

SOLAPUR UNIVERSITY, SOLAPUR



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

CBCS

Pattern Syllabus

B.Sc. Part-II (Sem. III & IV)

BOTANY

With effect from June-2017

SOLAPUR UNIVERSITY, SOLAPUR

Proposed Syllabus for B.Sc.Part-II (CBCS Semester pattern)

BOTANY

(Introduced from June 2017)

Introduction:

With the view to ensure worldwide recognition, acceptability, horizontal as well as vertical mobility for students completing under graduate degree, Solapur University has implemented Choice Base Credit System of Evaluation at Undergraduate level.

The main objective of this course is to introduce CBCS semester system to the B.Sc-II (Botany) students which covers the basic concepts of Anatomy and Taxonomy of Angiosperms, Plant Ecology, Plant Physiology and Cytogenetics and Economic Botany.

B.Sc-II (Botany) CBCS Semester wise pattern to be introduced from June 2017. This syllabus of Botany carries 600 marks. In semester-III, university examination of theory papers V and VI and in semester-IV, university examination of theory papers VII and VIII. The university examination of practical-I based on paper-V, VI and practical-II based on paper-VII, VIII will be held annually. The distributions of marks are as below.

Moreover, the grading system of evaluation is introduced for B. Sc. course, wherein process of Continuous Internal Evaluation is ensured. The candidate has to appear for Internal Evaluation of 30 marks and University Evaluation for 70 marks. It is 70 + 30 pattern of evaluation. It is applicable for theory and practical as well. The details regarding this evaluation system are as under.

Semester No.	Paper No.	Title of the Paper	University Exam.	Internal Exam.	Total
III	BOTANY PAPER-V	Anatomy and Taxonomy of Angiosperms.	70	30	100
	BOTANY PAPER-VI	Plant Ecology.	70	30	100

IV	BOTANY PAPER-VII	Plant Physiology and Cytogenetics.	70	30	100
	BOTANY PAPER-VIII	Economic Botany.	70	30	100
Annual Examination	BOTANY PRACTICAL	Botany Practical-I Based on Paper-V, VI	70	30	100
		Botany Practical-II Based on Paper-VII, VIII	70	30	100

Note: Nature of Internal examination, Passing standard, ATKT and the conversion of marks into grades and credits are as per guidelines of Science Faculty Credit and Grading System.

Teaching Periods:

- (1) Total teaching periods for each theory paper is six periods per week.
- (2) Total teaching periods for each practical-I and practical-II are eight periods per week per batch of 20 students.

Duration of University Examinations:

1. For theory paper-V and VI: Two and half hours in semester-III.
2. For theory paper-VII and VIII: Two and half hours in semester-IV.
3. For practical-I: Four hours for a batch of 20 students annually.
4. For practical-II: Four hours for a batch of 20 students annually.

Equivalent Subject for Old Syllabus

Sr. No.	Name of the Old Paper	Name of the New Paper
1)	Paper – III: Structural Botany & Taxonomy of Angiosperms	Paper – V: Anatomy and Taxonomy of Angiosperms
2)	Paper-IV: Plant Ecology	Paper-VI: PLANT ECOLOGY
3)	Paper –V: Plant Physiology and Cytogenetics	Paper –VII: Plant Physiology and Cytogenetics
4)	Paper-VI: Utilization of Plant	Paper-VIII: Economic Botany

SOLAPUR UNIVERSITY, SOLAPUR

B.Sc. Part – II (Botany)

w.e.f.- JUNE, 2017

Semester – III

Paper – V: Anatomy and Taxonomy of Angiosperms (45 Periods)

Unit-1: Apical Meristem: **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

Unit-2: Permanent tissues **07**

- 2.1 Structure and functions of simple tissues.
- 2.2 Structure and functions of Complex tissues-
- 2.3 Types of vascular bundles

Unit-3: Tissue systems and their functions: **07**

- 3.1 Epidermal Tissue System
- 3.2 Secretory Tissue System
- 3.3 Mechanical Tissue System

Unit-4: Secondary body of the plant

8

- 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.-

Unit-5: Taxonomy of Angiosperms

16

5.1 Morphology of Inflorescence, Flower, Fruit.

5.2 Study of Angiosperm families with respect to classification, morphology of vegetative and reproductive parts, floral formula, floral diagram, diagnostic features and economic importance.

