

SOLAPUR UNIVERSITY, SOLAPUR.

B.Sc. Part – II (Semester –III and IV)

(Revised Syllabus of Botany)

To be implemented from June, 2014.

SOLAPUR UNIVERSITY, SOLAPUR.
Revised Syllabus for B.Sc.Part-II (Botany)
(Semester-III and IV)
To be implemented from June-2014

1) **Title of the course:** B.Sc.Part II-Botany. -Semester III and IV

Course Structure:-

Sr. No	Semester	Paper No.	Title of the paper	Number of Lectures	Total Marks
1	III	V	Structural Botany and Taxonomy of Angiosperm	40	50
2	III	VI	Plant Ecology	40	50
3	IV	VII	Plant Physiology and Cytogenetics	40	50
4	IV	VIII	Plant Diversity and Utilization	40	50
5	Practicals-		No-I- (Based on Paper-V and VI)	25 Practicals	50
			No-II (Based on Paper-VII and VIII)	25 Practicals	50
Total Marks - (For Theory and Practicals)					300

2) **Introduction-** This is one of the basic subjects of life sciences which provides basic knowledge for the applied subjects like Bioinformatics, Biotechnology, Agroforestry, Environmental studies, Genetic engineering etc.

3) Objectives of the course:-

- i) To promote the students to the various disciplines of Botany.**
- ii) To assist the students to understand the life cycles, physiology, cytology, horticulture, diversity of the plants, Genetics, Biotechnology etc.**
- iii) To enhance the practical knowledge of the students of the subject.**
- iv) To create research attitudes among the students.**
- v) To create the awareness about the contribution of Botany to the society.**
- vi) To impart the knowledge of Botany to student facing the competitive exams.**

4) Advantages of the Course:-

- i) Students after passing B.Sc. with Botany as a principle subject will become eligible for M.Sc. in Botany, Biotechnology, Bioinformatics, Genetics, Forestry, Agrochemicals and Pest management etc.**
- ii) They can appear for Competitive Examinations like MPSC, UPSC, and Indian forest services etc. after B Sc.**
- iii) They can get jobs in different industries viz. Hybrid seeds industries, Bio-fertilizer industries and Research Institutes etc. after B Sc. III**
- iv) To update the knowledge of Life science.**
- v) Students can play important role in environment Protection and biodiversity conservation.**

5) Eligibility:- B Sc Part-I pass/ATKT with Botany Subject. (One of the optionals)

6) Duration: - The entire B.Sc. course is of three years (integrated) duration but the B Sc. Part-II is of one year duration with Semester III and IV

7) Medium of Instruction: - English.

8) Examination pattern - There are four theory papers carrying 50 marks each for B.Sc Part –II The students have to appear for theory examination based on Paper –V and –VI during Semester-III - and for the Paper VII and VIII during Semester IV- The practical course is to be covered in fifty- practicals based on theory paper no. V, VI, VII and VIII. and

the practical examination of 100 marks will be conducted at the end of semester IV on two successive days.

9) Equivalence of the Revised and Pre revised papers:-

Sr.No	Pre-revised	Marks	Re-vised	Marks
Semester –III				
1	Paper-V	50	Paper –V	50
2	Paper-VI	50	Paper-VI	50
Semester-IV				
3	Paper –VII	50	Paper VII	50
4	Paper- VIII	50	Paper- VIII	50
5	Practical – I &II	100	Practical – I &II	100

There shall be two papers of 50 marks each for each semester. Theory examination will be held at the end of each semester. The details of course are as follows.

A) Semester-III

- a) Theory paper- V: Structural Botany and Taxonomy of Angiosperm -50 Marks
 b) Theory paper- VI: Plant Ecology - 50 Marks

B) Semester-IV

- a) Theory Paper-VII: Plant Physiology and Cytogenetics - 50 Marks
 b) Theory paper-VIII: Plant Diversity and Utilization. - 50 Marks

Total marks for theory- -200 Marks

C) Practicals

- a) Practical – I - 50 Marks
 b) Practical – II - 50 Marks

Total Marks for practicals

100 Marks

Total marks for Theory and practicals (200+100)

300Marks.

