

Kadi Sarva Vishwavidyalaya, Gandhinagar
CBCS Syllabus of M.Sc. Botany

**KADI SARVA
VISHWAVIDYALAYA,
GANDHINAGAR**



M.Sc. BOTANY

**CBCS SYLLABUS
W.E.F. 2017**

Kadi Sarva Vishwavidyalaya, Gandhinagar
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Course Structure for M.Sc. Botany Semester -1 & 2

SEMESTER- 1

Sem	Paper	Title	Hours/ week	Credits	Exam hours	Mid Term marks	External marks	Total marks
1	BCT – 101	Cell& Molecular Biology	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
1	BCT – 102	Bio- instrumentation	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
1	BCT – 103	Geneticsand Plant breeding	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
1	BCT – 104	Plant Ecology &Phytogeography	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
1	BCP – 105	Practicals related to theory papers in the semester	8	8	12	----	Max.:200 Min: 100	Max:200 Min: 100
		Total credits		24				

SEMESTER- 2

Sem	Paper	Title	Hours/ week	Credits	Exam hours	Mid Term marks	External marks	Total marks
2	BCT – 201	Biology and Diversity of Algae, Bryophytes &Pteridophytes	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
2	BCT – 202	Taxonomy & Diversity of seed plants	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
2	BCT – 203	Mycology & Plant pathology	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
2	BCT – 204	Horticulture	4	4	3	Max.:30 Min: 12	Max.:70 Min: 28	100
2	BCP – 205	Practicals related to core theory papers in the semester	8	8	12	----	Max.:200 Min: 100	Max.:2 00 Min: 100
		Total credits		24				

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M.Sc. Botany I Year Course Description:

Paper	Title of Paper	Credits
Core	SEMESTER-1	
BCT – 101	Cell & Molecular Biology	4
BCT – 102	Bioinstrumentation	4
BCT – 103	Genetics and Plant breeding	4
BCT – 104	Plant Ecology and Phytogeography	4
BCP – 105	Practicals related to theory papers in the semester	8
	SEMESTER-2	
Core		
BCT – 201	Biology and Diversity of Algae, Bryophytes & Pteridophytes	4
BCT – 202	Taxonomy & Diversity of seed plants	4
BCT – 203	Mycology & Plant pathology	4
BCT – 204	Horticulture	4
BCP – 205	Practicals related to core theory papers in the semester	8

BCT- Botany Core Theory, BCP- Botany Core Practical.

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Semester-1
BCT101- Cell & Molecular Biology

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT 101	Cell & Molecular Biology	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
An overview of cell organization: Structure of prokaryote and eukaryote cell. Cell organization: Structure and functions of membranes, nucleus, Chloroplast, Mitochondria, Endoplasmic reticulum, Golgi complex, ribosomes, lysosomes, peroxisomes and glyoxysomes.		
Unit 2	No. of Lectures:12	% Weightage:25
The cytoskeleton and cell motility – Microtubules, microfilaments and intermediate filaments. Cell cycle and cell division. Nucleic acids as carries of genetic information; Physical properties and structure of DNA and RNA. Replication of DNA: Enzyme and proteins involved in replication.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Transcription of DNA, post transcriptional modifications of RNA and control of transcription. Genetic code and its properties. Translation of RNA. Significant differences between prokaryote and eukaryote translation.		
Unit 4	No. of Lectures:12	% Weightage:25
DNA damage and repair- Pyrimidine dimer formation, Photoreactivation, Excision Repair, Mismatch Repair, Recombination Repair, SOS repair.		

REFERENCES:

Sr. No.	Name of Book	Authors
1	Instant notes on Molecular Biology- 4 Ed.	Turner
2	Cytology	Verma and Agrawal
3	Molecular Biology of cell	B.Albertet <i>al.</i>

Suggested reading:

1. Bonifacino JS, Dasso M, Harford JB, Liipincott-Schwartz J and Yamada KM. (2004) Short Protocols in Cell Biology. John Wiley & Sons, New Jersey.
2. Hawes C and Satiat-Jeunemaitre B (2001) Plant Cell Biology: Practical Approach. Oxford University Press, Oxford.
3. Hartk D.L and Jones, E.W 1998 Genetics: Principles and Analysis (Fourth Edition). Jones and Bartlett Publishers, Massachusetts, USA.
- 4.Karp, G.1999. Cell and Molecular Biology : Concept and Experiments. John Wiley and Sons, Inc., USA.
5. Molecular biology of the cell, 1994 : By Bruce Alberts et al; Garland publishing New York.
6. Cell and molecular biology, 1999: By Gerald Karp, John Wiley, London.
7. Cell and molecular biology, 1987: By DeRobertis and DeRobertis, Lee and Febiger, Washington.
8. Molecular cell biology, 2000: By Lodish et al; W. H. Freeman & Company, Newyork.

