

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



Name of the Faculty: Science and Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: BOTANY

Name of the Course: B.Sc. I (Sem-I&II)

(Syllabus to be implemented from w.e.f. June 2019)

Subject/ Core Course	Name and Type of the Paper		No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class :	B.Sc.- I Semester – I									
Ability Enhancement Course(AECC)	English(communication skill)		Paper- I	4.0			100	80	20	4.0
Core (*Students can opt any Four Subjects from the Twelve Subjects Listed below. Out of these Four Subjects One Subject will be CORE and other Three will be ELECTIVE Subjects.)	DSC 1A Microbiology, Phycology		Paper-I	2.5	--	--	50	40	10	4.0
	Fungi, Archegoniate		Paper-II	2.5	--	--	50	40	10	
	DSC 2A		Paper-I	2.5	--	--	50	40	10	4.0
			Paper-II	2.5	--	--	50	40	10	
	DSC 3A		Paper-I	2.5	--	--	50	40	10	4.0
			Paper-II	2.5	--	--	50	40	10	
	DSC 4A		Paper-I	2.5	--	--	50	40	10	4.0
			Paper-II	2.5	--	--	50	40	10	
Total				24	--	--	500	400	100	20
Class :	B.Sc.- I Semester – II									
Ability Enhancement Course(AECC)	English (communication skill)		Paper- II	4.0			100	80	20	4.0
Core (*Students can opt any Four Subjects from the Twelve Subjects Listed below. Out of these Four Subjects One Subject will be CORE and other Three will beELECTIVE Subjects.)	DSC1B Plant Ecology		Paper-III	2.5	--	--	50	40	10	4.0
	Taxonomy of Angiosperms		Paper-IV	2.5	--	--	50	40	10	
	DSC 2B		Paper-III	2.5	--	--	50	40	10	4.0
			Paper-IV	2.5	--	--	50	40	10	
	DSC 3B		Paper-III	2.5	--	--	50	40	10	4.0
			Paper-IV	2.5	--	--	50	40	10	
	DSC 4B		Paper-III	2.5	--	--	50	40	10	4.0
			Paper-IV	2.5	--	--	50	40	10	
Democracy, Elections and Good Governance			3.0			50	40	10	NC	
Total (Theory)				27	--	--	550	440	110	20
Core	DSC 1 A & 1B		Practical I and II	--	--	4	100	80	20	4.0
	DSC 2 A & 2B		Practical I and II	--	--	4	100	80	20	4.0
	DSC 3A & 3B		Practical I and II	--	--	4	100	80	20	4.0
	DSC 4A & 4B		Practical I and II	--	--	4	100	80	20	4.0
Total (Practical)						16	400	320	80	16
Grand Total				51		16	1450	1160	290	56

Core Subject : Botany

PUNYASHLOK AHILYADEVI HOLKAR

Solapur University, Solapur

Faculty of Science

Choice Based Credit System (CBCS) (w.e.f.2020-21)

