Hindi Vidya Prachar Samiti's

Ramniranjan Jhunjhunwala College

of Arts, Science & Commerce

(Autonomous College)

Affiliated to

UNIVERSITY OF MUMBAI

Syllabus for the S.Y.B.Sc.

Semester III & IV

Program: B.Sc. BOTANY

Program Code: RJSUBOT

(CBCS 2019-2020)

DISTRIBUTION OF TOPICS AND CREDITS

S.Y.B.Sc. BOTANY SEMESTER III

Course	Nomenclature	Credits	Topics
RJSUBOT301	Plant Diversity II	02	1. Algae 2. Bryophyta 3. Pteridophyta and Palaeobotany
RJSUBOT302	Forms & Functions II	02	4. Cytology 5. Physiology 6. Genetics
RJSUBOT303	Current Trends in Plant Sciences – I	02	7. Instrumentation 8. Economic Botany 9. Molecular Biology
RJSUBOTP301, RJSUBOTP302 & RJSUBOTP303	Practical I, II & III	03	

S.Y.B.Sc. BOTANY SEMESTER IV

Course	Nomenclature	Credits	Topics
RJSUBOT401	Plant Diversity II	02	1.Fungi 2. Gymnosperms 3. Angiosperms
RJSUBOT402	Forms & Functions II	02	4.Anatomy 5.Ecology 6. Pharmacognosy
RJSUBOT403	Current Trends in Plant Sciences – I	02	7. Biotechnology I 8. Horticulture 9. Biostatistics I & Bioinformatics I
RJSUBOTP401, RJSUBOTP402 & RJSUBOTP403	Practical I, II & III	03	

SEMESTER III (THEORY)		**L**	**Cr**
Paper-I: Plant Diversity- II	**Paper Code: RJSUBOT301**	45	2
UNIT I		15	
THALLOPHYTA- ALGAE			
1	Outline classification of Phaeophyta up to order as per G.M. Smith.		
2	General characters of Phaeophyta based upon Thallus, Reproduction. Economic importance of Phaeophyta.		
3	*Sargassum*- Systematic position, Life cycle and Alternation of generations.		
4	General characters of Bacillariophyta based upon thallus structure, cell structure, reproduction.		
5	*Pinnularia*- Systematic position, Life cycle and Alternation of generations.		
UNIT II		15	
BRYOPHYTA			
1	Outline classification of Anthocerotae up to order as per G.M. Smith.		
2	General characters of Anthocerotae based upon Thallus, Reproduction.		
3	*Anthoceros*- Systematic position, Life cycle and Alternation of generations.		
4	*Funaria*- Systematic position, Life cycle and Alternation of generations.		
UNIT III		15	
PTERIDOPHYTA AND PALEOBOTANY			
1	Outline classification of Psilophyta and Lepidophyta up to order as per G M Smith.		
2	General characters of Psilophyta and Lepidophyta based upon Plant structure and Reproduction.		
3	*Selaginella*- Systematic position, Life cycle and Alternation of Generations.		
4	Stelar evolution in Pteridophytes.		
5.	Geological time scale.		
6.	Formation and types of Fossils.		
7.	*Rhynia*- Systematic position and structure.		

S.Y.BSc	Semester III Theory
RJSUBOT301 Paper I Plant Diversity II	Course Outcome 3.1 : 1. Algae: Phaeophyta general structure and *Sargassum* a type genus to study the various stages of the life cycle. 2. Bacillariophyta and its features with *Pinnularia* as a representative. Diatoms and their role in aquatic ecosystem. 3. Bryophyta: Anthocerotae and Musci with *Anthoceros* and *Funaria* as type genera. 4. Detailed study of classification of Psilophyta and Lepidophyta 5. Study of *Selaginella*- Systematic position, Life cycle and Alternation of Generations. 6. Palaeobotany study with Stelar evolution, Geological time scale and Formation and types of Fossils. 7. Study of *Rhynia*- Systematic position and structure. 8. Study of Coniferophyta and *Cordaites* Learning outcome: ➢ Detailed study of diversity in algae, bryophyte and its future applications in industry and environment. ➢ Learning the diversity in Pteridophyta. ➢ Understanding the past environment with the study of palaeobotany, fossils and geological time scale.