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Semester -I
BCT-102: Bioinstrumentation

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT102	Bioinstrumentation	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
Experimental approaches for studying cells: Various types of light microscopy, Electron microscopy, fixation and staining. Principle and application of light, phase contrast, fluorescence, scanning and transmission electron microscopy, scanning tunneling electron microscopy. Preparation of microbial, animal and plant samples for microscopy.		
Unit 2	No. of Lectures:12	% Weightage:25
Principle methodology and applications of Paper chromatography, Thin layer chromatography, gel filtration, ion –exchange and affinity chromatography; High Performance Liquid Chromatography and gas chromatography.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Visible, UV, IR Spectroscopy. Radioactive Isotopes and half-life of isotopes; Effect of radiation on biological system; Autoradiography.		
Unit 4	No. of Lectures:12	% Weightage:25
Centrifugation: Basic principle, types and applications; density gradient and Ultracentrifugation. Overview of pH meter, buffers and Electrophoresis.		

REFERENCES:

SN	Title	Author
1.	Biophysical chemistry: Principle and techniques.	Upadhyay&Nath
2.	Instrumental analysis	D.A.Skoog, Holler & Crouch

Suggested reading:

1. H. H. Willard *et al.* Instrumental methods of analysis.
2. Instrumental method of chemical analysis -Sharma BK
3. Voet, D., J. G. Voet and C. W. Pratt : Fundamentals of Biochemistry. John Wiley & sons, Inc. New York.

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Semester -I

BCT 103- Genetics and Plant breeding

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT 103	Genetics & Plant breeding	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
Fundamentals of Genetics: Mendelian analysis, The Law of segregation, The law of Independent assortment. Test cross and back cross; Interaction of genes: Incomplete dominance, co-dominance, lethal genes, epistasis, pleiotropy polygenic traits and quantitative inheritance;		
Unit 2	No. of Lectures:12	% Weightage:25
Sex chromosomes and sex-linked inheritance: Transmission of sex- linked traits, sex determination; Chromosome structure and function. Chromosome mapping and its significance: Linkage, Crossing over- two point crosses, three–point crosses, tetrad analysis, chromosome maps.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Alterations in chromosome number and structure: Aneuploidy & euploidy, polyploidy and its significance. Deletions, duplications, inversions and translocations; Mutations: Types of mutations, mutagens, molecular basis of mutations; transposable elements; Reverse mutations & suppressor mutations.		
Unit 4	No. of Lectures:12	% Weightage:25
Male sterility in plants. Objectives and Methods of plant breeding, Origin, domestication and introduction of crop plants; Modes of reproduction – asexual and sexual reproduction, determination of mode of reproduction in a species, modes of pollination, mechanism of pollination control, self-incompatibility, Hybridization: History, objectives and procedures in hybridization, consequences of hybridization		

REFERENCES

SN	Title	Author
1.	Principles of Plant Genetics and Breeding, Blackwell Publishing Ltd.USA.	Acquaah G (2007).
2.	Genetics, 3rd Edition, Pearson (Prentic Hall).	Strickberger MW (2008).

Suggested reading:

1. Snustad, D.P and Simmons, M.J 2000. Principles of Genetics (Second Edition).John Wiley and Sons Inc., USA.
2. Gardner and Simmons Snustad2005 (Eighth Edition). Principles of Genetics, JohnWiley and Sons, Singapore.3.
3. Allard R.W1995. Principles of Plant Breeding. John Wiley and Sons, Ice., Singapore.
4. Sharma J.R1994 Principles and practices of Plant Breeding. Tata McGraw-HillPublishers Company Ltd., New Delhi.
- 5.Singh B.D1996 Plant Breeding – Principles and methods. Kalyani Publications,Ludhiana.
6. Chahal G.Sand Gosal S.S 2002. Principles and procedures of Plant Breeding,Narosa Publishing House, New Delhi.
7. Hartl DL and Jones EW (2007). Genetics – Analysis of Genes and Genomes, 7th edition,Jones and Barlett publishers..
8. Allard RW (1999). Principles of Plant Breeding (2nd Edition), John Wiley and Sons.