- a) Combretaceae b) Asclepiadaceae c) Amaranthaceae d) Liliaceae.

References Book:-

Paper – V: Anatomy and Taxonomy of Angiosperms.

1. P.C.Vashista. Plant Anatomy. Pradip Publications, Opposite Sitlamandir, 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. Carlquist, S. 1998. Comparative Wood Anatomy: Systematic, Ecological and Evolutionary Aspects of dicotyledonous Wood. Springer – Verlag, Berlin.
5. Culter, E.G. 1969. PartI. Cells and Tissues. Edward Arnold, London.
6. Culter, E.G. 1971. Plant Anatomy: Experiment and Interpretation. Part II Organs. Edward Arnold, London.
7. Esau, K. 1977. Anatomy of Seed Plants, 2nd edition, John Wifey and Sons, New York.
8. Fahn, A. 1974. Plant Anatomy, 2nd edition. Pergamon Press, Oxford.
9. Lyndon, R.F. 1990. Plant Development: The Cellular Basis. Unwin Hyman, London.
10. Mauseth, J.D. 1988. Plant Anatomy. The Bonjamin/Cummings Publishing Company Inc., Metro Park, California, USA.
11. Nair, M.N.B. 1998. Wood Anatomy and Major Uses of Wood. Faculty of Forestry, Universiti Putra Malaysia, 43400 Serdang, Selangor D.E., Malaysia.
12. Rahvan, V. 2000. Developmental Biology of Flowering Plants. Springer-verlag, New York.

13. Raven, P.H., Evert, R.F. and Eichhorn, S.E. 1999. *Biology of Plants*. 5th edition. W.H., Freeman and Co., Worth Publishers, New York.
14. Steeves, T.A. and Sussex, I.M. 1989. *Patterns in Plant Development*, 2nd edition. Cambridge University, Press, Cambridge.
15. Thomas, P. 2000. *Trees: Their Natural History*. Cambridge University Press, Cambridge
16. *Morphology of Angiosperms*, J M Coulter and C J Chamberlain, Pointer Publishers, Jaipur.
17. *Taxonomy of Angiosperm* R Pandey, S Chand and Co. Ltd, Ramnagar New Delhi.110055
18. *An Introduction to Taxonomy of Angiosperms*-Pritish Shukla, Shital P Mishra, Vikas Publishing House, Pvt.Ltd.Gaziabad, UP.
19. *A Text Book of Angiosperms*-B P Pandey, S Chand and Co Ltd.ramnagar, New Delhi.110055
20. *A Text Book of Botany -'Angiosperm'*,V Singh C Pande, D K Jain, Rastogi Publication, Shivaji Road Meerut.250002
21. *Taxonomy of Angiosperm*, Neeru Mathur, Sonali Publications, New Delhi, 110002.
22. *Angiosperms*-G L Chopra, Pradeep Publications, Jalandhar, 144008.
23. Simpson, M.G. (2006). *Plant Systematics*. Elsevier Academic Press, San Diego, CA, U.S.A.
24. Singh, G. (2012). *Plant Systematics: Theory and Practice*. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.
25. Jeffrey, C. (1982). *An introduction to plant Taxonomy*, Cambridge University Press, Cambridge.
26. Judd, W.S., Campbell, C.S., Kellogg, E.A., Steven, P.F. (2002). *Plant Systematics-A Phyllogenetic approach*. Sinauer Associates Inc., U.S.A. 2nd edition.
27. Maheshwari j.k. (1963). *Flora of Delhi*. CSIR, New Delhi.

Paper-VI: PLANT ECOLOGY

(45 Periods)

Unit-1: Introduction

06

1.1) Climatic factors.