SEMESTER III (THEORY)		**L**	**Cr**
Paper-II: Forms and Functions-II	**Paper Code: RJSUBOT302**	45	2
UNIT I		15	
CYTOLOGY			
1	Ultra-structure and functions of the following cell organelle: Chloroplast		
2	Cell Cycle		
3.	Cell division and its significance, Mitosis, Meiosis.		
UNIT II		15	
PHYSIOLOGY			
1	Photosynthesis: Light reaction Photosystem I and II , Dark reaction, C_3 ,C_4 and CAM pathways		
2	Photorespiration- Mechanisms and it's significance.		
3	Photoperiodism: Phytochrome Response and Vernalization with reference to flowering in higher plants; Physio-chemical properties of phytochrome; Pr-Pfr interconversion; role of phytochrome in flowering of SDPs and LDPs. .		
UNIT III		15	
GENETICS			
1	Variation in Chromosome structure (Chromosomal Aberrations) Definition, Origin, Cytological and Genetic Effects of the following: Deletions, Duplications, Inversions and Translocations.		
2	Variation in Chromosome Number - Origin and production, morphological and cytological features, applications in crop improvement and evolution of Aneuploids and Euploids (Monoploids, Autopolyploids and Allopolyploids).		
3	Sex determination- Chromosomal basis, Gene Balance Theory. Sex determination based on hormones and environment. Morphology of X and Y chromosomes. Sex linkage- X and Y linkage, criss-cross Inheritance, holandric genes, Sex limited and sex-influenced traits.		

S.Y.BSc	Semester III Theory
RJSUBOT302 Paper II Form and Function II	Course Outcomes 3.2 : 1. Cell Biology Ultrastructure of cell organelles : Chloroplast 2. Cell Division to learn how cells divide by equational division and reduction division. 3. Detailed study of Photosynthesis- C3, C4 and CAM pathways 4. Photorespiration and Photoperiodism study in plants. 5. Chromosomal aberrations, and variations in chromosome number, Polyploidy, sex determination and sex-linkage in plants and animals. Learning outcome: ➢ Basic concept of cell biology and cell division. ➢ Understanding the mechanism of Photosynthesis, Photoperiodism. ➢ Knowing the effect of Chromosomal Aberrations, Variation in Chromosome Number, Sex linkage and Sex determination. Application in genetic counselling.

SEMESTER III (THEORY)		**L**	**Cr**
Paper-III: Current Tends in Plant Sciences – I	**Paper Code: RJSUBOT303**	45	2
UNIT I		15	
INSTRUMENTATION			
1	Microscopy – Light and Phase contrast- Instrumentation, Principles and working.		
2	Colorimetry and Spectrophotometry (Visible)- Instrumentation, Principles, Working and Applications.		
3	Chromatography – Paper and TLC- Instrumentation, Principles, Working and Applications.		
UNIT II		15	
ECONOMIC BOTANY			
1	Fibers: Types of fibers, fiber yielding plants. Paper: Types of paper, paper yielding plants, paper processing.		
2	Spices and condiments: Botanical source and Uses- Nutmeg, Mace, Clove, Cardamom and Saffron.		
UNIT III		15	
MOLECULAR BIOLOGY			
1	Types, structure and functions of DNA and RNA.		
2	Structure of Chromosome.(Eukaryotic and Prokaryotic)		
3	DNA replication in prokaryotes and eukaryotes.		

S.Y.BSc	Semester III Theory
RJSUBOT303 Paper III Current trends in Plant Science I	Course Outcomes 3.3 : 1. Analytical techniques learning (microscopy, colorimeter and chromatography. 2. Economic importance of plants with the help of examples of plants yield in terms of fibres, paper and spices. 3. Basic molecular biology concept with respect to DNA, RNA, chromosome and DNA replication. Learning outcome: ➢ Learning of principles and working of microscopy, colorimetric, Spectrophotometry and Chromatography. Research orientation ➢ Identification and understanding the economic importance of forest products and Spices and condiments. Develop Entrepreneurial skills among the learners ➢ Basic molecular biology concept learning. Research orientation