The practical course is to be covered in 50 practicals .The practical course should be divided into practical no. -I comprises 25 practicals based on Paper No.V & Paper No.VI where as the practical No.II comprises 25 practicals based on Paper No.VII & VIII. The practical No I will carry 50 marks & practical II will also carry 50 marks. The practical examination will be conducted at the end of semester IV on two successive days.

SOLAPUR UNIVERSITY, SOLAPUR

B.Sc. Part – II (Botany)

TO BE IMPLEMENTED FROM JUNE, 2014

(Semester – III and IV)

Semester – III -

Paper – V: Structural Botany and Taxonomy of Angiosperms - (45 Periods)

Unit- 1-(A):Meristems: 07

- 1.1 Introduction and Classification of meristems
- 1.2 functions of meristems
- 1.3 Theories of structural development –
 - a) The Apical cell theory
 - b) Histogen Theory
 - c) Tunica corpus theory

(B): Permanent tissues 06

- 1.4 Structure and functions of simple tissues.
- 1.5 Structure and function of Complex tissues-
- 1.6 Types of vascular bundles.

Unit-2 : Tissue systems and their functions: 06

- 2.1 Epidermal Tissue System
- 2.2 Secretory Tissue System
- 2.3 Mechanical Tissue System

Unit-3:Primary structure of plant organs. 05

- 3.1 Primary structure of monocot Root and stem- (maize)
- 3.2 Primary Structure of dicot root and stem- (Sunflower)

Unit-4:Secondary body of the plant

10

- 4.1 Normal Secondary growth in Dicot root and stem.
- 4.2 Periderm, Lenticels and Annual rings.
- 4.3 . Basic structure of wood and its types.-
- 4.4 Anomalous secondary growth in *Bignonia* and *Dracaena* stem

Unit-5 Taxonomy of Angiosperms:-

11

Study of Angiosperm families with respect to classification,morphology of vegetative and reproductive parts, floral formula , floral diagram, diagnostic features and economic importance. (any five examples)

- a)Meliaceae b) Fabaceae c) Combretaceae d) Asclepiadaceae e) Acanthaceae
f)Amaranthaceae g) Liliaceae.

References:-

Paper -V Structural Botany and Taxonomy of Angiosperms

1. P.C. Vashista. Plant Anatomy. Pradip Publications, Opposite Sitla mandir, Jalandhar- 144008.
2. B.P.Pandey ,Plant Anatomy. S.Chand & Company,LTD. Ram Nagar, New Delhi.110055.
3. A.C.Datta. Botany For Deree students. Press-Delhi, Bombay, Madrass.S
4. Taxonomy of Angiosperm R Pandey, S Chand and Co. Ltd, Ramnagar New Delhi.110055
5. An Introduction to Taxonomy of Angiosperms-Pritish Shukla, Shital P Mishra, Vikas Publishing House, Pvt.Ltd.Gaziabad, UP.
6. A Text Book of Angiosperms-B P Pandey, S Chand and Co Ltd.ramnagar, New Delhi.110055
7. A Text Book of Botany -‘Angiosperm,’V Singh C Pande, D K Jain, Rastogi Publication, Shivaji Road Meerut.250002
8. Taxonomy of Angiosperm, Neeru Mathur, Sonali Publications, New Delhi, 110002.
9. Angiosperms-G L Chopra, Pradeep Publications, Jalandhar, 144008.

