SOLAPUR UNIVERSITY, SOLAPUR.

Revised Semester pattern Syllabus.

B.Sc.Part-I (Botany)

w.e.f June-2013

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

Syllabus for B.Sc.-I Botany-To be implemented from June 2013

Course Structure:-

Sr. No	Semester	Paper No.	Title of the paper	Number of Lectures	Total Marks
1	I	I	Microbiology & Cryptogams	35	50
2	I	II	Plant Physiology and Horticulture	35	50
3	II	III	Gymnosperms and Angiosperms	35	50
4	II	IV	Cell Biology, Genetics and Plant Biotechnology.	35	50
5	Practicals-		Based on Paper- No-I to IV	-	50
			Total Marks - (For Theory and Practicals)		250

2) Introduction: Up to XIIth standard, students have studied Botany as a part of subject Biology. At University level, students have to study Botany as one of the subjects. This University has accepted the semester system since June 2009 at

B. Sc. Part –I. Students have to study two papers in each semester of 50 Marks each in each semester.

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.

iii) They can get jobs in different industries viz. Hybrid seeds industries, Bio-fertilizer industries and Research Institutes etc.

iv) To update the knowledge of Life science.

v) Students can play important role in environment Protection and biodiversity conservation.

5) Eligibility:-XIIth Science pass and also XII th MCVC pass with one of the Agri.Subjects.

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

7) Medium of Instruction: - English.

8) Examination pattern - There are four theory papers carrying 50 marks each for B.Sc Part –I. The students have to appear for theory examination based on Paper –I and –II during Semester-I - and for the Paper III and IV during Semester II- The practical course is to be covered in twenty- six practicals based on theory paper no. I, II III and IV and the practical examination of 50 marks will be conducted at the end of semester II.

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

Sr.No	Pre-revised	Marks	Re-vised	Marks
	Semester –I			
1	**Paper-I**	50	Paper –I	**50**
2	**Paper-II**	50	Paper-II	**50**
	Semester-II			
3	**Paper –III**	50	Paper -III	**50**
4	**Paper- IV**	50	Paper- IV	**50**
5	**Practical -**	50	**Practical -**	**50**

Syllabus of B.Sc. Part – I (Botany) Semester System

(With effect from June2013)

Semester – I

Paper – I

Microbiology and Cryptogams **35 Lectures**

Microbiology

Unit-1 –Viruses:-

General characters, structure, classification (plant, animal and bacterial viruses) and economic importance of viruses. (02)

Unit-2-Bacteria:-

Characteristics of bacteria, size, forms (Shapes), ultra structure of bacterial cell, Economic importance. (Useful and harmful) (03),

Unit-3-Mycoplasma:-

— (Phytoplasma and Spiroplasma) Characters, Structure, classification and significance- (02)

Cryptogams:

Unit-4 General characters and classification of Cryptogams (as per G.M.Smith1955) up to class. (02)

4.1 General characters and classification of algae (As per Smith-1955) up to class. (01)

4.2-Study of ***Nostoc*** and ***Spirogyra*** with respect to –classification, distribution, thallus structure and reproduction. : (04)

4.3 Brief account of economic importance of algae – **(**01**)**

Unit-5 -Fungi

5.1-General characters and classification of fungi up to class (as per Ainsworth) (02)

5.2-Study of ***Mucor*** and ***Albugo*** –with respect to-Classification, occurrence, thallus Structure and reproduction. (04)

5.3-Brief account of economic importance of fungi (01)

Unit -6 Lichens-Characters, types, morphology, anatomy and economic importance. (02)

Unit-7-Bryophytes:-

7.1 General characters and economic importance (02)

7.2 Study of ***Riccia*** with respect to classification, distribution, thallus organization and reproduction. (Development of sex organs and sporophyte not expected), alternation of generation (03)

Unit-8 –Pteridophytes:-

8.1 General characters and economic importance (02)

8.2 Study of ***Selaginella*** –with respect to-Systematic position with reasons, occurrence, morphology of sporophyte, anatomy of stem, reproductive structure (Development of sex organs and embryo not expected). (04)

Reference Books

1) General Microbiology-Vol-II, C B Powar, H F Daginawala, Himalaya Publishing House Mumbai, 400004.