SEMESTER IV (THEORY)		**L**	**Cr**
Paper-I: Plant Diversity - III	**Paper Code: RJSUBOT401**	45	2
UNIT I		15	
FUNGI			
1	Outline classification of Ascomycetes up to order as per G.M. Smith.		
2.	General characters of Ascomycetes based upon Thallus, Reproduction. Economic importance of Ascomycetes.		
3	*Aspergillus*- Systematic position, Life cycle and Alternation of generations.		
4	*Xylaria* - Systematic position, Life cycle and Alternation of generations.		
5	Lichens – classification, general characters, methods of reproduction, economic importance, ecological significance.		
UNIT II		15	
GYMNOSPERMS			
1	Outline classification of Coniferophyta as per Chamberlain.		
2	*Pinus*- Systematic position, Life cycle and Alternation of Generations.		
3	*Cordaites*- Systematic position and structure.		
4	Distribution of Conifers in India.		
UNIT III		15	
ANGIOSPERMS			
1	Morphology of Inflorescence- All types.		
2	Morphology of Flower- Terminologies associated with description of flowers, Calyx and its modifications, Corolla and its modifications, Perianth, Androecium- structure, Adhesion and Cohesion types, staminodes, Gynoecium- carpels, Gynostegium, Placentation types.		
3	Taxonomy – study of plant families- a) Magnoliaceae b) Apocynaceae c) Amaranthaceae d) Palmae		

S.Y.BSc	Theory Semester IV
RJSUBOT401 Paper-I Plant Diversity – III	Course Outcomes 4.1 : 1. Fungi: Students to learn the classification of Ascomycetes important fungi like yeast, *Penicillium*. Life cycle study of *Aspergillus* and *Xylaria.* Symbiotic relationships lichen and their ecological significance. 2. Detailed study of *Pinus* and Distribution of Conifers in India. 3. Study of flower morphology and all types of inflorescence 4. Taxonomy of selected plant families Magnoliaceae, Apocynaceae, Amaranthaceae and Palmae. Learning outcomes: ➢ Learning the diversity in gymnosperms and distribution of Conifers in India. Climate change and its effect. ➢ Detailed study of morphology of flowers and some angiosperm families. Plant identification skills

SEMESTER IV (THEORY)		L	Cr
Paper-II: Forms and Functions-III	**Paper Code: RJSUBOT402**	45	2
UNIT I		15	
ANATOMY			
1	Secondary growth in Dicot stem and root, Monocot stem		
2	Mechanical tissue system- Distribution, I- girders, adaptation for Inextensibility, Incompressibility, Inflexibility, Shearing stress.		
3	Types of Vascular bundles.		
4	Growth rings, Periderm and Tyloses		
UNIT II		15	
ECOLOGY			
1	Ecological factors: Concept of environmental factors. Soil as an edaphic factor, Soil composition, types of soil, soil formation, soil profile.		
2	Community ecology- Qualitative characters- Phenology, Growth forms- Raunkiaer's Classification, Biological spectrum, Stratification. Quantitative characters- Density, Frequency.		
3	Soil Pollutants- Pesticides and synthetic fertilizers.		
UNIT III		15	
Pharmacognosy			
1	Introduction to Pharmacopoeia.		
2	Study of secondary metabolites (sources, classification, properties and uses) with reference to Alkaloids, Glycosides, Tannins, Volatile oils and Gums and resins (example of one plant for each category).		

S.Y.BSc	Theory Semester IV
RJSUBOT402 Paper *II* Forms and Functions-III	Course Outcomes 4.2 : 1. Understanding the secondary growth structure and types of vascular bundles of dicot and monocot stem and root. 2. Soil profile and composition analysis 3. Understanding Qualitative characters of Community ecology 4. Study of secondary metabolites (sources, properties and uses) with reference to Alkaloids, Glycosides, Tannins, Volatile oils and Gums and resins. Learning outcomes: ➢ Knowing the process and need of secondary growth in plant, mechanical tissue system and vascular bundles functions in plant ➢ Study of Ecological factors, community ecology and assessment of Soil Pollutants ➢ Detailed study of secondary metabolites and its application for drug making. Industrial applications of fine chemicals