Paper-VI PLANT ECOLOGY

(45 Periods)

Unit-1 - Population ecology-	06
1.1) Concept, Density, Natality & Mortality.	
1.2) Age distribution of population	
1.3) Brief account of carrying capacity-	
1.4) Population Regulation- Abiotic factors -Nutrients, moisture, food. Biotic factors -Competition, predation, density.	
Unit-2 Community Ecology-	06
2.1) Form and structure of communities	
2.2) Classification and Physiognomy.	
2.3) Community characteristics	
2.3) Concept of species diversity- α , β and γ	
Unit-3 Ecosystems	11
3.1) Concept and types	
3.2) Components and Organization of ecosystem	
3.3) Ecological pyramids, Food chains and food webs.	
3.4) Energy flow in ecosystem.	
3.5) Biogeochemical cycles – Nitrogen, Oxygen, Carbon	
,	
Unit-4 (A) Ecological Succession	07
4.1) Concept and process	
4.2) Primary and Secondary succession	
4.3) Hydrosere and xerosere	
(B) Ecological adaptations	06
4.4) Concept	
4.5) Xeric, Hydric and Mesic adaptations	

- 5.1) Definition and types (Air, water and soil pollution.)
- 5.2) Air pollution-Sources of air pollutants, their effects and control measures.
- 5.3) Water pollution- Sources of water pollutants, their effects and control measures.
- 5.4) Soil Pollution: - Sources of soil/land pollutants, their effects and control measures.

References:-**Paper-VI-Plant Ecology**

1. Odum, E.P. Ecology. Oxford & F.B.h.Publishing Co.pvt.LTD-New Delhi..
2. Kormondy, E.J. 1996. Concepts of Ecology, Prentice-Hall of India Pvt. Ltd., New Delhi.
3. Hill, M.K. 1997. Understanding Environmental Pollution. Cambridge University Press.
4. Mackenzie, A. et al. 1999. Instant Notes in Ecology. Viva Books Pvt. Ltd., New Delhi.
5. B.P. Pandey – Modern Practical Botany Vol – I / II Chand & Company Ltd. Ramnagar New Delhi – 110055.
6. B.P. Pandey – Economic Botany Vol – I / II Chand & Company Ltd. Ramnagar New Delhi – 110055.
7. Pavas Divan – Environ Protection – Deep & Deep Publications D-I 124, Rajouri Garden, New Delhi – 110027.
8. P.S. Verma / V.K. Agrawal – Concept of Ecology, S. Chand & Lonpan Ltd. Ramnagar, New Delhi – 110055.
9. R.S. Shukla & P.S. Chandel. Plant Ecology. S.Chand & Company LTD. Ram Nagar, New Delhi.110055.

SEMESTER- IV
(Paper-VII and VIII)

Paper -VII Plant Physiology and Cytogenetics

(45 periods)

Plant Physiology

Unit-1:-Photosynthesis:

10

- 1.1 Introduction and significance
- 1.2 Photosynthetic apparatus
- 1.3 Photosynthetic pigments, accessory pigments
Photosystems – reaction center complexes
- 1.4 Photochemical/light reactions
Emerson enhancement effect.
Electron transport pathway in chloroplast membrane.
Photophosphorylation
- 1.5 Dark reactions, Calvin cycle, C4 cycle, CAM.

Unit-2:- Transport of organic substances (Phloem Transport)

07

- 2.1 Definition and types of transport (Symplastic and apoplastic)
- 2.2 Phloem loading and unloading
- 2.3 Mechanism of translocation in phloem -Mass flow hypothesis,
- 2.4 Source sink relationship:
Assimilate partitioning –
 - a. During vegetative phase
 - b. During reproductive phase

Unit-3:- Nitrogen metabolism

07

- 3.1 Introduction
- 3.2 Nitrogen cycle
- 3.3 Biological N₂ fixation – Definition, types & organisms involved
- 3.4 Mechanism of Biological Nitrogen fixation (Symbiotic and non symbiotic)
- 3.5 Significance of Biological Nitrogen fixation.