1.2) Edaphic factors

Unit-2:CommunityEcology-

08

2.1) Form and structure of communities

2.2) Classification and Physiognomy.

2.3) Community characteristics

Unit-3: Ecosystem

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: Ecological Succession

06

4.1) Concept and process

4.2) Primary and Secondary succession

4.3) Hydrosere and xerosere

Unit-5:Ecological adaptations **08**

5.1) Introduction

5.2) Xeric, Hydric and Mesic adaptations

Unit-6: Pollution: **06**

6.1) Introduction

6.2) Air pollution-Definition, Sources of air pollutants, their effects and control measures.

6.3) Water pollution-Definition, Sources of water pollutants, their effects and Control measures.

References Book:-

Paper-VI: PLANT ECOLOGY

1. Odum, E.P. Ecology. Oxford&F.B.h.PublishingCo.pvt.LTD-New Delhi..
2. Barbour, M.G., Burk, J.H. and Pitts, W.D. 1987. Terrestrial Plant Ecology. Benjamin / Cummings Publication Co., California.
3. Kormondy, E.J. 1996. Concepts of Ecology, Prentice-Hall of India Pvt. Ltd., New Delhi.
4. Hill, M.K. 1997. Understanding Environmental Pollution. CambridgeUniversity Press.
5. Mackenzie, A. et al. 1999. Instant Notes in Ecology. Viva Books Pvt. Ltd., New Delhi.
6. Ashok Bendre / Ashok Kumar Economic Botany RastogiPublications Shivaji Road, Meerut – 250002 India.
7. Prof. M.A. Khan – Environment, Biodiversity and Couservation S-B Nangia, A.P.H. Publishing Corporation, 5, Ansari Road, Daryaganj New Delhi – 110002.

8. B.P. Pandey – Modern Practical Botany Vol – I / II Chand & Company Ltd. Ramnagar New Delhi – 110055.
9. B.P. Pandey – Economic Botany Vol – I / II Chand & Company Ltd. Ramnagar New Delhi – 110055.
10. Pavas Divan – Environ Protection – Deep & Deep Publications D-I 124, RajouriGarden, New Delhi – 110027.
11. P.S. Verma / V.K. Agrawal – Concept of Ecology, S. Chand & Lonpan Ltd. Ramnagar, New Delhi – 110055.
12. Eug Warming – Ecology of Plants, Ambey Publications Delhi (India)
13. Evgene P Odum – Ecology Oxford & IBH Publishing Co. Pvt. Ltd. Calcutta, New Delhi.
14. IshwarPrakash. Desert Ecology. Scientific Publications, Ratandas Road, Jodhpur.-342001-India.
15. T.W. Woodhead. Plant Ecology. SonaliPublications. New Delhi. 110002.
16. Eug. Warming. Ecology of Plant. Ambey Publications Delhi.
17. Jonathan Silvertown. Introduction To Population Plant Ecology. Longman Singapore .Publisher, LTD.
18. R.S. Shukla & P.S. Chandel. Plant Ecology. S.Chand & Company LTD. Ram Nagar, New Delhi. 110055.

SEMESTER- IV

Paper –VII: Plant Physiology and Cytogenetics

(45 periods)

Unit-1: Photosynthesis:

12

- 1.1 Introduction and significance
- 1.2 Photosynthetic apparatus
- 1.3 Photosynthetic pigments, accessory pigments, Photosystems – reaction center complexes
- 1.4 Light reaction – cyclic and non-cyclic
- 1.5 Dark reactions - Calvin cycle, C4 cycle, CAM (NADP – ME type)

Unit-2: Nitrogen metabolism

08

- 2.1 Introduction
- 2.2 Nitrogen cycle
- 2.2 Biological N₂ fixation – Definition, types & organisms involved
- 2.4 Mechanism of Biological Nitrogen fixation (Symbiotic and non symbiotic)
- 2.5 Significance of Biological Nitrogen fixation.

