RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS),

DEPARTMENT OF BOTANY

Report of BoS in Botany

Date: 25.04.2019

A meeting of Board of Studies in Botany was held on 11.04.2019 at 10:00 am in the Department of Botany, Rajarshi shahu Mahavidyalaya (Autonomous), Latur. The following agenda items were discussed and resolved in presence of Honorable members of Board of Studies in Botany.

Agenda of the meeting:

1. Revision of the Curriculum of UG and PG.
2. Designing of Curriculum of B.Sc III according to CBCS.
3. Short and long Excursions for UG and PG.
4. Designing of Practicals of all the PG courses as Separate Laboratory Courses.

S.N.Shinde
Chairman
Board of studies in Botany
Rajarshi Shahu Mahavidyalaya, Latur.
(Autonomous)

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS)

AFFILATED TO

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. FIRST YEAR(CBCS)

BOTANY – CURRICULUM

UNDER ACADEMIC AUTONOMOUS STATUS 2013 -2018

(MCQ + Theory Pattern)

w. e. f. JUNE, 2017

ACKNOWLEDGEMENT

The Chairman , Board of Studies in Botany (UG) acknowledges the contributions of the members, Board of Studies in Botany, in structuring the under graduate Curricula. The abundant support and recommendations from the members for designing different courses have shaped this curriculum to this present nature.

Thanks to all the esteemed.

S.N.Shinde

Chairman

Board of Studies in Botany

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS)

BOARD OF STUDIES IN BOTANY

2018-19 to 2020-21

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1. Shri S. N. Shinde — Chairman
   Head, Department of Botany,
   Rajarshi Shahu Mahavidyalaya (Auto), Latur

2. Dr. K. D. Savant — Faculty
   Rajarshi Shahu Mahavidyalaya (Auto), Latur

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4. Miss S. S. Sarkale — Faculty
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7. Miss M. S. Madne — Faculty
   Rajarshi Shahu Mahavidyalaya (Auto), Latur

8. Smt S. V. Bhoyar — Faculty
   Rajarshi Shahu Mahavidyalaya (Auto), Latur

9.	Dr. V. S. Maske Bahirji Smarak Mahavidyalaya, Vasmat, Dist. Hingoli	Member (Academic Council Nominee)
10.	Prof. Dr. A. B. Ade Savitribai Phule Pune University, Pune	Member (Academic Council Nominee)
11.	Prof. Dr. A. S. Dhabe Head, Dept of Botany Dr.Babasaheb Ambedkar Marathwada University, Aurangabad	Member (V.C. Nominee)
12.	Shri Laxman Done Done's Mushrooms, Kumbhari, Dist. Latur	Member (Expert from Industry)
13.	Prof. Dr. N. B. Gaikwad Shivaji University, Kolhapur	Member (P.G. Alumni)
14.	Dr. D. V. Vedpathak Rajarshi Shahu Mahavidyalaya (Auto), Latur	Member (From same Faculty)

S. N. Shinde
Chairman
BoS in Botany

INTRODUCTION

The Board of Studies in Botany (UG) recognizes that curriculum, course content and assessment of scholastic achievement play complementary roles in shaping education. The structured Curriculum for Undergraduate Programme of Botany envisages Undergraduate Education as a combination of general and specialized education, simultaneously introducing the concepts of breadth and depth in learning .It also stresses learning to learn rather than learning of specific lessons. The attempt is to prepare the students for life long learning by drawing attention to the vast world of knowledge of plants and introducing him to the methodology of systematic academic enquiry. With this in mind, we aim to provide a firm foundation in every aspect of Botany and to explain a broad spectrum of modern trends in Botany and to develop experimental, observational, computational skills also which lead him / her as an ambassador of sustainable development of our country.