Cytogenetics:-

Unit-4:-Physical basis of inheritance: -

05

- 4.1) **Chromosome**-Structure and chemical nature of eukaryotic chromosome.
- 4.2) **Study of Meiotic cell division and its significance.**

Unit-5(A):-Classical genetics-

11

- 5.1) **Linkage**-Definition, coupling and repulsion theory, Kinds of Linkage-Complete, incomplete, linkage groups. Significance of linkage.
- 5.2) **Crossing over**-Definition, Mechanism of crossing over, 'Break and exchange' theory, (Stern and Hotta, 1969), Significance of crossing over.

(B):-Chromosomal aberrations-

05

- 5.3) **Definition and types**-Deletion, Duplication, Inversion and Translocation,
- 5.4) Significance of Chromosomal aberrations

References:-

Paper-VII-Plant Physiology and Cytogenetics

1. Salisbury, F.B. and Ross, C.W. 1992. Plant Physiology (4th edition). Wadsworth Publishing Co., California, USA.
2. R.C. Grewal – Plant Physiology Campus Brokes International 483/24, Prahiad street Ansari Road, Darya ganj, New Delhi – 110002.
3. V.K. Jain – Fundamentals of Plant Physiology, S. Chand & Company Ltd. Ramnagar, New Delhi – 110055.
4. Salisbury Ross – Plant Physiology CBS, Publishers & Distributions 485/ Jain Bhawan, Bhole Nath Nagar, Shahdara, New Delhi – 110032.
5. Devlin & Witham – Plant Physiology CBS Publishers & Distributors 485, Jain Bhavan, Bhole Nath Nagar, Shahdara, New Delhi – 110032.
6. G. Ray Noggle / G. Fritz Introductory Plant Physiology Prentice Hall of India Ltd. New Delhi – 110001.
7. V.Verma. Text Book Of Plant Physiology. Emkay Publications.,B-19,East Krishna Nagar, Delhi-1100051.

8. Dr. S. Sundara rajan. Physiology Of Transport In Plants. Anmol Publications, Pvt. LTD. New Delhi.110002.
9. P.S Verma,V.K Agarwal,Cell Biology,Genetics,Evolution and Ecology,S.Chand and Co.Pvt.Ltd.,Ramnagar,New Delhi,110055
10. A.M Winchester,Genetics,Oxford and IBH,Publishing Co.New Delhi-110055.
11. P.S Verma, V K Agarwal;Genetics,S Chand and Co.Ramnagar,New Delhi-110055
12. Dr (Mrs.) Veer Bala Rastogi,A text Book of Genetics,Kedarnath Ramnath road,Meerut-250001.
13. H.S Bhamrah,Kavita Juneja,Genetics and Evolution,Anmol Publication,Pvt.ltd.New delhi-110002.

Paper – VIII:-Plant Diversity and Utilization. (45 Periods)

Plant Diversity.

Unit-1(A):- Algae-Study of *Sargassum* With respect to – Classification, distribution, thallus structure and reproduction (Excluding the development of sex organs and spoprophyte)

03

(B) Fungi- Study of *Puccinia*-with reference to Classification, distribution, thallus structure and reproduction.(Life cycle stages on wheat and barberry)

03

(C) Bryophyte- -Study of *Anthoceros* with respect to – Classification, distribution, ,thallus morphology and reproduction(Excluding the development of sex organs and spoprophyte)

03

(D) Pteridophyte- Study of *Equisetum* .with respect to – Classification, distribution, morphology of sporophyte, anatomy of aerial stem and reproduction. (Excluding the development of sex organs and spoprophyte)

03

(E)Gymnosperms- Study of *Pinus* with respect to – Classification, distribution, , morphology of sporophyte, Stem and Leaf anatomy, reproduction(Structure of male and female cone)

04

Plant utilization

Unit-2:- Botanical names, Morphology, Source and Economic importance-
of the followings:-

09

2.1) Legumes- Pulse crops-Chickpea and Red gram

Fodder legumes - Lucerne and *Sesbania*

2.2) Vegetable oil sources- Groundnut, and Soybean

2.3) Plant Fibers--- Cotton, and Coir

Unit -3:- Medicinal plants

06

A brief account of plant drugs and their chief constituents used in
Indigenous and allopathic systems in –