Subject/ Core Course	Name and Type of the Paper		No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class :	B.Sc.- II Semester – III									
Core (*Students can opt any Three subjects among the Four Subjects offered at B.Sc.I. Out of Three Subjects offered One Subject will be the Core Subject OR Subject will be the Core Subject	DSC 1C	Paper-V	3.0	--	--	50	40	10	4.0	
		Paper-VI	3.0	--	--	50	40	10		
Subjects offered at B.Sc.I. Out of Three Subjects offered One Subject will be the Core Subject OR Subject will be the Core Subject	DSC 2C	Paper-V	3.0	--	--	50	40	10	4.0	
		Paper-VI	3.0	--	--	50	40	10		
Subject will be the Core Subject OR Subject will be the Core Subject	DSC 3C	Paper-V	3.0	--	--	50	40	10	4.0	
		Paper-VI	3.0	--	--	50	40	10		
	AECC - Environmental Studies SEC-1		3.0	--	--	-	-	-	NC	
			2.5			50	40	10	2.0	
Grand Total			23.5	--	--	350	280	70	14	
Class :	B.Sc.- II Semester – IV									
Core (*Students can opt any Three subjects among the Four Subjects offered at B.Sc.I. Out of Three Subjects offered One Subject will be the Core Subject OR Students can opt any Two subjects among the Four Subjects offered at B.Sc.I. Out of Two Subjects One Subject will be the Core Subject and any One Subject among the other will be Elective Subject	DSC 1D	Paper-VII	3.0	--	--	50	40	10	4.0	
		Paper-VIII	3.0	--	--	50	40	10		
	DSC 2D	Paper-VII	3.0	--	--	50	40	10	4.0	
		Paper-VIII	3.0	--	--	50	40	10		
	DSC 3D	Paper-VII	3.0	--	--	50	40	10	4.0	
		Paper-VIII	3.0	--	--	50	40	10		
	SEC-2		2.5			50	40	10	2.0	
Total (Theory)			20.5	--	--	350	280	70	14	
DSE (Practical)	DSC 1C & 1D	Pr. III&IV	--	--	8	100	80	20	4.0	
	DSC 2C & 2D	Pr. III&IV	--	--	8	100	80	20	4.0	
	DSC 3C & 3D	Pr. III&IV	--	--	8	100	80	20	4.0	
Total (Practical)					24	300	240	60	12	

Grand Total			43.5		24	1000	800	200	40
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Draft Structure for B. Sc-II

Core Subject : Botany

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Solapur University, Solapur

Faculty of Science

Choice Based Credit System (CBCS)

(w.e.f.2021-22)

Draft Structure for B. Sc-III

Subject/ Core Course	Name and Type of the Paper		No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits	
	Type	Name		L	T	P					
Class :	B.Sc.- III Semester – V										
Ability Enhancement Course(AECC)	English (Business English)		Paper- III	4.0	--	--	100	80	20	4.0	
Discipline Specific Elective (DSE)	(Students can opt any one subjects among the three Subjects excluding interdisciplinary offered at B.Sc II.		DSE-1A	Paper- IX	3	--	--	100	80	20	4.0
	DSE- 2 A	Paper -X	3	--	--	100	80	20	4.0		
	DSE- 3 A	Paper- XI	3	--	--	100	80	20	4.0		
	DSE- 4 A	Paper- XII	3	--	--	100	80	20	4.0		
	SEC- 3		2.5	--	--	50	40	10	2.0		
Grand Total				18.5	--	--	550	440	110	22	
Class :	B.Sc.- III Semester –VI										
Ability Enhancement Course(AECC)	English (Business English)		Paper IV	4.0	--	--	100	80	20	4.0	
DSE	(Students can opt any one		DSE- 1B	Paper -XIII	3.0	--	--	100	80	20	4.0
			DSE- 2B	Paper- XIV	3.0	--	--	100	80	20	4.0

subjects among the three									
Subjects excluding interdisciplinary offered at B.Sc. II.									
	DSE- 3 B	Paper- XV	3.0	--	--	100	80	20	4.0
	DSE- 4 B	Paper- XVI	3.0	--	--	100	80	20	4.0
SEC	SEC- 4		2.5	--	--	50	40	10	2.0
Total (Theory)			18.5	--	--	550	440	110	22
DSE (Practical Annual Exam)	DSE- 1 A&B	Practical- IX & XIII	--	--	4	100	80	20	4.0
	DSE -2 A&B	Practical- X&XIV	--	--	4	100	80	20	4.0
	DSE- 3 A&B	Practical- XI&XV			4	100	80	20	4.0
	DSE- 4 A& B	Practical- XII & XVI			4	100	80	20	4.0
	Total (Practicals)					24	400	320	80
Grand Total			37.5		24	1500	1200	300	56

Summary of the Structure of B.Sc. Programme
as per CBCS pattern

Class	Semester	Marks-Theory	Credits-Theory	Marks-Practical	Credits-Practicals	Total – credits
B.Sc.-I	I	500	20	--	--	20
	II	550	20	400	16	36
B.Sc.-II	III	350	14	--	--	14
	IV	350	14	300	12	26
B.Sc.-III	V	550	22	--	--	22
	VI	550	22	400	16	38
Total		2850	112	1100	44	156