OBJECTIVES

1. To know the importance and scope of the discipline.

2. To Inculcate interest in and love of nature with its myriad living forms.

3. To Impart knowledge of Science as the basic objective of Education.

4. To develop a scientific attitude to make students open minded, critical and curious.

5. To develop an ability to work on their own and to make them fit for the society.

6. To expose themselves to the diversity amongst life forms.

7. To develop skill in practical work, experiments, equipments and laboratory use along with collection and interpretation of biological materials and data.

8. To Make aware of natural resources and environment and the importance of conserving it.

9. To develop ability for the application of the acquired knowledge in the fields of life so as to make our country self reliant and self sufficient.

10. To Appreciate and apply ethical principles to biological science research and studies.

11. To enable the students to face NET, SET examinations.

12. To enable the students to face MPSC, UPSC and other competitive examinations successfully.

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RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. FIRST YEAR (CBCS)

BOTANY – CURRICULUM

(MCQ Pattern + Theory Pattern)

Semester	Paper No. & Title	Period / practical	Marks			Credits
			In Sem. Evaluation	End Sem. Evaluation	Total	
Semester-I	**Theory Paper-I:** Biodiversity of Cryptogams and Gymnosperms	45	20	30	50	02
	Theory Paper-II: Cell biology and Molecular biology	45	20	30	50	02
	Lab course -I: Practical bases on theory papers -I&II	24	--	--	50	02
Semester-II	**Theory Paper-III:** Histology Anatomy and Embryology of Angiosperms	45	20	30	50	02
	Theory Paper-IV: Fundamentals of Genetics	45	20	30	50	02
	Lab course -II:-: Practical based on theory papers -III&IV	24	--	--	50	02
					300	12

Workload:
1. Theory: Three Lectures / Paper / Week.
2. Practical: One practical (Three Lectures) / Batch / Week

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS)

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. SECOND YEAR (CBCS)

BOTANY – CURRICULUM

(MCQ + THEORY PATTERN)

Semester	Paper No.	Paper Title	Lectures/ Practicals	Marks			Credits
				In Sem. Evaluation	End Sem. Evaluation	Total Marks	
III	**V**	Morphology and Taxonomy of Angiosperms	45	20	30	50	02
	VI	Economic Botany and Pharmacognosy	45	20	30	50	02
	Lab. Course III	Based on theory paper – V&VI	24	--	--	50	02
	SEC-I	Nursery and Floriculture	45	--	50	50	02
IV	**VII**	Environmental Biology; Gardening and Land Scaping	45	20	30	50	02
	VIII	Plant Breeding and Biotechnology	45	20	30	50	02
	Lab. Course IV	Based on theory paper –VII& VIII	24	--	--	50	02
	SEC-II	Mushroom Cultivation Techniques	45	--	50	50	02
					Total	**400**	**16**

Workload:
1. Theory: Three Lectures / Paper / Week.
2. Practical: One practical (Three Lectures) / Batch / Week

RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. Third YEAR(CBCS)

BOTANY – CURRICULUM

(MCQ + THEORY PATTERN)

Semester	Paper No.	Paper Title	Lectures/ Practicals	Marks			Credits
				In Sem. Evaluation	End Sem. Evaluation	Total Marks	
V	**IX**	Plant Physiology and Metabolism	45	20	30	50	02
	X	Plant Pathology-I/ Plant Biotechnology (DSE)	45	20	30	50	02
	Lab. Course V	Based on theory Paper – IX& X	24	--	--	50	02
	SEC-III	Fruits and Fruit Processing	45	--	50	50	02
VI	**XI**	Plant Biochemistry and Bioinformatics	45	20	30	50	02
	XII	Plant Pathology-II / Cytogenetics (DSE)	45	20	30	50	02
	Lab. Course VI	Based on theory Paper –XI& XII	24	--	--	50	02
	SEC-IV	Basics in Horticulture	45	--	50	50	02
					Total	**400**	**16**

Workload:
1. Theory: Three Lectures / Paper / Week.
2. Practical: One Practical (Three Lectures) / Batch / Week

RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B. Sc. GENERAL (SEMESTER PATTERN)

B. Sc. FIRST YEAR (CBCS)

BOTANY – CURRICULUM

(MCQ Pattern + Theory Pattern)

Semester	Paper No. & Title	Period / practical	Marks			Credits
			In Sem. Evaluation	End Sem. Evaluation	Total	
Semester-I	**Theory Paper-I:** Biodiversity of Cryptogams and Gymnosperms	45	20	30	50	02
	Theory Paper-II: Cell biology and Molecular biology	45	20	30	50	02
	Lab course -I: Practical bases on theory papers -I&II	24	--	--	50	02
Semester-II	**Theory Paper-III:** Histology Anatomy and Embryology of Angiosperms	45	20	30	50	02
	Theory Paper-IV: Fundamentals of Genetics	45	20	30	50	02
	Lab course -II:-: Practical based on theory papers -III&IV	24	--	--	50	02
					300	12

Workload:
1. Theory: Three Lectures / Paper / Week.
2. Practical: One practical (Three Lectures) / Batch / Week

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS)

B. Sc. First Year
Semester – I
(MCQ + Theory Pattern)

BOTANY

Theory Paper-I: Biodiversity of Cryptogams and Gymnosperms

(Viruses, Bacteria, Fungi, Lichens, Algae, Bryophytes, Pteridophytes and Gymnosperms)

Periods – 45 Maximum Marks – 50

OBJECTIVES

1. To awaken the students about microbial world and the nature of diseases of plants.
2. To understand the principles and concept in plant pathology.
3. To understand the relationships between pathogens and plants.
4. To become familiar with algae and bryophytes
5. To develop the awareness about the importance of Viruses, Bacteria, Fungi, Lichens, Algae, Bryophytes, Pteridophytes
6. To learn the life cycles of, Fungi, Lichens, Algae, Bryophytes, Pteridophytes

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UNIT – I: BACTERIA AND VIRUSES (10 L)

BACTERIA:

1. General characters.
2. Size, Shape and Ultra structure.
3. Asexual reproduction (By binary fission).
4. Sexual reproduction (By conjugation).
5. Economic importance.

VIRUSES:

1. General characters.
2. Classification based on host.
3. Ultra structure of TMV.
4. Economic importance.

UNIT – II: FUNGI (12 L)

1. General characters and.
2. Classification (Alexopolous and Mims, 1979).
3. Systematic position, occurrence, structure, reproduction, and graphic life cycle of ***Erysiphe.***

4.Economic importance.
5. Mycorhiza (General characters).
6. General characters of lichens.
7. Types of Lichens.
8. Economic importance of Lichens.

UNIT – III: ALGAE AND BRYOPHYTES (10 L)
ALGAE:
1. General characters.
2. Classification (F.E.Fritsch, 1935).
3. Systematic position, occurrence, thallus structure, reproduction and graphic life cycle of ***Oedogonium*.**

BRYOPHYTES:
1. General characters.
2. Classification (N.S.Parihar).
3. Systematic position, occurrence, thallus structure (external and internal), reproduction, and graphic life cycle of (Developmental stages not expected) ***Funaria.***

UNIT – IV: PTERIDOPHYTES AND GYMNOSPERMS (*13 periods)*

PTERIDOPHYTES:
1. General characters.
2. Classification (N.S.Parihar)
3. Systematic position, occurrence, thallus structure (external and internal),reproduction, and graphic life cycle with alternation of generation of (Developmental stages not expected) ***Nephrolepis* (fern).**

GYMNOSPERMS:

1. General characters.
2. Classification (Arnold, 1948).
3. Morphology of vegetative and reproductive structures (Developmental stages are not expected), and life cycle of ***Cycas.***

Reference Books:

