonas*.

Unit II
General characters of Fungi and study of structure and reproduction of *Aspergillus* and *Puccinia*.

Unit III
Classification of Plant Kingdom: Study of major divisions – structure, reproduction and life cycle of the following genera: *Oedogonium, Marchantia, Selaginella* and *Pinus*.

Unit IV
Taxonomy: Study of Angiospermic families (Bentham and Hooker): Annonaceae, Cucurbitaceae, Apocynaceae, Euphorbiaceae and Poaceae.

Unit V
Binomial, family and morphology of the useful parts of any three products under each of the following categories: Cereals, Millets, Pulses, Oils, Spices, Beverages and Medicines.

Practicals :

1. Study of genera included in Unit I,II and III.
2. Study of families included in Unit IV.
3. Study of products of economic importance included in Unit V.

Text books :

1. Rao.K.N,Krishnamurthy.K.V and Rao.G.S.1979. Ancillary Botany. Viswanathan Publication Pvt.Ltd,Chennai.
2. Rao.K.N and Raman.A. 1993. Outlines of Botany. Viswanathan Publication Pvt.Ltd,Chennai.
3.Parihar,N.S. 1965. An Introduction to Embryophyta. 5th Edition. Central Book Depot,Allahabad.
4.Jeffrey,C. 1982. An Introduction to Plant Taxonomy. 2nd Edition.Claridon Univeresity.
5.Hill. 1964. Economic Botany. McGraw Hill Book Co,New York,USA.

PONDICHERRY UNIVERSITY
Allied Plant Science for B.Sc., Zoology Main – Paper - II
(Effective from the academic year 2010-11)

Theory:

Unit I
Study of plant cell orgenelles with emphasis on cell wall, chloroplast and sphaerosome.

Unit II
Anatomy of primary and secondary structure in stem and root of dicot, anatomy of dicot and monocot leaf.

Unit III
Brief study of mechanism of ion transport, nitrogen fixation by symbiotic bacteria, photosynthesis, respiration and phytohormones.

Unit IV
Applied Microbiology: Agricultural microbiology (soil microflora, soil fertility and biofertilizers); Industrial microbiology (fermentation, alcoholic beverages, beers and vine); Food microbiology (microbial spoilage of food, microbial contamination of milk and water)

Unit V
Plant Ecology: Brief study of ecosystems, plants as primary producers, food chain and food web, ecological pyramids. Forests their importance and conservation, urban and rural forestry. Pollution: plants as pollution indicators and pollution controlling agents.

Practicals :

1. Study of Cell Organelles include in Unit I from electron micrographs.
2. Anatomical studies of plant parts included in Unit II.
3. To perform simple experiments as included in Unit III.
4. Study of microbes as included in Unit IV.
5. Study of ecological processes included in Unit V.

Text books :

1. Thorpe,N.O. 1984. Cell Biology. John Wiley & Sons,Newyork,USA.
2. Carpenter.P.L. 1967. Microbiology. 2nd Edition. W.B.Saunders & Co.,Philadelphia,USA.
3 .Stainer,R.V, Adelberg,E.A and Ingraham,J.L. 1976. General Microbiology. 4th edition. Macmillan,London,UK.
4. Salisbury,F.B, and Rose,C.W. 1986. Plant Physiology. 3rd edition.CBS Publishers and Distributers, New Delhi.

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(Effective from the academic year 2010-11)

Time – 3 hrs

Max. Marks – 75

Section – A

Answer **all** the questions. Each answer should not exceed 50 words.
Two questions from each unit (10 x 2 = 20 marks)

1. Unit I
2. Unit I
3. Unit II
4. Unit II
5. Unit III
6. Unit III
7. Unit IV
8. Unit IV
9. Unit V
10. Unit V

Section – B

Answer **all** the questions. Each answer should not exceed 200 words.
Two questions from each unit (5 x 5 = 25 marks)

11 a) Unit I
or
11 b) Unit I

12 a) Unit II
or
12 b) Unit II

13 a) Unit III
or
13 b) Unit III

14 a) Unit IV
or
14 b) Unit IV

15 a) Unit V
or
15 b) Unit V

Section – C

Answer any **three** questions. Each answer should not exceed 600 words.
One question from each unit (10 x 3 = 30 marks)

16. Unit I
17. Unit II
18. Unit III
19. Unit IV
20. Unit V

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ALLIED PLANT SCIENCE PRACTICAL FOR B.Sc., ZOOLOGY MAIN
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Allied Zoology practical paper – 1.