- A) Rhizome – *Zingiber officinale*
- B) Root – *Withania somnifera*
- C) Stem – *Tinospora cordifolia*
- D) Leaf – *Adhatoda zeylanica*.
- E) Floral bud – *Syzigium aromaticum*
- F) Fruit – *Emblica officinalis*

Unit-4:- Natural Products

10

- 4.1) Rubber – Introduction, properties of rubber, source
(*Hevea brasiliensis*), morphological characters, extraction method and economic importance
- 4.2) Botanical pesticides-Introduction,
Promising species (Neem, Tobacco, Custard apple,)
Effect on non target organisms-(Natural enemies and Man)
- 4.3) Sources of dyes and pigments with economic importance.
 - a) From wood-Log wood,,Kutch.
 - b)From bark-Oak,Teak.
 - c) From root and rhizome -Manjistha,Turmeric,
 - d) From leaves-,Indigo, Henna.
 - e) from flowers- Saffron,Palas.

Unit-5:-Ornamental Plants –

Botanical name and ornamental value of following plants

04

- 5.1) Seasonals - *Celosia, Chrysanthemum sp.*
- 5.2) Perennials – *Acalypha, Crossandra, sp.*
- 5.3) Cacti and succulents – *Opuntia and Bryophyllum*
- 5.4) Climbers – *Bougainvillea, Quisqualis sp.*

References:-

Paper-VIII- Plant Diversity and Utilization.

- 1) B R Vashita, Botany for Degree students, vol-II, Fungi, S Chand and Co.ltd., Ramnagar, New Delhi-110055
- 2) C J. Alexopoulos, Introductory Mycology, Wiley eastern Pvt.Ltd. New Delhi.
- 3) B R Vashita, Botany for Degree students, Vol-III, Bryophyte, S Chand and Co.ltd. Ramnagar New Delhi-110055
- 4) R M Johri, Snehlata, kavita tyagi, A text Book of Botany-Bryophyte, Dominant Publishers and Distributors, New Delhi -110002
- 5) N S.Parihar, Bryophyte, Central Book Depot. Allahabad.
- 6) P.C Vashista, Pteridophyte, S. Chand and Co. Ramnagar, New Delhi-110055
- 7) P C Vashita, Botany For Degree students ,Gymnosperms, S Chand and Co.ltd. Ramnagar New Delhi-110055
- 8) R.C. Grewal – Medicinal plants, Campus Books International 4831/24, Prahiad street, Ansari Road, Darya Ganj, New Delhi – 110002. Fax : 91-011-3257835.
- 9) Sambamurthy, A.V.S.S. and Subramanyam, N.S. 1989. A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi.
- 10) Sharma, O.P. 1996. Hill's Economic Botany. Tata McGraw Hill Publishing Company Ltd., New Delhi.
- 11) B.P.Pandey Economic Botany. S.Chand & Company pvt. LTD. Ram Nagar New Delhi. 110055.
- 12) A Text book of Medicinal plants .Prajakta, Purohit, Sharma, Kumar (2007)
Publ. by Agro bios (India) Agrohouse Jodhpur 342002.

Solapur University, Solapur

PRACTICALS IN BOTANY AT B.Sc. Part – II

(To be implemented from June 2014)

Botanical excursions – One teacher along with a batch not more than sixteen students be taken for Botanical excursions to places of botanical interest, one in each term. If there are female students in a batch of sixteen, one additional lady teacher is permissible for excursion. Each excursion will not be more than 3 days during college working days. T.A. and D.A. for teachers and non teaching staff participating in the excursions should be paid as per the rules. The tour report duly certified by the concerned teacher and the head of the department should be submitted at the time of practical examination.

Practical – I and II are to be covered in 25 practicals each. These practicals are to be performed by the students. Each practical is to be supplemented by permanent slides, preserved / fresh specimens / materials, charts, herbarium sheets, wherever necessary.