Unit-3: Genetics

12

- 3.1) Introduction, terminology
- 3.2) Mendelism – History,
- 3.3) Principles of inheritance – i. Law of dominance, ii. Law of purity of gametes, iii. Law of independent assortment.
- 3.4) Gene interaction – a. Definition, b. types – complementary, supplementary and inhibitory genes.

Unit-4: Classical genetics

6

4.1) Linkage-Definition, Kinds of Linkage-complete, incomplete and linkage groups, Significance of linkage.

4.2) Crossing over-Definition, Mechanism of crossing over, 'Break and exchange' theory, (Stern and Hotta, 1969), Significance of crossing over.

Unit: 5 Multiple allelism

7

5.5) Introduction and definition.

5.2) Eye colour in *Drosophila*.

5.3) Blood groups in man.

5.4) Self incompatibility in plant.

References Book:-

Paper –VII: Plant Physiology and Cytogenetics

1. Hopkins, W. G. 5995. Introduction to Plant Physiology. John Wiley & Sons, Inc., New York, USA.
2. Moore, T. C. 5989. Biochemistry and Physiology of Plant Hormones (2nd edition). Springer – Verlag, New York, USA.
3. Salisbury, F.B. and Ross, C.W. 5992. Plant Physiology (4th edition). Wadsworth Publishing Co., California, USA.
4. Taiz, L. and Zeiger, E. 5998. Plant Physiology (2nd edition) Sinauer Associates, Inc., Publishers, Massachusetts, USA.
5. R.C. Grewal – Plant Physiology Campus Brokes International 482/24, Prahiad street Ansari Road, Darya ganj, New Delhi – 550002.
6. V.K. Jain – Fundamentals of Plant Physiology, S. Chand & Company Ltd. Ramnagar, New Delhi – 550055.
7. Salisbury Ross – Plant Physiology CBS, Publishers & Distributions 485/ Jain Bhawan, BholeNath Nagar, Shahdara, New Delhi – 550022.
8. Devlin & Witham – Plant Physiology CBS Publishers & Distributors 485, Jain Bhavan, BholeNath Nagar, Shahdara, New Delhi – 550022.
9. G. Ray Noggle / G. Fritz Introductory Plant Physiology Prentice Hall of India Ltd. New Delhi – 550005.
10. V.Verma. Text Book Of Plant Physiology. Emkay Publications.,B-59,East Krishna Nagar, Delhi-5500055.
11. V.I. Paladin. Plant Physiology. Arihant Publishers. Jaypur, (India)
12. Dr. S. Sundararajan. Physiology Of Transport In Plants. Anmol Publications, Pvt. LTD. New Delhi.550002.
13. D.O.hall& K.K. Rao. Photosyntheis. Edward Arnold, East Street, Baltimore, Mary-land-25202,U.S.A.
14. P.S Verma,V.KAgarwal,CellBiology,Genetics,Evolution and Ecology,S.Chand and Co.Pvt.Ltd.,Ramnagar,New Delhi,550055

15. W.R.Singleton, Elements of Genetics, VanNostrand, ReinholdCo.melborne, AffiliatedeastwestPress, pvt.ltd. newdelhi.
16. A.M Winchester, Genetics, Oxford and IBH, PublishingCo. New Delhi-550055.
17. P.S Verma, V K Agarwal; Genetics, S Chand and Co. Ramnagar, New Delhi-550055
18. Dr (Mrs.) Veer Bala Rastogi, A text Book of Genetics, Kedarnath Ramnath road, Meerut-250005.
19. H.S. Bhamrah, Kavita Juneja, Genetics and Evolution, Anmol Publication, Pvt. Ltd. New delhi-550002.

Paper-VIII: Economic Botany

(45 Periods)

Unit-1: Legumes: Botanical names, Morphology, Source and Economic **07**

importance of Pulses-Chickpea and Red gram, legumes - Lucerne and *Sesbania*

Unit-2: Plant Fibers Botanical names, Morphology, Source and Economic **07**

importance of Cotton and Coir

Unit-3: Vegetable oil sources **07**

2.1. Botanical name, source and economic importance of – Groundnut, Soybean.

2.2 Brief account of cultural practices of Ground nut and Soybean.

Unit -4:- Drug Yielding plants **07**

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-5:- Natural Products **09**

4.1) **Rubber** – Introduction, properties of rubber, source (*Hevea brasiliensis*), morphological characters, extraction method and economic importance

4.2) Botanical pesticides-

Introduction- Botanical name, morphological characters, source and importance of Neem, Tobacco, Custard apple.