Time : 2 Hrs. Max. Marks :25.

1. Identify, draw and write notes on **A,B & C**.
(Identification – 1,Diagram – 1,Notes – 2) **(3x4 = 12)**

2. Assign the given specimen **D** to its family. Describe in technical terms and draw diagrams.
(Family – 1,Technical description – 2,Diagram – 1) **(1x4 = 04)**

3. Identify the binomial, family & morphology of the useful part of **E.**
(Binomial – 1,Family – 1,Useful part – 2) **(1x4 = 04)**

Total for Practical = **20.**
Record = **05.**
Total = **25.**

KEY

A	Bacteria	(Slide/Specimen)	
B	Algae/Fungus.	(Slide/Specimen)	
C	Bryophyte/Pteridophyte/Gymnosperm.)	(Slide/Specimen	
D	Taxonomy.	(Specimen)	
E	Economic Botany	(Product/Specimen)	

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ALLIED PLANT SCIENCE PRACTICAL FOR B.Sc., ZOOLOGY MAIN
(Effective from the academic year 2010-11)

Allied Zoology Practical paper – 11.

Time: 2 Hrs. Max. Marks: 25.

1. Identify, draw and write notes on **A & B**.
(Identification – 1,Diagram – 1,Notes – 2) **(2x4 = 08)**

2. Comment on the physiological importance of **C.**
(Notes – 2,Diagram – 2) **(1x4 = 04)**

3. Comment on the microbiological importance of **D**.
(Notes – 2,Diagram – 2) **(1x4 = 04)**

4. Comment on the ecological importance of **E.**
(Notes – 2,Diagram – 2) **(1x4 = 04)**

Total for Practical = **20.**
Record = **05.**
Total = **25.**

KEY

A	Cell Biology	(Slide/Photograph)	
B	Anatomy	(Slide/Specimen)	
C	Physiology	(Set up/Specimen)	
D	Microbiology	(Specimen/Photograph)	
E	Ecology	(Specimen/Photograph)	

PONDICHERRY UNIVERSITY
Allied Plant Science for B.Sc.,Chemistry Main– Paper - I
(Effective from the academic year 2010-11)

Thery:

Unit I
General characters of Bacteria and study of structure and reproduction of *Escherichia coli* and *Xanthomonas*.

Unit II
General characters of Fungi and study of structure and reproduction of *Aspergillus* and *Puccinia*.

Unit III
Classification of Plant Kingdom: study of major divisions – structure, reproduction and life cycle of the following genera: *Oedogonium, Marchantia, Selaginella* and *Pinus*.

Unit IV
Taxonomy: Study of Angiospermic families (Bentham and Hooker): Annonaceae, Cucurbitaceae, Apocynaceae, Euphorbiaceae and Poaceae.

Unit V
Brief study of secondary metabolites: source, useful part, active principles and uses of the following: Essential oil: *Ocimum*; alkaloids: *Papaver* and *Vinca*; glycosides – *Digitalis*; steroids – *Dioscorea*; flavanoids – *Pelargonium*; terpenoids – *Hevea* (Rubber – Polyterpene).

Practcials :

1. Study of genera included in Unit I,II and III.
2. Study of families included in Unit IV.
3. Study of products of economic importance included in Unit V.

Text books :

1. Rao.K.N,Krishnamurthy.K.V and Rao.G.S.1979. Ancillary Botany. Viswanathan Publication Pvt.Ltd,Chennai.
2. Rao.K.N and Raman.A. 1993. Outlines of Botany. Viswanathan Publication Pvt.Ltd,Chennai.
3. Parihar,N.S. 1965. An Introduction to Embryophyta. 5th Edition. Central Book Depot,Allahabad.
4. Jeffrey,C. 1982. An Introduction to Plant Taxonomy. 2nd Edition.Claridon Univeresity.
5. Hill. 1964. Economic Botany. McGraw Hill Book Co,New York,USA.

PONDICHERRY UNIVERSITY
Allied Plant Science for B.Sc.,Chemistry Main – Paper - II
(Effective from the academic year 2010-11)

Theory:

Unit I
Study of plant cell orgenelles with emphasis on cell wall, chloroplast and sphaerosome.

Unit II
Brief study of structure of DNA and RNA; bacterial plasmid DNA; recombinant DNA technology and gene cloning.

Unit III
Brief study of mechanism of ion transport, nitrogen fixation by symbiotic bacteria, photosynthesis, respiration and phytohormones.