1. Trivedi, A. N. (2002) - Advances in Pteridology
2. Bierhorst, D.W. (1971) - Morphology of Vascular plants
3. Eames, A. J. and E. M. Giffard (1950) - Comparative morphology of vascular plants.
4. Rashid, A. (1978) - An introduction to Pteridophytes.
5. Sporne, K.R. (1966) - Morphology of Pteridophytes.
6. Bower, F. O. (1963) - The Ferns.
7. Jermy, A. G. (1973) - The Phylogeny and Classification of ferns.
8. Vashishta, B.R. (1996) - Botany for degree students – Pteridophytes.
9. Parihar, N.S. (1959) - An Introduction to Pteridophyta.
10. Arnold, C.A. (1972) - An introduction to paleobotany.
11. Darroh, W.C. (1968) - Principles of paleobotany.
12. Surange, K.R. (1968) - Indian Fossil Pteridophytes.
13. Arnold, C.A. (1947): Introduction to Palaeobotany, Mc-Graw HillBook Co. Inc., New York and London.
14. Pteridophytes and Gymnosperms, springer Verlag, New York
15. Agashe, S.N. (1995), Palaeobotany, Oxford & IBH, New Delhi.
16. Biswas, C & Johri, B.N. (2004), The Gymnosperms, Narosa

Publishing House, New Delhi.Coulter J.M. & Chamberlain C.J.(1978): Morphology of

17. Gymnosperms, Central Book Depot, Allahabad.
18. Kakkar, R.K.and Kakkar, B.R. (1995), The Gymnosperms (Fossils& Living), Central Publishing House, Allahabad.
19. Sharma O.P. (2002) Gymnosperms, Pragati Prakashan, Meerut.
20. Vashishta P.C., A.R. Sinha, Anil Kumar. 2006. Gymnosperms. S.Chand.
21. Vashishta P.C. 2006. Pteridophytes. S. Chand.
22. Parihar N.S. 1996. Biology and Morphology of Pteridophytes. Central Book Depot,Allahabad.

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(AUTONOMOUS)

B. Sc. First Year
Semester – I
(MCQ + Theory Pattern)

BOTANY
Theory Paper- II: Cell and Molecular Biology

Periods – 45 Maximum Marks – 50

OBJECTIVES

1. To acquire good knowledge about cell biology
2. To acquire good knowledge about chemistry of active constituents of medicinal plants.
3. To know the techniques of Molecular biology.
4. Identification of different stages of cell division

UNIT –I: CELL BIOLOGY (12 L)

1. Cell: Ultra structure of Prokaryotic cell and Eukaryotic cell.

2. Structure and functions of: Cell wall and Plasma membrane.

3. **Structure and functions of cell organelles:** Nucleus, Golgi apparatus, Endoplasmic reticulum and Ribosome, Chloroplast and Mitochondria.

UNIT –II: CHROMOSOME (10 L)

1. Organization of Chromosome (Nucleosome Solenoid Model).
2. Morphology, structure and function of typical chromosome.
3. Types of chromosome.
4. Karyotype and Ideogram and their significance.
5. Chromosomal Aberrations (structural and numerical).

UNIT –III: CELL DIVISION (11 L)

1. Cell cycle: Inter phase G_1 - S - G_2 –M phase and G0 phase
2. Phages and significance of Mitosis.
3. Phages and significance of Meiosis.

UNIT –IV: MOLECULAR BIOLOGY (12 L)

1. Structure of DNA (Watson and Crick model).
2. Replication of DNA.
3. Structure, function and types of RNA.
4. Introduction to genetic code and wobble hypothesis.
5. Protein synthesis.