4.3) Plant Dyes - Botanical name, source and economic importance.

- a) Wood-Log wood, Kutch.
- b) Bark-Oak, Teak.
- c) Root and rhizome -Manjistha, Turmeric,
- d) Leaves- Indigo, Henna.
- e) Flowers-Saffron, Palas.

Unit 6: 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.*

Unit 7: Plants perfumes and cosmetics

04

6.1. Introduction, Botanical name, source and economic importance of Citronella, Jasmine, Rose, Aloe

References Book:-

Paper-VIII: Economic Botany

1. R.C. Grewal – Medicinal plants, Campus Books International 4825/24, Prahiad street, Ansari Road, Darya Ganj, New Delhi – 550002. Fax : 95-055-2257825.
2. F.O. Bower – Plants and Man Ariana Publishing House, New Delhi – 550052.
2. Fuller, K.W. and Galon, J.r. 5985. Plant Products and New Technology. Calrendon Press, Oxford, New York.
4. Kocchar, S.L. 5998. Economic Botany in Tropics, 2nd edition. Macmillan India Ltd., New Delhi.
5. Sambamurthy, A.V.S.S. and Subramanyam, N.S. 5989. A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi.
25. Sharma, O.P. 5996. Hill's Economic Botany. Tata McGraw Hill Publishing Company Ltd., New Delhi.
6. Simpson, B.B. and conner-Ogorzaly, M. 5986. Economic Botany – Plants in Our World. McGraw Hill, New York.
7. Tippto, O. and Stern, W.L. 5977. Humanistic Botany. W.W. Norton, New York.
8. B.P.Pandey Economic Botany. S.Chand& Company pvt. LTD. Ram Nagar New Delhi. 550055.
9. Bentley & Trimmen. Medicinal Plants. Asiatic Publishing house, 585 D.J. Extension, Laxmi Nagar. Delhi. 550092.
50. Robert Brentley & Henry Trimmen. Medicinal Plants. London J & A Chureldill. New Rulington Street.
55. He nery Kraemer Applied Economic Botany Ambey Publications, New Delhi.
52. A Textbook of economic Botany (EDN 5989)
By SAMBA MURTY & N S Subramanyam. Publ. Wiley Estern LTD. New Delhi .
52. A Text book of Medicinal plants .Prajakta, Purohit, Sharma, Kumar (2007)
Publ. by Agro bios (India) Agrohouse Jodhpur 242002.

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PRACTICALS IN BOTANY AT B.Sc. Part – II

(w.e.f.- June 2017)

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 5 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 ----- 70 Marks

Sr. No.	Particulars	
5)	Structural Botany and Taxonomy of Angiosperms.	25Marks
2.)	Plant Ecology	25Marks
2.)	Journal	10 Marks
4.)	Tour report	10 Marks

Practical – II ----- 70 Marks

5)	Plant Physiology and Cytogenetics	25 Marks
2.)	Utilization of Plant	25 Marks
2.)	Journal	10Marks
4.)	Horticultural Term Paper	10Marks

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 Floral Formula and Foral Diagram.
- 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)
2. Secondary growth in dicot stem and root.(Sunflower)
4. Anomalous secondary growth in *Bignonia* stem by using permanent double stained technique.
5. Anomalous secondary growth in *Dracaena* stem by using permanent double stained technique.
4. Maceration technique
5. Study of Epidermal tissue system.
6. Study of Mechanical tissue system.
7. Study of Secretory tissue system..
8. Study of anatomy of porous (ring porous & diffused porous) and non porous wood
9. Morphology of Inflorescence
10. Morphology of Flower
11. Morphology of Fruit
- 12-15. Study of Angiosperm families as per syllabus.
16. Study of the working and use of meteorological instruments.(Any three)
17. Study of soil pH (any two soil samples)