SEMESTER IV (THEORY)		**L**	**Cr**
Paper-III: Current Trends in Plant Sciences - I	**Paper Code: RJSUBOT403**	45	2
UNIT I		15	
BIOTECHNOLOGY			
1	Introduction to plant tissue culture- Totipotency, organogenesis, organ culture, root culture, meristem culture, pollen and embryo culture.		
2	R-DNA technology - Gene cloning, enzymes in gene cloning and vectors in gene cloning.		
UNIT II		15	
HORTICULTURE			
1	Introduction to Horticulture: Branches of Horticulture.		
2	Gardening: Locations in the garden- Paths and Pathways, Avenue, Edges, Hedges, Lawn, Flower beds, Arches and Pergolas, Topiary, Water garden (with names of two plants for each category). Focal point.		
UNIT III		15	
BIOSTATISTICS AND BIOINFORMATICS- I			
1	Biostatistics -Testing of hypothesis - Chi square; Coefficient of correlation. Theory and Problems based on these.		
2	Bioinformatics – a) Introduction and aims – Information technology, history, Internet & its uses. b) Data organization and Retrieval- Biological databases, Software tools related to Biology (Biotechnology), Nucleic Acid Database, Protein Database, ENTREZ. c) BLAST d) Institutes- NCBI, EBI, Bioinformatics programme and Institues in India.		

S.Y.BSc.	Theory Semester IV
RJSUBOT403 Paper III Current Trends in Plant Sciences - I	Course Outcomes 4.3 : 1. Introduction and learning of plant tissue culture. 2. Study of R-DNA technology. 3. Introduction to Horticulture and gardening study. 4. Biostatistics -Testing of hypothesis - Chi square; Coefficient of correlation. Theory and Problems based on these. 5. Study of Bioinformatics with respect to Internet, Databases, Software tools, Bioinformatics Service Institutes. Learning outcome: ➢ Application of plant tissue culture and R-DNA technology. ➢ Designing of gardens and application of horticulture. (Entrepreneurship) ➢ Understanding the application of biostatistics with the given data.(Data Analysis) ➢ Virtual data/ literature study and use of bioinformatics. (Computational biology)

Semester III (PRACTICALS)			L	Cr
Practical-I: Plant Diversity- II		**Paper Code: RJSUBOTP301**		1
1	**Algae-** Study of stages in the life cycle of *Sargassum* from fresh/ preserved material and permanent slides.			
2	Study of stages in the life cycle of *Pinnularia* from fresh/ preserved material and permanent slides.			
3	Economic importance of Phaeophyta & Bacillariophyta.			
4	Range of thallus in Phaeophyta.			
5	**Bryophyta-** Study of stages in the life cycle of *Anthoceros* from fresh/ preserved material and permanent slides.			
6	Study of stages in the life cycle of *Funaria* from fresh/ preserved material and permanent slides.			
7	**Pteridophyta-**Study of stages in the life cycle of *Selaginella* from fresh/ preserved material and permanent slides.			
8	Study of form genera *Rhynia* with the help of permanent slides/ photomicrographs.			
9	Study of different types of stele			
Practical-II: Forms and Functions - II		**Paper Code: RJSUBOTP302**		1
1	Study of the ultra-structure of cell organelles prescribed for theory from Photomicrographs (Chloroplast).			
2	Study of different stages of Mitosis using onion root tip cells.			
3	Isolation and localization of mitochondria using density gradient centrifugation			
4	Identification of CAM plants by testing pH of the sap in the morning and introduction to TAN			
5	Estimation of sugars using Colorimeter and preparation of standard graph.			
6	Study of inheritance pattern with reference to Plastid Inheritance			
7	Aberrations --- Karyotypes - Cri – du- chat, Philadelphia, D-G translocation, Down's Syndrome.			

Practical-III: Current Trends in Plant Sciences – I	**Paper Code: RJSUBOTP303**	30	1
1	Separation of amino acids using circular paper chromatography.		
2	Separation of carotenoids using TLC.		
3	Determination of λ max for the given colored solution. Experiments based on Beer Lambert's Law from the given coloured solution.		
4	Sources, properties and uses of : a) Fibers b) Paper.		
5	Sources, properties and uses of : (as per theory) a) Spices b) Condiments.		
6	Determining the sequence of amino acids in the protein molecule synthesized from the given m-RNA strand (prokaryotic and eukaryotic).		
7	Estimation of DNA by DPA method.		