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Semester-1

BCT: 104 - Plant Ecology and Phytogeography

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT-104	Plant Ecology & Phytogeography	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
Plant relation with the environment:		
1. Plant relation with the climatic factors: water, precipitation, temperature, light and radiation.		
2. Plant relation with the edaphic factors: types of soil, soil moisture and waterholding capacity of the soil, soil nutrients, soil microbes.		
3. Plant distribution with respect to topographic and climatic factors, centres of origin, migration.		
4. Environmental pollution and its impact – Air, water, soil and noise.		
Unit 2	No. of Lectures:12	% Weightage:25
Population Ecology:		
1. Ecological limits and the size of population, factors affecting population size, demes.		
2. Life history strategies, r and k selection, C-S-R triangle.		
3. Concept of metapopulation, extinction events, population viability analysis.		
4. Community structure and species diversity.		
5. Diversity types and levels (alpha, beta, gamma), ecotone and edge effect.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Ecosystems:		
1. Ecosystem: Components and organization.		
2. Energy flow and mineral cycling, carbon sequestration.		
3. Ecosystem types Terrestrial: Forests, grasslands and deserts. Aquatic: Fresh water and marine. Artificial: Agricultural.		
4. Eco-physiology: Adaptive responses of plants to variation in: Light: Photoinhibition, protection against light-induced damage. Temperature: Winter hardness, vernalization, adaptation to high temperature. Water availability: Adaptation to light drought and flooding. Plant succession: Autogenic and allogenic, mechanism and phases.		
5. Cerial communities and climax communities: Hydroseres, lithoseres, xeroseres, haloseres		
Unit 4	No. of Lectures:12	% Weightage:25
Phytogeography:		
1. Introduction, major plant communities of world, phytogeographic regions of world (vegetation of belts), soil, climate, flora and vegetation of India, floristic (Botanical) regions of India.		
2. Biomes: Classification and components. 3. Habitat ecology: Fresh water, Marine water, Estuarine ecology, Terrestrial ecology, Dessert ecology.		
4. Endemism and EIA		

REFERENCES:

SN	Title	Author
1.	Plant Ecology	P.D. Sharma
2.	Environment. 6th edition. John Wiley & Sons, Inc., New York.	Raven PH, Begr LR, Hassenzahl DM (2008)

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Suggested reading:

1. Ambhast, R. S. (1998). A Text Book of Plant Ecology, 9th edition, Friend and Co.
2. Barbour, M. G., Pits, W. D. and Burk, J. H. (1967). Terrestrial Plant Ecology, Addison-Wesley Publisher.
3. Begon, M., Townsend, C. R., Harper, J. L. (2005). Ecology: From Individuals to Ecosystems, 4th edition, Wiley Blackwell.
4. Canter, L. (1996). Environmental Impact Assessment, 2nd edition, McGraw Hill Publishing Company.
5. Coleman, D. C., Crossley, D. A., Handrix, P. F. (2004). Fundamentals of Soil Ecology, 2nd edition, Elsevier academic press.
6. Collier, B. D., Cox, G. W. and Miller, P. C. (1973). Dynamic Ecology, Prentice-Hall, Inc. Englewood Cliffs, New Jersey.
7. Crawley, M., Crawley, J. And Crawley, M. (1997). Plant Ecology, 2nd edition, Wiley Blackwell.
8. De, A. K. (1994). Environmental Chemistry, Wiley Eastern publication.
9. Gurevitch, J., Scheiner, S. M., Fox, G. A. (2006). The Ecology of Plants, Sinauer Associates.

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Semester-1
BCP 105 Practical work

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Practical		Total Marks
			Hrs	Max Marks	
BCP 205	Practical work	8	48	200	200

Practicals related to core theory papers of Semester1 shall be conducted.

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Semester-2

BCT 201 - Biology and Diversity of Algae, Bryophyta, and Pteridophyta

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT201	Biology and Diversity of Algae, Bryophytes & Pteridophytes	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
Archebacteria and eubacteria: General account; ultra-structure, nutrition and reproduction biology and economic importance; cyanobacteria – salient features and biological importance. Viruses: general account, morphology and reproduction, classification, economical importance		
Unit 2	No. of Lectures:12	% Weightage:25
Algae: general account, morphology and reproduction, classification, economical importance		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Bryophyta: general account, morphology and reproduction, classification, economical importance		
Unit 4	No. of Lectures:12	% Weightage:25
Pteridophyta: general account, morphology and reproduction, classification, economical importance		

REFERENCES:

SN	Title	Authors
1	The Structure and Reproduction of Algae. Vol. II. Cambridge Univ. Press. Cambridge, London.	Fritsch FE (1945).
2	Biology of Bryophytes. John Wiley & Sons, New York, NY.	Chopra R.N. & Kumar P.K. (1988)
3	Botany for degree students, Bryophyta, S. Chand Publication.	Vashista B.R., Sinha A.K., Kumar A. (2008)
4	Textbook of Pteridophyta. MacMillan India Ltd. Delhi.	Sharma O.P. (1990).