B.Sc. Programme:

Total Marks : Theory + Practical's = 2850 + 1100 = 3950

Credits : Theory + Practical's = 112 + 44 = 156

Numbers of Papers Theory: Ability Enhancement Course (AECC) : 05

Theory: Discipline Specific Elective Paper (DSE) : 08

Theory: DSC : 14

Skill Enhancement Courses : 04

Total : Theory Papers : 31

Abbreviations:

L: Lectures

T: Tutorials

P: Practicals

UA: University Assessment

CA: College Assessment

DSC / CC: Core Course

AEC: Ability Enhancement Course

DSE: Discipline Specific Elective Paper

SEC: Skill Enhancement Course

GE: Generic Elective

CA: Continuous Assessment

ESE: End Semester Examination

PUNYASHLOK AHILYADEVJI HOLKAR
Solapur University, Solapur
Faculty of Science
Choice Based Credit System (CBCS), (w.e.f June.2019-20)
Structure for B. Sc-I
***Core Subjects: Botany**

Objective and Outcome of the Course
Syllabus of B. Sc.-I, CBCS Pattern
Botany, w.e.f. June-2019
DSC -1-A

Semester- I

Paper No-I: Microbiology and Phycology

Unit 1: Introduction of Microbiology

Objective: To get the knowledge about the basic concepts in microbiology

Outcome: The student can understand the basic concept of microbiology

Unit 2: Microbes

Objective: To get the knowledge about the characters, structure and economic importance of viruses. Knowledge about the forms, size and diversity of bacteria and about the Mycoplasma

Outcome: The student can understand in detail about the viruses, diversity of bacteria and about the Mycoplasma

Unit 3: Phycology

Objective: To get the knowledge about the characters, classification and economic importance of algae

Outcome: The student can understand importance of algae

Unit:4: Cyanophyta

Objective: To get the knowledge about the general Characters, occurrence, classification, Thallus organization & reproduction of Cyanophyta division along with the example *Nostoc*

Outcome: The student can understand in detail about the division Cyanophyta along with its one detailed example of *Nostoc*

Unit 5: Chlorophyta

Objective: To get the knowledge about the general Characters, occurrence, classification, Thallus organization & reproduction of chlorophyta division along with the example *Nostoc*

Outcome: The student can understand in detail about the division chlorophyta along with its one detailed example of *Spirogyra*

Paper -II

Fungi and Archegoniate

Unit 1: Fungi

Objective: To get the knowledge about characters, mode of nutrition & classification of the True fungi.

Outcome: The student can understand about the general introduction of true fungi.

Zygomycotina

Objective: To get the knowledge about the fungal division Zygomycotina

Outcome: The student can understand about division of Zygomycotina.

Ascomycotena

Objective: To get the knowledge about the fungal division Ascomycotina.

Outcome: The student can understand about the division of Ascomycotina

Unit 2: Archegoniate

Objective: To get Knowledge about Introduction & general characters of Archegoniate

Outcome: The student get an detailed idea about Archegoniate

Unit 3: Bryophytes

Objective: To get the knowledge about the Bryophytes with suitable example

Outcome: The student can understand about the Bryophytes and life cycle of *Riccia* with its economic importance.

Unit 4: Pteridophyta

Objective: To get the knowledge about the Pteridophytes with suitable example.

Outcome: The student can understand about the Pteridophytes and life cycle of *Selaginella* with its economic importance..

Unit 5: Gymnosperms

Objective: To get the knowledge about the Gymnosperms with suitable example

Outcome: The student can understand about the Gymnosperms and life cycle of *Cycas* with its economic importance.

Paper No. III

Plant Ecology

Unit 1: Introduction

Objective: To get the knowledge about the climatic and Edaphic factors of environment

Outcome: The student can understand about the Climatic and Edaphic factors of environment.

Unit 2: Ecological Adaptations

Objective: To get the knowledge about the Ecological adaptations.