S.Y.BSc	Semester III Practical
RJSUBOTP301 Practical I Plant Diversity II	Course Outcomes They aim at enhancing the skills of the students learning by doing 1. Experiential learning to mount the specimens of Sargassum, *Pinnularia*, *Aspergillus.*, *Xylaria*., *Anthoceros* and *Funaria* and learn about the details of the life cycles. 2. Identification of fungal pathogens and disease caused by them. Learning outcomes: ➢ Learning the diversity in algae, fungi, bryophyte and its future application ➢ Understanding the effect of pathogens on plants

S.Y.BSc	Semester III Practical
RJSUBOTP302 Practical II Forms and Functions - II	Course Outcomes: 1. Study of the ultra-structure of cell organelles 2. Learning different stages of mitosis. Staining techniques 3. Preparation of standard graph using sugars. 4. Study of types of mechanisms of photosynthesis in plants 5. Study of inheritance pattern and Aberrations using Karyotypes Learning outcomes: ➢ Understanding the ultra-structure of Chloroplast ➢ Able to identify morphology of chromosomes ➢ Construction of standard graphs, calibration curves data interpretations ➢ Knowing the effect of Chromosomal Aberrations with the study of karyotypes (Cri-du chat, Philadelphia, D-G translocation, Down's syndrome). Genetic counselling

S.Y.BSc	Semester III Practical
RJSUBOTP303 Practical III Current Trends in Plant Sciences – I	Course Outcomes: Skill enhancement 1. Learning Circular paper chromatography and thin layer chromatography techniques. 2. Determination of λ max 3. Analysing the interpretation of DNA sequencing- Sanger's method and sequencing of amino acids in the protein molecule synthesised from the given m-RNA strand. 4. Quantifying the DNA by DPA method. Learning outcomes: ➢ Separating amino acid and carotenoids with Chromatography. ➢ Determination of λ max for any given coloured solution. ➢ Identification and knowing the economic importance of forest products and Spices and condiments ➢ Basic molecular biology concept learning of DNA sequencing and m-RNA strand.

Semester IV (PRACTICALS)		L	Cr
Practical-I: Plant Diversity- II	**Paper Code: RJSUBOTP401**		1
1	**Fungi-** Study of life cycle of *Aspergillus.*		
2.	Study of life cycle of *Xylaria*.		
3.	Study of Lichens.		
4.	Plant Pathology- Powdery Mildew.		
5.	Plant Pathology-Late Blight of Potato.		
6.	**Gymnosperm-** Study of stages in the life cycle of *Pinus* from fresh/ preserved material and permanent slides		
7.	Study of the form genus *Cordaites* with the help of permanent slide/ photomicrographs.		
8	**Angiosperms**- Study of inflorescence.		
9	Study of flower morphology and functional modifications of floral whorls.		
10.	Study of the following angiosperm families: a) Magnolianceae b) Apocyanaceae c) Amaranthaceae d) Palmae		
Practical-II: Forms and Functions - II	**Paper Code: RJSUBOTP402**		1
1	Study of normal secondary growth in the stem and root of a Dicotyledonous plant.		
2	Study of secondary growth in monocot stem (*Dracena*).		
3	Types of mechanical tissues, mechanical tissue system in aerial, underground organs.		
4	Study of different types of vascular bundles.		
5	Mechanical analysis of soil by the sieve method & pH of soil.		
6	Study of water holding capacity of different soil samples.		
7	Quantitative estimation of organic matter of the soil by Walkley and Black's Rapid titration method.		
8	Study of vegetation by the list quadrat method.		
9	Tests for alkaloids from *Strychnos* (seeds) and *Holarrhena* (bark)		

10	Tests for glycosides from *Glycyrrhiza* rhizome/ *Aloe* leaf.		
11	Tests for tannins.		
12	Stomatal index.		
13	Measurement of length of fibre using ocular meter		
Practical-III: Current Trends – I	**Paper Code: RJSUBOTP403**		1
1	Various sterilization techniques in Plant Tissue Culture.		
2	Technique of seed sterilization, callus induction and plant regeneration from callus.		
3	Encapsulation of axillary buds /formation of synthetic seeds.		
4	Identification of the cloning vectors – pBR322, pUC 18, Ti plasmid.		
5	Bottle and dish garden preparation.		
6	Study of five examples of plants for each of the garden locations as prescribed for Theory.		
7	Preparation of garden plans – formal and informal gardens.		
8	Chi square test.		
9	Calculation of coefficient of correlation.		
10	Web Search – Google- NCBI, EBI		
11	ENTREZ, BLAST.		