Every candidate must produce a certificate from Head of the Department in his / her college stating that he / she has completed practical course in a satisfactory manner as per the lines laid down by academic council on the recommendations of Board of Studies in Botany. The student should record his / her observations and report of each experiment should be written in the Journal.

The Journal is to be signed periodically by teacher in charge and certified by Head of the Department at the end of the year. Candidates have to produce their certified journal and tour reports at the time of practical examination. A candidate will not be allowed to appear for the practical examination without a certified journal, otherwise a candidate must produce a separate certificate of his / her regular attendance for practical course and completion of the same signed by the concerned teacher and Head of the Department.

Distribution of Marks:

Practical – I ----- 50 Marks

Sr. No.	Particulars	
1)	Structural Botany and Taxonomy of Angiosperms.	20 Marks
2.)	Plant Ecology	20 Marks
3.)	Journal	05 Marks
4.)	Tour report	05 Marks

Practical – II ----- 50 Marks

1)	Plant Physiology and Cytogenetics	20 Marks
2.)	Plant diversity and Utilization.	20 Marks
3.)	Journal	05 Marks
4.)	Horticultural Term Paper	05 Marks

Each practical examination (Practical I and II) should be of maximum. 5 hours duration and shall test a candidate in respect of following –

- i. Identification and preparation of temporary and permanent slides.
- ii. Practical study of external and internal structures of different plants as per the syllabus.
- iii. Identification of the angiosperm specimen and assigning to its family with FF and FD
- iv. Understanding of principles of the experiments.
- v. Identification and setting of ecological experiments.
- vi. Identification and setting of Physiological experiments.
- vii. Solving problems based on linkage and crossing over
- viii. Recording of observations and conclusions.
- ix. Identification of the plant specimen ,mounting (reproductive structures) and classification
- x. Identification and understanding of the practicals conducted with respect to development of plants and their utilization.
- xi. Spotting of the specimens as per the syllabus.
- x. Submission of the tour report and Horticultural term paper.

B.Sc. Part – II (Botany)

Practicals (Laboratory Exercise)

Practical No. I (Based on Paper – V & VI)

- 1) Study of organization in shoot tips of V S of- *Hydrilla / Bryophyllum* (w.m.).
- 2) Study of organization in root tips of V.S -of Onion / Aerial roots of *Ficus*
(w.m)
- 3) Study of primary structure of root and stem of monocot plant using hand sections
Or permanent slides (Maize)
- 4) Study of primary structure of root and stem of dicot plant using hand sections
Or permanent slides (Sunflower)
- 5) Secondary growth in dicot stem and root.(Sunflower)
- 6) Anomalous secondary growth in *Bignonia* stem by using permanent double stained technique
- 7) Anomalous secondary growth in *Dracaena* stem by using Permanent double stained technique.
- 8) Maceration technique
- 9) Study of Epidermal tissue system.
- 10) Study of Mechanical tissue system.
- 11) Study of Secretory tissue system..
- 12) Study of anatomy of porous (ring porous & diffused porous) and non porous wood
- 13-16) Study of Angiosperm families as per syllabus.
- 17) Study of the working and use of meteorological instruments.(Any three)
- 18) Study of soil pH and water holding capacity (any two soil samples)
- 19) Determination of density & frequency of different plant species by quadrat method.
- 20) To prepare a report on any ecosystem from nearby locality. (Supplementary)
- 21) Ecological adaptations in morphology and anatomy of hydrophytes –
 - 1) Submerged-(*Hydrilla*) 2) Floating, (*Eicchornia*) 3) Amphibious (*Typha*)
- 22) Ecological adaptation of xerophytes (*Nerium & Aloe*).
- 23) Ecological adaptations of Epiphyte (orchid) and parasite (*Cuscuta*)
- 24) Detection of Sulphate, Chloride From polluted water sample(Demo.)
- 25) Tour report (To be written separately and submitted)