Outcome: The student can understand about the Ecological adaptations in plants.

Unit 3: Plant communities

Objective: To get the knowledge about the Forms & structure of community along with Qualitative and quantitative characters of community

Outcome: The student can understand about the Plant communities

Unit 4: Ecology

Objective: To get the knowledge about Introduction, Components of ecosystem, Ecological pyramids with Food chain and food webs.

Outcome: The student can understand about the concepts of ecology

Unit 5: Ecological succession

Objective: To get the knowledge about the Ecological succession

Outcome: The student can understand about the Ecological succession

Taxonomy of Angiosperms

Unit 1: Introduction

Objective: To get knowledge about different concepts in taxonomy

Outcome: The student can understand about importance of taxonomy

Unit 2: Classification

Objective: To understand different classification systems and its merit & demerits

Outcome: The student can understand about classification systems in taxonomy

Unit 3: Identification and nomenclature

Objective: To understand Identification methods, Nomenclature, Principles and Rules of ICBN

Outcome: The student can understand different methods of classification and rules of nomenclature

Unit 4: Herbarium and Botanical Garden

Objective: To understand technique of herbarium preparation and significance

Outcome: The student can understand technique and botanical gardens in India

Unit 5: Study of Angiosperm families

Objective: To study morphological & reproductive characters of 4 families

Outcome: The student can understand detailed identifying characters of family

Botany, w.e.f. June-2019

DSC -1-A

Semester- I

Paper No-I: Microbiology & Phycology

Microbiology & Phycology (Lecture 35)

- Unit-1** : Introduction of microbiology (02 lecture)
- Unit-2** **Microbes** (09 lectures)
- 2.1** **Viruses:** General characters, structure, classification (plant viruses) and economic importance of viruses.
- 2.2** **Bacteria:** General characters of bacteria, structure and Economic importance.
- 2.3** **Mycoplasma:** General characters, Structure, classification and significance.
- Unit-3** **Phycology** (09 lectures)
- 3.1** Introduction, general characters and classification of algae (As per Smith-1955) up to class.
- 3.2** Economic importance of Algae
- Unit-4** **Cyanophyta** (07 lectures)
- 4.1** General Characters
- 4.2** Study of *Nostoc* – Occurrence, Classification, thallus structure and reproduction. (excluding developmental stages)
- Unit-5** **Chlorophyta** (08 lectures)
- 5.1** General Characters
- 5.2** Study of *Spirogyra* - Occurrence, Classification, thallus structure and reproduction (excluding developmental stages)

References Book

1. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
2. Prescott, L.M., Harley J.P., Klein D. A. (2005). Microbiology, Mc Graw Hill, India. 6th edition.
3. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
4. Sahoo, D. (2000). Farming the ocean: seaweeds cultivation and utilization. Aravali International, New Delhi.
5. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008). Biology, Pearson Benjamin Cummings, USA. 8th edition.
6. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata Mc Graw-Hill Co, New Delhi.

Paper-II: Fungi & Archegoniate

Fungi & Archegoniate

(Lecture 35)

Unit-1	Fungi	(08lecture)
1.1	General characters, Nutrition and classification of fungi up to class (as per Ainsworth).	
1.2	Economic importance of Fungi	
1.3	Study of <i>Mucor</i> - Occurrence, Thallus organisation, classification and Life cycle. (excluding developmental stages)	
1.4	Study of Yeast-Occurrence, Thallus organization, classification and life cycle. (excluding developmental stages)	
Unit 2	Archegoniate	(04 Lectures)
2.1	Introduction	
2.2	General characters.	
Unit 3	Bryophytes	(07 Lectures)
3.1	General characters, and Classification (as per G. M. Smith)	
3.2	Study of <i>Riccia</i> - Occurrence, classification, thallus structure (External and Internal) and reproduction (Excluding development).	
3.3	Economic importance of Bryophytes	
Unit 4	Pteridophytes	(8 Lectures)
4.1	General characters and classification up to class (as per G. M. Smith)	
4.2	Study of <i>Sellaginella</i> - Occurrence, classification, morphology of sporophyte, anatomy (stem) and reproduction (Excluding development).	
4.3	Economic importance of Pteridophyte	
Unit 5	Gymnosperms	(08 Lectures)
5.1	General characters and classification (As per Sporne)	
5.2	Study of <i>Cycas</i> - Occurrence, classification, morphology (Sporophyte, Corolloid root), anatomy of leaflet and reproduction of <i>Cycas</i> (Structure of male and female reproductive structures excluding development).	
5.3	Economical importance of Gymnosperms	