S.Y.BSc	Semester IV Practical
RJSUBOTP401 Practical I Plant Diversity II	Course Outcomes: Skill development plant identification in field 1. Slide preparation of *Selaginella, Pinus.* 2. Understanding *Rhynia, Pinus* and *Cordaites* with the help of permanent slide (Evolution of plants) 3. Study of inflorescence, flower morphology and functional modifications of floral whorls. 4. Study of Magnoliaceae, Apocynaceae, Amaranthaceae and Palmae family. Learning outcomes: ➢ Learning the diversity and stages of life cycle in Pteridophyta and gymnosperms. ➢ Understanding the past environment with the study of palaeobotany, fossils and geological time scale. ➢ Detailed study of morphology of flowers and some angiosperms. families.

S.Y.BSc	Semester IV Practical
RJSUBOTP402 Practical II Forms and Functions - II	Course Outcomes: Skill development 1. Exploring the normal secondary growth in the stem and root of a Dicotyledonous plant and Monocot stem (*Dracena*). 2. Study of different types of vascular bundles and conducting tissues- Xylem and phloem elements in Gymnosperms and Angiosperms. 3. Analysis of soil by the sieve method & pH of soil and water holding capacity of different soil samples. 4. Quantitative estimation of organic matter of the soil by Walkley and Black's Rapid titration method. (Industrial application) 5. Study of vegetation by the list quadrat method. 6. Tests for alkaloids, glycosides and tannins. 7. Study of Stomatal index, Palisade ratio, vein islet number. Learning outcomes: ➢ Knowing the reason of secondary growth, mechanical tissue system and vascular bundles functions in plant. ➢ Study of Ecological factors and assessment of soil pH, water holding capacity and organic content. ➢ Detailed study of secondary metabolites and its application for drug making. ➢ Analysis of Stomatal index, palisade ratio and vein islet number.

S.Y.BSc	Semester IV Practical
RJSUBOTP403 Practical III Current Trends in Plant Sciences – I	Course Outcomes: Entrepreneurial skills 1. Exploring the sterilization techniques in Plant Tissue Culture, Technique of seed sterilization, callus induction and plant regeneration from callus. 2. Encapsulation of axillary buds /formation of synthetic seeds. 3. Study of pBR322, pUC 18, Ti plasmid. 4. Preparation of Bottle and dish garden and study of five examples of plants for each of the garden locations. 5. Data analysis using Chi square test. 6. Data collection using Web Search – Google- NCBI, EBI and ENTREZ. Learning outcomes: ➢ Application of plant tissue culture and R-DNA technology ➢ Identification of the cloning vectors – pBR322, pUC 18, Ti plasmid. ➢ Designing of gardens and application of horticulture (Entrepreneurship). ➢ Understanding the application of biostatistics on data. (data analysis) ➢ Virtual data/ literature study and use of bioinformatics.

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58. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
59. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
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Scheme of Examinations

1. Two Internals of 20 marks each. Duration 30min for each.
2. One External (Semester End Examination) of 60 marks. Duration 2 hours.
3. One Practical at the end of Semester consisting of Practical I- 50 marks, Practical II- 50 marks and Practical III -50 marks but passing combined out of 150.
4. Minimum marks for passing Semester End Theory and Practical Exam is 40 %.
5. Student must appear for at least one of the two Internal Tests to be eligible for the Semester End Examination.
6. Two short field excursions for habitat studies are compulsory. A field report must be submitted
7. Field work of not less than eight hours duration is equivalent to one period per week for a batch of 15 students.
8. A candidate will be allowed to appear for the practical examinations if he/she submits a certified journal of S.Y.B.Sc. Botany or a certificate from the Head of the department / Institute to the effect that the candidate has completed the practical course of S.Y.B.Sc. Botany as per the minimum requirements.
9. In case of loss of journal, a candidate must produce a certificate from the Head of the department /Institute that the practicals for the academic year were completed by the student. However, such a candidate will be allowed to appear for the practical examination but the marks allotted for the journal will not be granted.
10. HOD's decision, in consultation with the Principal, shall remain final and abiding to all.