2) Virology: P Saravanan, MJP, Publishers, Chennai, 600005.

3) Understanding Microbiolgy, S K Prasad, Discovery Publishing House, Pvt.Ltd. New Delhi, 110002.

4) An introduction to Viruses,S B Biswas,and Amita Biswas,Vikas Publishing House,Pvt.Ltd.New Delhi,110002.

5) Botany for Degree Students- Algae- B.R.Vasistha (1994) S.Chand and Company, Ramnagar New delhi.110055

6) A Text Book of Algae,R M Johari,Sneha Lata,Sandhya Sharma, Dominant Publishers and Distributors, New Delhi,110020.

7) A Text Book on Algae, D Kumar and N Singh, Affiliated East-west Press, Pvt Ltd.Uravashi Press, Press, Meerut, 250002.

8) Introduction to Algae, Sudara Rajan, Anmol Publications, Pvt.Ltd. New Delhi, 110002.

9) An Introduction to Algae, Suresh Kumar, Campus Books International, Daryaganj, New Delhi, 110002.

10) Cryptogrammic Botany-Smith G.M. (1973) Vol. I –Algae and Fungi, Tata McGraw HIILL, Book, Company INC, Tokyo, Japan

11) Introduction to fungi –Dube H.C. (1990).Vikas Publishing House Ltd. New Delhi.

12) The Fungi-Mehrotra B.S. (1980).Oxford and IBH Publishing Co.66, Janapath New Delhi, 110020.

13) Introductory Mycology –Alexopoulos C.J. and C.W.Mims. (1962) Wiley Western Ltd.Ansari Road, Daryaganj, New Delhi, 110020.

14) Botany for Degree students- Fungi - B.R.Vasistha. ,-S.Chand and Company, Ramnagar New Delhi.110055

15) A Text Book of Fungi:-G L Chopra, and V Verma, Pradeep Publishing, Pratap Road, Jalandahr City, 144008.

16) Introductory Mycology, Sung Huang Sun-Wiley Eastern Ltd.Ansari Road, Daryaganj, New Delhi, 110020

17). Biology of Lichens –Hale I.E. (1967) Edward Arnold, London

18) Plant diseases –Singh R.S. (1963) Oxford and IBH Publishing Company Pvt.Ltd.New Delhi, 110001.

19) Disease s of crop plants in India –.Rangaswami and Mahadevan, Prentice Hall of India,Pvt.Ltd.,New Delhi,110001.

20) Botany for Degree Students –Bryophyte- B.R.Vashishta.S.Chand Company, Ramnagar New delhi.110055.

21) An Introduction to Embryophyta-Bryophyta, NS.Parihar, Vol-I, Central Book Depot, Allahabad.

22) A Text Book of Bryophyte, R M Johari, Sneha Lata, and Kavita tyagi, Dominant Publishers and Distributors, New Delhi, 110020

23) Botany for Degree Students- Pteridophyte, P.C.Vasishta. S.Chand and Company, Ramnagar New Delhi.110055

24) Introductions to Pteridophytes-Rashid A. (1978).Vikas Publishing house, Pvt.Ltd.Sahibabad, UP.

25). Cryptogrammic Botany-Smith G.M. (1973) Vol. II –Bryophyte and Pteridophyte, Tata McGraw HIILL, Book, Company INC, Tokyo, Japan.

Paper-II -Plant Physiology and Horticulture. - 35 Lectures

Unit-1. **Plant Growth**

1.1 Vegetative growth: - Definition, phases of growth, Kinetics of growth. (01)

1.2 Reproductive growth: - Physiology of flowering with respect to photoperiodism (Definition and classification of plants based on photoperiod) (02)

1.3) Role of phytochrome in flowering (01)

1.4) Vernalisation (definition and mechanism), (02)

-1.5) Plant growth regulators:--Definition and classification (Growth promoters and retardants) (02)

a) Growth promoters: - Auxins (IAA), Gibberellins

b) Growth retardants: - CCC.