References Book

1. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. Delhi, India.
2. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
3. Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
4. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
5. Vander-Poorteri 2009 Introduction to Bryophytes. COP.
6. Agrios, G.N. 1997 Plant Pathology, 4th edition, Academic Press, U.K.
7. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley & Sons (Asia) Singapore. 4th edition.
8. Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge University Press, Cambridge. 3rd edition.
9. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Publishers India Ltd.
10. Sharma, P.D. (2011). Plant Pathology, Rastogi Publication, Meerut, India.
11. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
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Syllabus of B. Sc.-I, CBCS Pattern
Botany, w.e.f. June-2019
DSC -1-A
Semester- II

Paper No-III: Plant Ecology

Plant Ecology **(Lecture 35)**

Unit 1: Introduction (05 Lectures)

- 1.1. Climatic factor- Light, Temperature, Humidity, Wind & Rainfall.
- 1.2. Edaphic factor- Soil formation, Soil profile, Classification & Chemical properties of soil.

Unit 2: Ecological Adaptation (8 Lectures)

- 2.1. Introduction.
- 2.2. Hydric Adaptation.
- 2.3. Xeric Adaptation.

Unit 3: Plant communities (8 Lectures)

- 3.1. Introduction.
- 3.2. Forms & structure of community.
- 3.3. Classification.
- 3.4. Qualitative and quantitative characters of community

Unit 4: Ecosystem (8 Lectures)

- 4.1. Introduction.
- 4.2. Concept & type.
- 4.3. Components of ecosystem.
- 4.4. Ecological pyramids.
- 4.5. Food chain and food webs.

Unit 5: Ecological succession (6 Lectures)

- 5.1. Introduction.
- 5.2. Concept & process.
- 5.3. Hydrosere and Xerosere.

References;

1. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
3. Odum, E.P. Ecology. Oxford & F.B.h. Publishing Co. Pvt. LTD - New Delhi.
4. Barbour, M.G., Burk, J.H. and Pitts, W.D. 1987. Terrestrial Plant Ecology. Benjamin Cummings Publication Co., California.
5. Kormondy, E.J. 1996. Concepts of Ecology, Prentice-Hall of India Pvt. Ltd., New Delhi.
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9. Prof. M.A. Khan – Environment, Biodiversity and Conservation S-B Nangia, A.P.H. Publishing Corporation, 5, Ansari Road, Daryaganj New Delhi – 110002.
10. B.P. Pandey – Modern Practical Botany Vol – I / II Chand & Company Ltd. Ramnagar New Delhi – 110055.
11. R.S. Shukla & P. S. Chandel. Plant Ecology. S. Chand & Company LTD. Ram Nagar, New Delhi. 110055.
12. Pava Divan – Environ Protection – Deep & Deep Publications D-I 124, Rajouri Garden, New Delhi – 110027.
13. P.S. Verma / V.K. Agrawal – Concept of Ecology, S. Chand & Lonpan Ltd. Ramnagar, New Delhi – 110055.
14. Eug Warming – Ecology of Plants, Ambey Publications Delhi (India)
15. Eugene P Odum – Ecology Oxford & IBH Publishing Co. Pvt. Ltd. Calcutta, New Delhi.
16. Ishwar Prakash. Desert Ecology. Scientific Publications, Ratandas Road, Jodhpur. - 342001-India.
17. T.W. Woodhead. Plant Ecology. Sonali Publications. New Delhi. 110002.
18. Eug. Warming. Ecology of Plant. Ambey Publications Delhi.
19. Jonathan Silvertown. Introduction To Population Plant Ecology. Longman Singapore .Publisher, LTD.