18. Study of water holding capacity (any two soil samples)
- 19-20. Determination of density & frequency of different plant species by quadrat method.
- 21) Ecological adaptations in morphology and anatomy of hydrophytes –
 Submerged-(*Hydrilla*) 2) Floating, (*Eicchornia*) 2) 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. To prepare report on any ecosystem from nearby locality (supplementary).
- 26) 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 C₂ and C₄ plants by Kranz anatomy.
- 4) Estimation of TAN.
- 5) Study of root nodules in any legume crop.
- 6) Study of mendelian traits
- 7) Study of multiple alleles – eye colour in *Drosophila* (with the help of photographs)
- 8) Study of meiosis (Smear preparation) using onion buds.
- 9-10) Problems on linkage and crossing over
- 11) Study of Vegetative, Floral morphology and pod in Chickpea, Red gram.

- 12) Study of fodder legumes- Source and uses- *Sesbania* and Lucern
- 13) Study of structure of oil storing tissues in sectioned seeds of Groundnut, and Coconut endosperm using micro chemical tests.
- 14) Study of vegetative, Floral and Fruit morphology of Cotton.
Microscopic structure Cotton fiber,
- 15-18) Study of plants (live or herbarium) used as resource of drugs as per theory.
- 19) Study of plant pesticides (as per theory)
- 20) Study of dyes -source and uses (as per theory)
- 21-22) Study of ornamental plants, seasonals of flowering plants, botanical name morphology and uses. (as per theory)
- 23) Study of plant perfumes and cosmetics (as per theory)
- 24-25) Horticultural term Paper-Based on – theory syllabus etc.

Solapur University, Solapur

B.Sc. Part – II Practical Examination, March / April 201--

BOTANY PRACTICAL – I

Centre:

Total Marks: 70

Date:

Time: 11.00 a.m. onwards

N.B.:

5. Draw near labeled sketches whenever necessary.
 2. Do not write about theoretical points, unless asked specifically.
 2. Record your observations carefully and neatly wherever asked.
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Q. 5 Make a double stained permanent micro preparation of a T.S. of Specimen A and show it to the examiner (No written answer) 08

Q. 2 Macerate the given material 'B' and prepare the slide from it. Show the slide to the examiner (No written answer) 05

Q-2 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). 08

Q. 4 Prepare the list quadrat of the marked area and find out the percentage

Frequency / Density of different species there in. 05

Q-5- Set up the ecological experiment 'D' assigned to you & show it to the examiner

09

Or

Describe the ecological adaptation in the given specimen. 'D'

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

70

Solapur University, Solapur.

B.Sc. Part – II Practical Examination, March / April 201....

BOTANY PRACTICAL – II

Centre:

Total Marks: 70

Date:

Time: 11.00 am onwards

N.B. : 5. Draw neat labeled sketches wherever necessary.

2. Do not write about theoretical points, unless asked specifically.

2. Record your observations carefully and neatly wherever asked.

Q. 5) Set up the physiological experiment assigned to you and record your observation, submit the report to the examiner (Written answer).

09

Q. 2) Arrange the physiological experiment given to you and show it to the examiner.

(No written answer).

06

Q-2) Solve the genetic problem based on linkage and crossing over.(Written answer).

08

Q-4) Identify, give the botanical name, source and economic importance of Specimen 'A' (Written answer).

09

Q. 5) Identify, give the botanical name, and uses of Specimen 'B' & 'C'.(written answer). 08

Q. 5) Identifications:

- | | |
|---|----|
| a) Identify and comment – (Cytogenetics) | 02 |
| b) Identify and comment – (Economic Botany) | 02 |
| c) Identify and comment – (Economic Botany) | 02 |
| d) Identify and comment (Economic Botany) | 02 |
| e) Identify and comment (Economic Botany) | 02 |

Q. 6) a) Journal 05

b) Horticultural term paper 05

70