1.6) Role of plant growth regulators (IAA, GA and CCC) in Agriculture. (01)

Unit -2. **Mineral nutrition**

2.1 Introduction, macro and micro elements (01)

2.2 Role and deficiency symptoms of Macro elements-N, P K,Ca and Mg and micro elements-Fe, Cu & Mn. (04)

Unit- 3 **Enzymes.**

3.1 Definition and physicochemical structure of enzymes. (2)

3.2 Properties of enzymes, Coenzymes, Co-factors and Isoenzymes, (2)

3.3 Mechanism of enzyme action-Lock and key hypothesis. (01)

Unit- 4. **Horticulture**

4.1 Introduction and Scope of horticulture (01)

4.2 Branches of Horticulture- **a)** Olericulture: **b**) Pomoculture **c**) Floriculture (01)

4.3 Cultivation practices of **Rose** with respect to Climate, soil type, varieties, planting, pruning, manures, irrigation, Pest and disease management. (02)

Unit-5. **Propagation of horticultural plants.**

5.1 Sexual propagation – Merits and Demerits. **(**01)

5.2 Vegetative propagation- (02)

A) Natural methods of vegetative propagation:-

i) Runners ii).Suckers, iii). Bulbs, iv) Tubers, v) Rhizomes

vi). Bulbils, vii)-Offset, viii) Stolon

B) Artificial methods of vegetative propagation

i) **Cutting**– Definition, Types (listing), Stem cutting – Soft wood, Semi hard wood and Hardwood cuttings (02)

ii) **Layering** – Definition, Types (listing), Simple and Air layering (02)

iii) **Grafting** – Definition, Stock and scion relationship, Types (listing), Whip and Approach Grafting (02)

iv) **Budding** – Definition, Types – "T" (Shield) and Patch budding (02)

5.3 Merits and Demerits of vegetative propagation. (01)

Reference Books

1) Plant Physiology, P.S. Gill. Publisher .S Chand and Company Limited, Ramnagar New Delhi.110055.

2) Fundamentals of Plant Physiology. , J L Jain. .S Chand and Company Limited, RamNagar New Delhi.110055.

3) Plant Physiology V. Verma, EMKAY Publications. B-19, East Krishnanagar Delhi.110051.

4) Introductory Plant Physiology .G Ray Noggle & Frtiz.Prentice Hall of India.Pvt Ltd.New Delhi.110001.

5) Plant Physiology. Salisbury and Ross, CBS Publishers and Distributors. Jain Bhavan Bholanathnagar, Shahadara-Delhi.110032.

6) Plant Physiology, V I Palladin, Arihant Publications, Jaipur. (INDIA)

7) Physiology of Crop plants, F P Gardner B Pearce, R L Mitchell. Scientific Publishers Ratanada Road, P O Box 91, Jodhpur.342001.

8) Fundamentals of Horticulture –J.B.Edmond and J.L.Senn, Tata McGraw Hill publishing Company Ltd –New Delhi.

9) Manual of Gardening –W.Burns (Edn)-Saeed International (Regd.) E-9-Jungpura (Extn).New Delhi-110014.

10) Gardening in India-T.K.Bose and D.Mukhargee, Oxford and IBH-Publishing Co.Pvt.Ltd.Culcutta.

11) The Culture of Vegetables and flowers-Martin-Sutton-Ambey-Publications Delhi.

12) PlantPropagation-M.K.Sadhi,WileyEasternLimited,4835/29,Ansari

Road, Daryaganj, New Delhi -110002.