Paper- IV: Taxonomy of Angiosperms

Taxonomy of Angiosperms

(Lecture 35)

Unit 1:	1.1. Introduction	(4 Lectures)
	1.2. Aims and Principles of Taxonomy	
Unit 2:	Classification	(8 Lectures)
	2.1. Types of classification: Artificial, Natural and Phyllogenetic.	
	2.2 Bentham and Hooker system of classification	
	2.3 Merits and demerits	
Unit 3:	Identification and nomenclature	(8 Lectures)
	3.1 Identification of plants	
	3.2 Nomenclature, Binomial nomenclature of plants	
	3.3 Principles of ICBN.	
Unit 4:	Herbarium and Botanical Garden	(5 Lectures)
	4.1 Herbarium- Steps in preparation and significance.	
	4.2 Botanical gardens of India- Sir J. C. Bose Botanical Garden, Calcutta & Lead Botanical Garden of Shivaji University Kolhapur.	
Unit 5:	Study of Angiosperms families	(10 Lectures)
	5.1 Systematic position, Morphological & distinguishing characters with economic importance of following families:	
	a) Caesalpiniaceae b) Solanaceae	
	c) Nyctaginaceae d) Liliaceae	

References:

1. Morphology of Angiosperms, J M Coulter and C J Chamberlain, Pointer Publishers, Jaipur.
2. Taxonomy of Angiosperm R Pandey, S Chand and Co. Ltd, Ramnagar New Delhi.110055
3. An Introduction to Taxonomy of Angiosperms- Pritish Shukla, Shital P Mishra, Vikas Publishing House, Pvt. Ltd. Gaziabad, UP.
4. A Text Book of Angiosperms-B P Pandey, S Chand and Co Ltd. Ramnagar, New Delhi.110055
5. A Text Book of Botany -'Angiosperm,V Singh C Pande, D K Jain, Rastogi Publication, Shivaji Road Meerut.250002
6. Taxonomy of Angiosperm, Neeru Mathur, Sonali Publications, New Delhi, 110002.
7. Angiosperms-G L Chopra, Pradeep Publications, Jalandhar, 144008.
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List of Practicals (based on paper no I to IV):

1. Study of dissecting and compound microscope.
 2. Electron micrographs/Models of viruses - T-Phage and TMV (photographs/models).
 3. Gram staining (demonstration) and forms of Bacteria (permanent slides/photographs).
 4. Identification of Algae (*Volvox*, *Sargassum*, *Gracillaria*,)
 5. Study of *Nostoc*.
 6. Study of *Spirogyra*.
 7. Identification of Fungi (*Albugo*, *Penicilium*, *Agaricus*,)
 8. Study of *Mucor*.
 9. Study of Yeast
 10. Identification of Archegoniates (*Marchantia*, *Adantium*, *Pinus*)
 11. Study of *Riccia*.
 12. Study of *Selaginella*- Morphology of sporophyte and anatomy of stem, Strobilus.
 13. Study of *Cycas*- Morphology of sporophyte and anatomy of leaflet.
 14. Study of *Cycas*- Reproductive structure: male cone, microsporophyll, microspore and megasporophyll, L. S. of ovule (permanent slide).
 15. - 18. Study of plant families:
 - a) Caesalpiniaceae
 - b) Solanaceae.
 - c) Nyctaginaceae
 - d) Liliaceae
 19. Study of soil P^H by Universal indicator/pH paper/pH meter.
 20. Study of Water holding capacity of different soil.
 21. Study of meteorological instruments (any three).
 22. Determination of Density and Frequency of plants by quadrat method.
 23. Ecological adaptations of Hydrophytes (*Hydrilla*, *Eichhornia* and *Typha*).
 24. Ecological adaptations of Xerophytes (*Nerium* and *Aloe*).
 25. Excursion report.
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PUNYASHLOK AHILYADEVJI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