Reference Books:

1. Albert's B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J. D. 1989
2. Molecular biology of the Cell (2ndedition). Garland Pub. Inc., New York.
3. Karp, G. 1999. Cells and Molecular Biology: Concepts & Experiments. John Wiley and Sons, Inc., USA.
4. Lodish S, Baltimore B , Berk, C and Lawrence K, 1995 , Molecular Cell Biology ,3rd editions, Scientific American Books, N.Y
5. De Robertis and De Robertis, 1988, Cell and Molecular Biology, 8 edition, Info-Med, Hongkong.
6. Buchanan, Grissem and Jones, 2000, Biochemistry and Molecular Biology of Plants, American Soc. Plant Biologists, Waldorf
7. Lewin, B. 2000. GENE VII. Oxford University Press, New York, USA Cooper G M and Hausman R E,2007 , The Cell: Molecular Approach 4thEdn, Sinauer Associates, USA. Johnson Lewys – 2004: Cell Biology; Sarup and sons, New Delhi
8. E.J. Dupraw – 1970 : Cell and Molecular Biology; Academic Press, London
9. De Robertis and De Robertis – 1997: Cell and Molecular Biology (VIII); B.I. Waverly Pvt. Ltd., New Delhi
10. C. P. Swanson, T. Merz, and W.J. Young – 1982 : Cytogenetics ; Prentice – Hall of India Pvt. Ltd., New Delhi India
11. C. B. Powar – 1992: Cell Biology; Himalaya Publishing House.

RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B.Sc. First Year
Semester – I
BOTANY

Practical Paper-III: Practical based on theory papers -I&II

Practicals: 12 Marks: 50

Practical 1: Study of forms of Bacteria.

Practical 2: Study of external features of ***Oedogonium*.**

Practical 3: Study of external features of ***Erysiphe with*** classification.

Practical 4: Study of types of **Lichens (Crustose, Foliose and Fructicose).**

Practical 5: Study of external and internal features of ***Funaria*.**

Practical 6: Study of external and internal features of ***Nephrolepis.***

Practical 7: Study of cell organelles with the help of photocopies / slides.

Practical 8: Study of mitosis (Onion/Garlic Root tips).

Practical 9: Study of Mitotic index (Onion/Garlic Root tips).

Practical 10-11 : Study of Meiosis from onion floral buds or any other available material.

Practical 12: Study of karyotype and ideogram from photocopies of onion / Aloe plant material.

Practical 13:Botanical excursions (one short excursion is compulsory)

RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B.Sc. First Year
Semester – II
BOTANY

Theory Paper-III: Histology, Anatomy and Embryology of Angiosperms

Periods – 45 Maximum Marks – 50

OBJECTIVES

1. To awaken the students about Tissue system of of plants.
2. To understand the process and concepts in plant Embryology.
3. To understand the relationships between pathogens and plants.
4. To become familiar with histology and anatomy of plants
5. To learn the internal structures of plant organs.

UNIT – I: HISTOLOGY

Plant Tissues (12 L)

A. Meristematic tissues and their classification based on position

B.Permanent Tissues

I Simple Tissues:

1. Parenchyma
2. Collenchyma
3. Sclerenchyma

II Complex Tissues

1. Xylem
2. Phloem

III Secretary Tissues

1. Laticiferous Tissues
Ex. Latex cells
2. Glandular Tissues
a. External glands
Ex. Digestive glands
b. Internal glands
Ex. Oil glands

UNIT – II: ANATOMY (12 periods)

1. Anatomy of dicot Stem (Sunflower).
2. Anatomy of monocot Stem (Maize).
3. Secondary growth in dicot stem.
4. Leaf anatomy of dicotyledons (Sunflower) and monocotyledons (Maize).
5. Anomalous secondary growth in *Dracaena* stem.

UNIT –III: EMBRYOLOGY –I (11 periods)
1 Structure of a Microsporangium (T.S. of anther)**.**
2. Structure of a Microspore.
3. Development of male gametophyte (Microgametogenesis).
4. Structure of a Megasporangium.
5. Anatropuns ovule
6. Types of ovule.
7. Development of female gametophyte (Monosporic).