13) Floriculture in India, G.S, Randhava and A. Mukhopadhyay.Allied Publishers, Pvt.Ltd, Mumbai, 40001

Semester-II

Paper-III- Gymnosperms and Angiosperms - 35 Lectures

Gymnosperms

Unit-.1 Introduction and salient features of Gymnosperms. (01)

Unit-.2 Classification of gymnosperms up to orders (According to Sporne1965) – (01)

Unit-3-Study of Cycas with respect to , occurrence ,Systematic position with reasons, External morphology of sporophyte, anatomy of leaflet and coralloid root,, Reproductive structures – structure of male cone and microsporophyll, Structure of megasporophyll and ovule (L. S.) (10)

Unit-.4 Brief account of economic importance of Gymnosperms. (01)

Angiosperms

Unit-5 Introduction and salient features of angiosperms (01)

5.1- Outline of Bentham and Hooker's system of classification, Merits and Demerits (02)

5.2 Principles of International Code of Botanical Nomenclature (ICBN) - (01)

Unit-6-General account of morphology of Angiosperms with respect to inflorescence, flower, fruit, Concept of floral formula and floral diagram. (12)

Unit-7 Study of the following families of Angiosperms –with respect to Systematic position with reasons, morphology of vegetative and reproductive parts, diagnostic features and economic importance:-

i) Annonaceae ii) Caesalpinaceae iii) Solanaceae

iv) Convolvulaceae v) Nyctaginaceae iv) Amaryllidaceae

(06)

Reference Books

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01) Botany for Degree Students-Gymnosperms-P C Vashishta (1976). S Chand and Company Limited, Ramnagar New Delhi.110055.

02). Gymnosperms Structure and Evolution J Chamberlain, CBS Publishers and Distributors, Bholanath Nagar, New Delhi.32

03). Morphology of Gymnosperms-Coulter and Chamberlain (1978).

04) Gymnosperm and Palaeobotany, S.K.Singh, Campus Book International, Ansari Road, Daryaganj, New Delhi.110002.

05) A Text Book of Bryophyte, Pteridophyte, Gymnosperm and Palaeobotany, AVSS, Sambamurty, IK International, Uphar Cinema Market, New Delhi.110016.

06) Morphology of Angiosperms, J M Coulter and C J Chamberlain, Pointer Publishers, Jaipur.

07) Taxonomy of Angiosperm R Pandey, S Chand and Co. Ltd, Ramnagar New Delhi.110055

08) An Introduction to Taxonomy of Angiosperms-Pritish Shukla, Shital P Mishra, Vikas Publishing House, Pvt.Ltd.Gaziabad, UP.

09). A Text Book of Angiosperms-B P Pandey, S Chand and Co Ltd.ramnagar, New Delhi.110055

10) A Text Book of Botany -‘Angiosperm,’V Singh C Pande, D K Jain, Rastogi Publication, Shivaji Road Meerut.250002

11) Taxonomy of Angiosperm, Neeru Mathur, Sonali Publications, New Delhi, 110002.

12) Angiosperms-G L Chopra, Pradeep Publications, Jalandhar, 144008.

Paper-IV- Cell Biology, Genetics and Plant Biotechnology- 35 Lectures

Unit-1 **The cell**

1.1) Definition and Ultra Structure of Prokaryotic and Eukaryotic cell. (02)

Unit 2. **Cell division**

2.1) **Mitosis** – Definition, Various stages of mitosis and significance (02)

Unit-3 Study of plant cell organelles- with respect to Occurrence, structure and functions of:-

3.1) Nucleus

3.2) Chloroplast

3.3) Mitochondrion.

(05)

Unit 4. **Microbodies**

Study of Microbodies with respect to Occurrence, Structure and functions of:-

4.1) Peroxisomes

4.2) Glyoxysomes

(02)

Unit 5 **Cell wall** (02)

5.1) Origin and Ultra structure of cell wall.

5.2) Chemical composition and functions of cell wall.

Unit 6- **Cell membrane**

6.1) Ultra structure of cell membrane (01)

6.2) Model of cell membrane (Singer – Nicholson's Fluid – Mosaic Model). (01)

6.3) Chemical composition of cell membrane (01)

6.4) Functions of cell membrane . (01)

Unit 7- **Genetics**

7.1). Mendel's work on Pea

a) Introduction and history

b) Selection criteria for Pea plant

(01)

c) Genetic terminology (Factors, allels, parent generation, filial generation, self breeding, phenotypes, genotypes, homozygous, heterozygous, Purline , dominant, recessive, Monohybrid cross, Dihybrid cross, Polyhybrid cross , Back cross, Test cross) (01)

d) Monohybrid and Dihybrid Cross. (02)