Practical No. II -(Based on Paper VII & VIII)

- 1) Separation of photosynthetic pigments by ascending Paper chromatography
- 2) To study the effect of CO₂ concentration on the rate of photosynthesis
- 3) To study C₃ and C₄ plants by Kranz anatomy.
- 4) Estimation of TAN.
- 5) Study of root nodules in any legume crop.
- 6) Study of meiosis (Smear preparation) using onion buds.
- 7) and 08) Problems on linkage and crossing over
- 9) Study of *Sargassum*.
- 10) Study of *Puccinia*.
- 11) Study of *Anthoceros*.
- 12) Study of *Equisetum*
- 13) and 14) Study of *Pinus*.
- 15 Study of Vegetative, Floral morphology and pod in Chickpea, Red gram.
- 16) Study of fodder legumes- Source and uses- *Sesbania* and Lucern
- 17 Study of structure of oil storing tissues in sectioned seeds of Groundnut, and Coconut endosperm using micro chemical tests.
- 18, Study of vegetative, Floral and Fruit morphology of Cotton.
Microscopic structure Cotton fiber,
- 19-20 Study of plants (live or herbarium) used as resource of drugs as per theory.
- 21 Study of plant pesticides sources –(*Azadirachta sp.*,*Pongamia sp.*,
and Annona squamosa,Nicotiana)
- 22 Study of dyes -source and uses as per theory.
- 23-24) Study of ornamental plants, as per theory, seasons of flowering plants ,
, botanical name ,morphology and uses.
- 25 Horticultural term Paper-Based on plant utilizations- – Seasonals, perennials,
Climbers, cacti, succulents, bonsai, indoor plants and cut flowers etc.

Solapur University, Solapur

B.Sc. Part – II Practical Examination, March / April 2014

BOTANY PRACTICAL – I

Centre:

Total Marks: 50

Date:

Time: 11.00 am onwards

- N.B. :**
1. Draw near labelled sketches whenever necessary.
 2. Do not write about theoretical points, unless asked specifically.
 3. Record your observations carefully and neatly wherever asked.
-

- Q. 1 Make a double stained permanent micro preparation of a T.S. of Specimen A and show it to the examiner (No written answer) 07
- Q. 2 Macerate the given material 'B' and prepare the slide from it. Show the slide to the examiner (No written answer) 04
- Q-3 Assign the specimen 'C' to its respective family on the basis of characters observed by you in it. Give important vegetative and floral characters. Draw the floral diagram / write the floral formula of it (Written answer) 05
- Q. 4 Prepare the list quadrat of the marked area and find out the percentage Frequency / Density of different species there in. 08
- Q-5-** Set up the ecological experiment 'D' assigned to you & show it to the examiner 06
- or**
- Describe the ecological adaptation in the given specimen. 'D' 06
- Q. 6 Identifications
- a) Identify and describe (Anatomy) 02
 - b) Identify and describe (Anatomy) 02
 - c) Identify and describe (Ecology) 02
 - d) Identify and comment – (Ecology) 02
 - e) Identify and comment – (Ecology) 02
- Q. 7
- a) Journal 05
 - b) Excursion report. 05

SOLAPUR UNIVERSITY, SOLAPUR.
B Sc Part-II Practical examination-March/April 2015

Botany –Practical- I

Date-
Time- 11.00 a.m.Onwards

Marks-50
Centre-

Key to the Examiners

- Q1)-A-*Dracaena* ,*Bignonia* or, Sunflower stem 08 Marks.
- Q-2)B-Any stem(*Acacia*/Ashok stem) 04Marks
- Q-3-C-Poly/Gamo/Apetalae/Monocot family 05 Marks
- Q-4-Quadrat-for cal. of Density/frequency 08 Marks.
- Q-5- D-Ecological Experiment 05Marks.
(Soil pH,Water holding capacity of Soil.)
- Or
- Q-5-D-Ecological adaptation-(-Hydrophyte/Xerophyte sp.) 05 Marks.
- Q-6 Identifications- 10 Marks
- a) Anatomy-Meristems/wood types/Oil storing tissues.
 - b) Anatomy-Specimen/slide from tissue systems
 - c) Ecology-Ecological instrument.
 - d) Ecology-Specimen/Slide of hydrophyte/xerophytes which is not kept above.
 - e) Ecology-Epiphyte/Parasite (Slide/Specimen)
- Q-7-a) Journal 05 Marks.
- b) Tour report. 05 Marks.