Unit IV
Applied Microbiology: Agricultural microbiology (soil microflora, soil fertility and biofertilizers); Industrial microbiology (fermentation, alcoholic beverages, beers and vine); Food microbiology (microbial spoilage of food, microbial contamination of milk and water)

Unit V
Biochemical techniques: Chromatography (Paper and Thin layer); spectrophotometry; tracer techniques.

Practicals :

1.Study of Cell Organelles included in Unit I from electron micrographs.
2.Study of microbial structures as included in Unit II.
3.To perform simple experiments as included in Unit III,IV & V.

Text books :

1 .Thorpe,N.O. 1984. Cell Biology. John Wiley & Sons,Newyork,USA.
2. Carpenter.P.L. 1967. Microbiology. 2nd Edition. W.B.Saunders & Co.,Philadelphia,USA.
3. Stainer,R.V, Adelberg,E.A and Ingraham,J.L. 1976. General Microbiology. 4th edition. Macmillan,London,UK.
4 .Salisbury,F.B, and Rose,C.W. 1986. Plant Physiology. 3rd edition.CBS Publishers and Distributers, New Delhi.

PONDICHERRY UNIVERSITY

BLUE PRINT OF QUESTION PAPER FOR ALLIED PLANT SCIENCE FOR B.Sc.,CHEMISTRY MAIN

(Effective from the academic year 2010-11)

Time – 3 hrs Max. Marks – 75

Section – A

Answer **all** the questions. Each answer should not exceed 50 words.

Two questions from each unit (10 x 2 = 20 marks)

1.Unit I
2.Unit I
3.Unit II
4.Unit II
5.Unit III
6. Unit III
7. Unit IV
8. Unit IV
9. Unit V
10. Unit V

Section – B

Answer **all** the questions. Each answer should not exceed 200 words.

Two questions from each unit (5 x 5 = 25 marks)

11 a) Unit I
or
11 b) Unit I

12 a) Unit II
or
12 b) Unit II

13 a) Unit III
or
13 b) Unit III

14 a) Unit IV
or
14 b) Unit IV

15 a) Unit V
or
15 b) Unit V

Section – C

Answer any **three** questions. Each answer should not exceed 600 words.

One question from each unit (10 x 3 = 30 marks)

16. Unit I
17. Unit II
18. Unit III
19. Unit IV
20. Unit V

PONDICHERRY UNIVERSITY
BLUE PRINT OF QUESTION PAPER FOR
ALLIED PLANT SCIENCE PRACTICAL FOR B.Sc., CHEMISTRY MAIN
(Effective from the academic year 2010-11)

Allied Chemistry Practical paper – 1.

Time : 2 Hrs. Max. Marks :25.

3. Identify, draw and write notes on **A,B & C.**
(Identification – 1,Diagram – 1,Notes – 2) **(3x4 = 12)**

4. Assign the given specimen **D** to its family. Describe in technical terms and draw diagrams.
(Family – 1,Technical description – 2,Diagram – 1) **(1x4 = 04)**

6. Identify the binomial, family & morphology of the useful part of **E.**
(Binomial – 1,Family – 1,Useful part – 2) **(1x4 = 04)**

Total for Practical = **20.**
Record = **05.**
Total = **25.**

KEY

A	Bacteria	(Slide/Specimen)	
B	Algae/Fungus.	(Slide/Specimen)	
C	Bryophyte/Pteridophyte/ Gymnosperms	(Slide/Specimen	
D	Taxonomy.	(Specimen)	
E	Economic Botany	(Product/Specimen)	

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ALLIED PLANT SCIENCE PRACTICAL FOR B.Sc., CHEMISTRY MAIN
(Effective from the academic year 2010-11)

Allied chemistry Practical paper – 11.

Time: 2 Hrs. Max. Marks: 25.

1. Identify, draw and write notes on **A & B.**
(Identification – 1,Diagram – 1,Notes – 2) **(2x4 = 08)**

3. Comment on the physiological importance of **C.**
(Notes – 2,Diagram – 2) **(1x4 = 04)**

3. Comment on the microbiological importance of **D**.
(Notes – 2,Diagram – 2) **(1x4 = 04)**

4. Comment on the biochemical importance of **E.**
(Notes – 2,Diagram – 2) **(1x4 = 04)**

Total for Practical = **20.**
Record = **05.**
Total = **25.**

KEY

A	Cell Biology	(Slide/Photograph)	
B	Nucleic acids	(Photograph/Specimen)	
C	Physiology	(Set up/Specimen)	
D	Microbiology	(Specimen/Photograph)	
E	Biochemical techniques	(Set up/Photograph)	