7.2) **Mendel's laws of inheritance**- a) Law of Dominance
b) Law of segregation
c) Law of independent assortment.
(03)

7.3) Interaction of genes-

A) Complementary genes (9:7),
B) Supplementary genes (9:3:4)
C) Inhibitory genes (13:3)
(3)

Unit-8. **Biotechnology**

8.1) Introduction, definition and Scope of biotechnology (01)

8.2) Multidisciplinary nature of biotechnology (01)

Unit 9. **Biotechnology in Agriculture**

9.1) **Tissue culture** – General techniques, Applications of tissue culture in Agriculture (04)

9.2) **Biofertilizers** – Definition, Necessity, Types – BGA (02)

Reference Books

01) Plant cell Biology –Structure and function-Gunning B.E.S and Steer M.W. (1996).

02). Cell Biology –C.B.Powar (1992), Himalaya Publ..House, Delhi.

03) Text Book of Cell and Molecular Biology –Gupta P.K. (1999), Publ.Rastogi Publication, Meerat.

04). Molecular and Cellular Biology-Wolfe S.L. (1993), Wadsworth Publishing Company, California, U.S.A.

05) A concept of a Cell biology –P.S.Verma, V.K. Agarwal,-S.Chand and Company Limited, Ramnagar New Delhi.110055

06 :) Genetics, A.M Winchester, Oxford and IBH Publishing, Co.New Delhi, 110055.

07) Study of Genetics and Evolution, R.H.Lock, Arihant Publishers, Jaipur.302004.

08:)-Genetics, M.P Arora, G.S Sandhu, Himalaya Publishing House, Girgaon Mumbai-40004

09) Advanced Biotechnology –Kagumarti B.Rao.-K.R.S-Sambasiva Rao.-
Discovery Publishing House, New Delhi -110002.

10.) Biotechnology (Recent Development)-Dr.Vandan Mohod, 1999 Book Enclave, Jaipur.

11) Biotechnology in Agriculture –S.Natesh, V.L.Chopra,-S.Ramchandran,
-Oxford&IBH Publishing Co.Pvt.Ltd. New Delhi, Bombay, Calcutta.

12)Recent Advances in Biofertilizer Technology-A K Yadav,M R Motsara and S Ray Chauduri,Nagari Printers,Navin Shahadara,Delhi110032.

13) Manures and Fertilizers S Yalwalkar, J P Agarwal and S Bokade, Agricultural Publishing House, Nagpur, 440010

14) Biofertilizers-Somani, Bhandari, Vyas, Saxena ScientificPublishers, Jodhapur, 342001.

SOLAPUR UNIVERSITY, SOLAPUR

Practicals of B.Sc. Part – I Botany

(With effect from June 2013)

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 six** 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 wherever necessary.

List of Practicals:

1) Study of Nostoc

2) Study of Spirogyra

3) Study of Mucor

4) Study of Lichens

5) Study of Riccia

6) Study of Plant Diseases–

i) Yellow vein mosaic of Bhendi ii) Citrus canker.

iii) Little leaf of Brinjal iv) White rust.

7) Study of ***Selaginella*** : Morphology of sporophyte, stem anatomy and structure of strobilus.

8. & 9) Study of ***Cycas*** –Systematic position, Morphology of Sporophyte, anatomy of leaflet, coralloid root (permanent slide), Male cone, microsporophyll, pollen grains, Megasporophyll, and V. S. of ovule (permanent slide)

10, 11 and 12) Study of Angiosperm families – as per theory syllabus

13) Study of cell structure in Onion peel (cataphyll), it's staining and mounting.

14) Study of means of Vegetative Propagation-Sucker, Offset, Stolon, Runner.

15) Study of means of Vegetative propagation-Tuber, Bulb, Rhizome, Bulbil.

16) Study of Cut flowers – Gladiolus, Gerbera, Rose

17) Techniques of potting and repotting (Demo.)

18) Propagation of Horticultural plants by Air – Layering and Whip grafting

19) Propagation of Horticultural plants by budding methods – 'T'shaped (Shield) and Patch budding.