Practicals of B.Sc. Part– I Botany (Semester System) (With effect from June 2019) Botanical Excursion: One teacher along with a batch not more than 20 students be taken for Botanical Excursion to places of Botanical interest, one in each term. If there are female students in a batch of twenty students, one additional lady teacher is permissible for excursion. T.A. and D.A. for teacher and non-teaching staff participating in excursions should be paid as per University rules. Tour report duly certified by teacher concerned and Head of the Department should be submitted at the time of practical examination. Practical Course: B.Sc. Part – I Botany practical course is to be covered in twenty five practicals. 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, meteorological instruments where ever necessary.

Details of Practical Examination:

A) Every candidate must produce a certificate from Head of Department of his / her college, saying that he / she has completed practical course in satisfactory manner as per terms laid down by Academic council on the recommendations of Board of Studies in Botany. The student should record his / her observation and report of each experiment in the journal. The journal is to be signed periodically by teacher Incharge and certified by the Head of Department at the end of year. Candidates have to produce their certified journal and tour report at the time of practical examination. Candidate is not allowed to appear for the practical examination without a certified journal / loss certificate from Head of Botany Department regarding the same.

B) Practical Examination should be of five hours duration and shall test a candidate in the following respect. 1. Practical study of external and internal structures of different plant types and their classification. 2. Making temporary stained preparations and identification. 3. Identification and setting of biochemical experiments. 4. Study of plant families as per syllabus. 5. Spotting of the specimens as per syllabus.

1. Structure of the courses:-

A) Each paper of every subject for Arts, Social Sciences & Commerce Faculty shall be of 50 marks as resolved by the respective faculties and Academic Council.

B) For Science Faculty subjects each paper shall be of 100 marks and practical for every subject shall be of 100 Marks as resolved in the faculty and Academic Council.

C) For B. Pharmacy also the paper shall be of 50 marks for University examination. Internal marks will be given in the form of grades.

D) For courses which were in semester pattern will have their original distribution already of marks for each paper.

E) For the faculties of Education, Law, Engineering the course structure shall be as per the resolutions of the respective faculties and Academic Council.

2. Practical Examination for B. Sc. I. will be conducted at the end of second semester.

3. Examination fees for semester Examination will be decided in the Board of Examinations. The structures of all courses in all Faculties were approved and placed before the Academic Council. After considered deliberations and discussion it was decided not to convene a meeting of the Academic Council for the same matter as there is no deviation from any decision taken by Faculties and Academic Council. Nature of Question Paper approved by Hon. Vice Chancellor on behalf of the Academic Council.

**PUNYASHLOK AHALYADEVJI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR**

B.Sc. Part- I: Practical Examination in Botany

March/April 2020

Centre:

Batch:

Date:

Total Marks -80

- N. B.** 1. Draw neat and labeled diagrams wherever necessary.
2. Do not write about points of theoretical information unless asked specifically.
3. Perform the experiment as per instructions given by the examiners.
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Q. 1. Identify and show the important structures observed by you in the given specimen- A, B and C. leave your preparation for inspection. (No written answer) **24**

Q. 2. Determine Density/Frequency of plants of given quadrat. **08**

Q. 3. Set up the ecological experiment- D assigned to you and shows it to the examiner (No Written answer). **08**

OR

Show the ecological adaptation in the given specimen- E (No written answer).

Q. 4. Assign the specimen- 'F' to its respective family on the basis of characters observed by you in it. Give important vegetative and floral characters. Draw the floral diagram/floral formula of it. **10**

Q. 5. Identifications **10**

a. Identify and describe the slide/photograph- **G** (*Viruses/ Gram staining/ Types of bacteria*).

b. Identify and describe- **H** (*Algae/Fungi*).

c. Identify and describe- **I** (*Bryophyte/Pteridophyte/Gymnosperm*).

d. Identify and describe- **J** (*Vegetative character/Reproductive character*).

e. Identify and describe the specimen- **K** (*Meteorological instrument*).

Q. 6. a. Journal **10**

b. Excursion report. **10**