UNIT – IV: EMBRYOLOGY –II (10 L)
1. Fertilization.
2. Post fertilization changes.
3. Endosperm and its types.
4. Development of dicot embryo (Crucifer type).
5. Structure of Dicot seed.
6. Structure of Monocot seed.

References:

1. **Briggs David 2009.** *Plant microevolution and Conservation in Human-influenced*
2. *Ecosystems*.Cambridge University Press.
3. **Cronquist, A. 1981.***An Integrated System of Classification of Flowering Plants*
4. Columbia University Press, New York.
5. **Cronquist, A. 1988**.*The Evolution and Classification of Flowering Plants* (2nded.) Allen
6. Press, U.S.A.
7. **Davis, P. H. and V. H. Heywood 1991**.*Principles of Angiosperm Taxonomy***.**Today and
8. Tomorrow Publications, New Delhi.
9. **Hutchinson, J. 1959.***Families of Flowering plants.*
10. **Judd W. S., Campbell, C. S., Kellogg, E. A., Stevens P. F. and M. J. Donoghue**
11. **2008.***Plant Systematics: A phylogenetic Approach.*Sunderland, Massachusetts,
12. USA.
13. **Lawrence George H. M. 195.1** *Taxonomy of Vascular Plants.*Oxford and IBH Publ. Co.
14. Pvt. Ltd. New Delhi.
15. **Leadlay E. and S. Jury (ed.) 2006.***Taxonomy and Plant conservation.*Cambridge
16. University Press.
17. **Manilal, K. S. and M. S. Muktesh Kumar [ed.] 1998.***A Handbook of Taxonomic*

18. *Training*. DST, New Delhi.

19. **Naik, V. N. 1984.***Taxonomy of Angiosperms*. Tata McGraw-Hill Publication Com. Ltd.

20. New Delhi

21. **Quicke, Donald, L. J. 1993.***Principles and Techniques of Contemporary*

22. *Taxonomy*.Blakie Academic & Professional, London

23. **Takhtajan, A. 1962.***Flowering plants- Origin and Dispersal.*

24. **Taylor, D. V. and L. J. Hickey 1997.** *Flowering Plants: Origin, Evolution and*

25. *Phylogeny***.**CBS Publishers & Distributers, New Delhi.

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(Autonomous)

B. Sc. First Year

Semester – II

BOTANY

Theory Paper-V: Fundamentals of Genetics

Periods – 45 Maximum Marks – 50

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1. To awaken the students about genetic terms
2. To understand the principles of genetics and laws of inheritance.
3. To understand the relationships between epistatic and non epistatic genes.
4. To develop the awareness about genetic disorders

UNIT –I: MENDELISM (10 L)

1. Mendel's experiments (biography)
2. Genetic terminologies
3. Explanation and examples of (monohybrid cross, dihybrid cross and back cross and test cross)
4. Mendel's Laws of Inheritance.

UNIT –II: GENE INTERACTIONS (12 L)

A. Allelic interactions: Explanation and examples of Incomplete dominance, Co- dominance (4 '0'clock plant inheritance of coat color in cattle)

B. Non-Allelic interactions

I. Epistatic: Explanation and examples of
   a. Dominant epistasis - 12:3:1
   b. Recessive epistasis - 9:3:4 (Supplementary gene)
   c. Duplicate dominant epistasis - 15:1
   d. Duplicate recessive epistasis - 9:7 (Complementary gene)

II. Non-epistatic: Explanation and examples of
   a. Collaborator gene - 9:3:3:1 (Comb shape in fowl)

UNIT –III: SEX DETERMINATION: (11 L)

1. Sex determination: Discovery of sex chromosomes,
2. Chromosomal theory of sex determination.
   - **i.** Sex determination in Animals (XX,XY) (Drosophila)
   - **ii.** Sex determination in insects (XO-XX),
   - **iii.** Sex determination in Birds (ZW-ZZ method),
   - **iv.** Sex determination in Plants (*Asparagus*).