Suggested reading:

1. Brodie J. and Lewis J. (2007). (Ed.) Unravelling the algae: the past, present and future of algal systematics. CRC press, New York, pp 335.
2. Bellinger E.G. and Sigeo D.C. (2010). Freshwater algae: Identification and use as bioindicators, Willey-Blackwell, UK, pp. 271..
3. Cole K.M. and Sheath R.G. (1990). Biology of the red algae. Cambridge University Press. USA. pp. 503.
4. Desikachary T.V. (1959). Cyanophyta. ICAR, New Delhi
5. Krishnamurthy V. (2000). Algae of India and neighboring countries I. Chlorophycota, Oxford & IBH, New Delhi.
6. Prescott G.W. (1969). The algae.
7. Kumar, H. D. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
8. Parihar, N. S. Bryophyta. Central Book Depot, Allahabad.
9. Round, F. E. The Biology of Algae. Cambridge University Press, Cambridge.
10. Sporne, K. K. The Morphology of Pteridophytes. B. I. Publishing Pvt. Ltd., Bombay.
11. Stewart, W. N. and Rathwell, G. W. Paleobotany and the Evolution of Plants. Cambridge University Press.

Semester-2

BCT 202- Taxonomy & Diversity of seed plants

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Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs	Max Marks		
				Mid Term	End Term	
BCT 202	Taxonomy & Diversity of seed plants	4	48	30	70	100

COURSE CONTENT

Section A

Unit 1 **No. of Lectures:12** **% Weightage:25**
Taxonomy- Definition. The species concept: taxonomic hierarchy, species, genus, family & other categories; Salient features of the International Code of Botanical Nomenclature (ICBN). Systems of classification: Bentham & Hooker, Hutchinson, Takhtajan. Merits & demerits of classification systems

Unit 2 **No. of Lectures:12** **% Weightage:25**
Taxonomic evidence: morphology, anatomy, palynology, embryology, cytology; phytochemistry; and genetics. Taxonomic tools: Herbarium; floras; histological, cytological, phytochemical, serological, biochemical and molecular techniques; computers and GIS. Plant explorations; invasions and introductions; local plant diversity and its socio-economic importance.

Section B

Unit 3 **No. of Lectures:12** **% Weightage:25**
Introduction to Gymnosperms, structure & reproductive organs, male & female gametophytes. Comparative account of Cycadales, Ginkgoales, Coniferales, Ephemerales & Gnetales. Geological rise & fall of gymnosperms.

Unit 4 **No. of Lectures:12** **% Weightage:25**
General characters, classification of angiosperms. Study of dicot families: *Polypetale* – *Menispermaceae*, *Anacardiaceae*, *Molgenaceae*, Gamopetale – *Olicaceae*, *Convolvulaceae*, *salvadoraceae*, *lamiaceae*, *Apetale* – *nectagenaceae*, *chinopodiaceae*, *euphorbeaceae*, *Axlapidaceae*. Study of monocot families: *Poaceae*, *Liliaceae*, *Commelianaceae*, *laminaceae*. Explanation of floral diagram.

REFERENCES:

SN	Title	Author
1.	An integrated system of classification of flowering plants. Columbia University Press, New York.	Cronquist, A. 1981.

Suggested reading:

- Bhatnagar, S.P. and Moitra, A. 1996. Gymnosperms.
- Gurcharan Singh. Plant systematics: Theory and Practice
- Heywood (ed.) Modern Methods in Plant Taxonomy
- Jeffery, C. An Introduction to Plant Taxonomy
- Jones, S.B., Luchsinger, A.L. 1987. Plant Systematics
- Judd, W.S; Campbell, C.S., Kellogg, E.A; Stevens, P.F. 1999. Plant Systematics: A phylogenetic approach
- Lawrence, G.H.M. Vascular Plant Systematics
- Nordenstam, B., El Gazaly, G. and Kassas, M. 2000. Plant systematics for 21st century.
- Radford, A. 1986. Fundamentals of Plant Systematics
- Solbrig, O.T. 1970. Principles and Methods of Plant Biosystematics
- Sporne, K. Morphology of gymnosperms
- Stace, C. A. 1980. Plant Taxonomy and Biosystematics
- Stebins, G.L. Variation and Evolution in Plants.
- Turrill, W.B. Vistas in Botany vol. IV (Recent Researches in Plant Taxonomy)
- Woodland, D.W. Contemporary plant systematics.