Solapur University, Solapur.

B.Sc. Part – II Practical Examination, March / April 2014

BOTANY PRACTICAL - II

Centre:

Total Marks: 50

Date:

Time: 11.00 am onwards

- N.B. :**
1. Draw near labeled sketches wherever necessary.
 2. Do not write about theoretical points, unless asked specifically.
 3. Record your observations carefully and neatly wherever asked.
-

- Q. 1) Identify and show the important structures observed in the specimens A,B and C
(Prepare a slide from each specimen and show to the examiner) 12
(No written answer)
- Q. 2) Set up the physiological experiment assigned to you and record your
Observation, submit the report to the examiner. 08
(Written answer)
- Q-3) Identify the Specimen 'D' with its botanical name,give source and economic importance.
(written answer) 05
- Q-4) Solve the genetic problem based on linkage and crossing over. 05
(Written answer)
- Q. 5) Identifications:**
- a) Identify and comment – (Cytogenetics) 02
 - b) Identify and comment – (Plant utilization) 02
 - c) Identify and comment – (Plant utilization) 02
 - d) Identify and comment (Plant utilization) 02
 - e) Identify and comment (Plant utilization) 02
- Q. 6) a) Journal 05
b) Horticultural term paper 05

50

SOLAPUR UNIVERSITY, SOLAPUR.
B Sc Part-II Practical examination-March/April 2015
Botany –Practical- II

Date-
Time- 11.00 a.m.Onwards

Marks-50
Centre-

Key to the Examiners

Q-1)A- <i>Sargassum/Puccinia</i> .	04 Marks
B- <i>Anthoceros/Equisetum</i> .	04 Marks.
C- <i>Pinus</i> -(Malecone/FemaleCone/ <i>Pinus</i> needle)	04Marks
Q-2:-Physiological Experiment-	08Marks.
a)Estimation of TAN	
b)Pigment separation by Ascending paper chromatography.	
c) C3 and C4 plants.(Kranz anatomy)	
d)Effect of CO ₂ Concentration on the rate of photosynthesis.	
Q-3) Study of Drug/dyes	05 marks.
Q-4) Genetic problem based on linkage and crossing over.	05 Marks.
Q-5) Identifications-	10 Marks.
a) Bacterial root nodule.(Slide) /stage of meiosis	
b)Legumes Pulse/Fodder.	
c) Oil Storing tissues/Cotton fibre	
d)Insecticide sources (Any one).	
e)Ornamental plants(Any one).	
Q-6:-a) Journal	05marks
b) Horticultural term Paper.	05Marks.

SOLAPUR UNIVERSITY ,SOLAPUR

**Nature of Question Paper
(For Paper-V, VI, VII, & VIII)**

(Faculty Of Science)

(W .e .f. June 2014)

Time: 2 hrs.

Total Marks: 50

- Q.No.1) Multiple choice questions. (10)
- 1) -----
a) - b) - c) - d) -
2)
3)
4)
5)
6)
7)
8)
9)
10)
- Q.No.2) Answer any Five of the following (10)
- i)
ii)
iii)
iv)
v)
vi)
- Q.No.3) A) Answer any Two of the following (06)
- i)
ii)
iii)
- B) Write the Answer/Solve/Problem/Note (04)
- Q.No.4) Answer any Two of the following (10)
- i)
ii)
iii)
- Q.No.5) Answer any one of the following (10)
- i)
ii)