3. Linkage: Definitions, significance, Coupling and repulsion hypothesis.

UNIT –IV: SEX LINKED INHERITANCE: (12 L)

1. Sex linked inheritance: Definition classification (x-linked, y-linked and xy-linked)

a) Sex linked inheritance in Drosophila (White eye colour)

b) Sex linked inheritance in Man (Hemophilia, colour blindness and hypertrochosis

c) Inheritance bobbed bristles in Drosophila

2. Gene related diseases: Phenylketonuria (PKU), Alkaptonuria (AKU) and Albinism.

3. Syndromes in Man (Autosomal and sex - chromosomal syndromes).

i) Down's syndrome

ii) Klinfelter's Syndrome.

References:

1. Alberts, B. Bray, D. Lewis, J. Raff, M. Roberts, K. and Watson, J. D. I989. Molecular Biology (Ed.) Garland Publishing Inc. New York.
2. Atherly, A. G., Girton, J. R. and McDonald, J. F. 1999. The Science of Genetics. Saunders College USA.
3. Burnham, C. R. 1962. Discussions in Cytogenetics, Burgess Publishing Co., Minnesota.
4. Busch. H. and Rothblum, L. 1982 Volume X. The cell nucleus: DNA part A, Academic Press.
5. Hartl, D. L. and Jones E. W. 1998. Genetics: Principles and Analysis (4ih Ed.)
6. Jones and Barew Publishers, Massachusetts, USA.
7. Khush, G. S. 1973. Cytogenetics of Aneuploids, Academic Press, New York, London.
8. Karp, G. 1999. Cell and Molecular Biology; Concepts and Experiments, John Wiley and Sons Inc. USA.
9. Lewin, B. 2000. Genes VII. Oxford University Press, New York, USA. Lewis, R. 1997. Human Genetics: Concepts and applications (2nd Ed),WCB, McGraw Hill, USA.

RAJARSHI SHAHU MAHAVIDYALAYA,LATUR

(AUTONOMOUS)

B.Sc. First Year
Semester – II
BOTANY

Practical Paper-VI: Practical based on theory papers - IV& V

Practicals: 12 Marks: 50

Practical 1: Study of permanent tissues (Mechanical and Complex) with the help of permanent slides/models/
Charts/photocopies.

Practical 2: Study of T.S. of Anther and types of ovule with the help of
Permanent slides/models/ charts/photocopies.

Practical 3: Preparation of double stained permanent slides of Sunflower Stem.

Practical 4: Preparation of double stained permanent slides of Maize Stem.

Practical 5-10: Problems based on monohybrid/Dihybrid ratio; 9:7//12:3:1/15:1
and collaborator gene.

Practical 11-12: Problems based on sex-linked inheritance.

Practical 13-14: Botanical excursions (one long excursion is compulsory)

SKELETON OF QUESTION PAPER
B.Sc. First Year

Semester – I & II

Theory Paper-I, II, III and IV

Time*: 1.30 hours* ***Maximum Marks: 30***

Note: (i) Attempt all questions.
(ii) Draw neat and well labeled diagrams wherever necessary.

Q1. Attempt all of the following (Each 3 marks) 12

a)
b)
c)
d)

Q2. Attept any ONE of the following 08

a)
b)

Q3. Attept any ONE of the following 10

a)
b)

RAJARSHI SHAHU MAHAVIDYALAYA, LATUR

(Autonomous)

B.Sc.I PRACTICAL EXAMINATION IN BOTANY

SEE WINTER/SUMMER

Time: Three Hours ***Maximum Marks: 30***

Note: - (i) Attempt all questions.

(ii) Draw neat and well labeled diagrams wherever necessary.

Q. 1. Long answer type question. 10

Q. 2. Long answer type question. 10

Q. 3. Spotting: (02 spots) 05

Q. 4. Viva- Voce. 05