20) Study of Mitosis.

21) Genetic problems based on monohybrid and dihybrid ratio

22) Study of enzyme activity - Catalase and Dehydrogenase

23) Study of vegetative growth analysis.

24) Study of deficiency symptoms of –N, K, Mg, (Either using specimens./photographs)

25) Effect of Biofertilizers –BGA, on seed germination.

26) Identification of Mendelian traits (Using-either specimens/photographs).

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 the 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 observations and report of each experiment in journal. The journal is to be signed periodically by teacher in-charge 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 / a 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 physiological experiments.
4. Identification and setting of cytological experiments
5. Study of Angiosperm families as per syllabus.
6. Showing the Techniques of - Budding/grafting/layering.
7. Spotting of the specimens as per syllabus.
8. Genetics problems based on mono and dihybrid ratio.

Distribution of marks:

Sr.No.	Name of the topic/s	Marks.
1	Algae/Fungi,	03
2	Bryophyte / Pteridophyte	03
3	Gymnosperms	04
4	Angiosperms	05
5	Plant diseases /Lichens	02
6	Physiology	07
7	Horticulture	09
8	Cell biology/ Genetics /Biotechnology.	07
9	Tour report	05
10	Journal.	05

Nature of Question Paper (Practical)

SOLAPUR UNIVERSITY, SOLAPUR.

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

March/April 2013.

Batch: - **Centre:-**

Date: - **Total Marks:-50**

N.B:-i) Draw neat and labeled diagrams wherever necessary.

ii) Do not write about points of theoretical information Unless asked specifically.

iii) Perform the experiments as per instructions given by the Examiners.

Q:-1 Identify and show the important structures observed by you in the specimens-A, B and C.Prepare one slide from each specimen

(Leave your preparation for inspection. No written answer). – 10

Q:-2 Identify and classify the specimen 'D' 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. -05

Q:-3 Setup the physiological experiment 'E' assigned to you and show it to the examiner.

(No written answer.) - 05

OR

Q:-3 Prepare the root tip squash and show different stages of Mitosis observed in the

Specimen 'E'

(No written answer)- 05

Q:-4 Demonstrate the technique of air layering/budding/grafting in a specimen 'F'

(No written answer.) -05

Q;5;-Solve the given problem on Genetics. 05

Q:-6 Identifications: - (10)

G) Identify the disease with causal organism; give symptoms/control measures - 02

OR

G) Identify and comment upon the specimen 02

H) Identify and comment upon the experiment/ slide 02

I) Identify and comment upon the specimen 02

J) Identify and comment upon the specimen 02

K) Identify and comment upon the experiment/Specimen. 02

Q:-7 a) Journal. 05

b) Tour report. 05

SOLAPUR UNIVERSITY, SOLAPUR.

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

March/April 2013.

Key to the Examiners-

Q-1 A-Nostoc/Spirogyra/Mucor. 03 Marks

B-Riccia/Selaginella 03 Marks

C-Cycas Microsporophyll (mounting of pollens)/Cycas pinna 04 marks

Q-2:-D-Polypetalae/Gamopetalae/Apetalae/Monocot-Family -05 Marks

Q-3 'E' - Physiology experiments -

Vegetative growth analysis 05 Marks

OR

Q-3:- E-'Mitotic stages - - 05 Marks.

Q-4:- 'F' Horticultural Techniques-Layering/budding/grafting 05Marks.

Q 5: Problem on Genetics 05 marks

Q-6:- Identifications: (10 Marks)

G) Any one plant disease /Lichen specimen. 02

H) Detection of enzyme activity/ Cell structure (Onion peel) 02

I) Natural methods of veg.propagation any one specimen 02

J) Cut flower -any one 02

K) Expt. on Biofertilizer /Mineral deficiency/Mendelian traits. 02

Q7 a) Journal. 05

b) Tour report 05

Solapur University, Solapur

Nature of Question Paper for B.Sc -I (Botany) Semester Pattern

- **Faculty of Science**

(W.e.f. June 2013)

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)