Semester-2

BCT 203 - Mycology & Plant pathology

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Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Theory		Total Marks	
			Hrs.	Max Marks		
				Mid Term		End Term
BCT 203	Mycology & Plant pathology	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
Introduction to fungi: general account, morphology and reproduction, classification, economical importance; Lichens: growth forms and reproductive structures.		
Unit 2	No. of Lectures:12	% Weightage:25
Techniques for mushroom cultivation: Schedule and systems of cultivation; composting; peak heating; spawn preparation and mushroom strains; spawning and mycelial growth; supplementation; cultivation techniques from casing to ruffling and recovery growth to harvesting; pests and diseases, its protection.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
Introduction to plant pathogens: Viruses, bacteria, fungi, nematodes and insect pests. Introduction to plant pathology. Detailed study on symptoms, etiology, epidemiology and control of the following fungal diseases of plants. Late blight; powdery mildew; smuts, Citrus canker, red dot.		
Unit 4	No. of Lectures:12	% Weightage:25
Symptoms, etiology, epidemiology and control of bacterial and viral diseases with reference to leaf blight, leaf spot, citrus canker, brown rot, mosaic diseases in plants. Host-pathogen interactions: Pathogen attack strategies; plant defense mechanisms; HR and SAR in plant defense.		

REFERENCES:

SN	Title	Author
1.	Plant Pathology, 5th Edition.	Agrios GN (2005)
2.	Introductory Mycology	Alexopoulos, C. J., Mims, C. W. and Blackwel

Suggested reading:

1. Mandahar, C. L. Introduction to Plant Viruses. Chand & Co. Ltd., Delhi.
2. Mehrotra, R. S. and Aneja, R. S. An Introduction to Mycology. New Age Intermediate Press.
3. Rangaswamy, G. and Mahadevan, A. 1999. Diseases of Crop Plants in India. Prentice Hall of India Pvt. Ltd., New Delhi.
4. Singh R S. Plant diseases. 6th edition. Oxford and IBH, New Delhi
5. Singh R.S. Principles of plant pathology. 3rd edition. Oxford and IBH, New Delhi

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Semester-2
BCT204- Horticulture

Subject Code	Subject Title	Credits	Theory			Total Marks
			Hrs.	Max Marks		
				Mid Term	End Term	
BCT 204	Horticulture	4	48	30	70	100

COURSE CONTENT

Section A		
Unit1	No. of Lectures:12	% Weightage:25
1. Importance of Horticultural crops. 2. Principles of Horticulture crop production technology. 3. Principles of plant propagation, methods of propagation for horticultural crops. 4. Essential of plant nutrients, their deficiency symptoms and toxicities in Horticultural crops.		
Unit 2	No. of Lectures:12	% Weightage:25
1.Organic and inorganic manures and their methods of application in Horticultural crops. 2.Principles of weed control, crop rotation, cropping system, methods of irrigation and drainage. 3. Major pest and diseases management in horticultural crops. 4. Harvesting, handling, storage. 5. Traits and quality standards of horticultural products.		
Section B		
Unit 3	No. of Lectures:12	% Weightage:25
1. Important vegetable crops - present status and future prospects. 2. Selection of site and soil for growing vegetables. 3. Role of environment and soil factors in vegetable production. 4. Essential plant nutrients and their deficiency symptoms. 5. Vegetable crops management. 6. Classification of vegetable crops.		
Unit 4	No. of Lectures:12	% Weightage:25
1. Importance and scope of Floriculture and Landscaping: Present status and future prospects. 2. History of gardening in India. 3. Types and styles of gardens. 4. Principle and elements of landscaping. 5. Important annual and perennial flower crops. 6. Principles and methods of propagation of ornamental crops. 7. Commercial seed production in Flower Crops. 8. Application of biotechnology in flower crops.		

REFERENCES:

SN	Name of Book	Authors
1	Post harvest technologies for commercial Floriculture	Verma and Anil
2	Horticulture Glance-3Floriculture,Landscaping and Gardening, Medicinal & Aromatic plants.	Dr. Ajeet Singh, Salaria and Dr. Babita Singh Salaria

Suggested reading:

- Objective Horticulture knowledge, Salaria.
- Advance in Horticulture Strategies, production,plant protection, value addition, Dr.V.K.Sharma

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Semester-2

BCP 205 Practicalhorticulture

Teaching and Evaluation Scheme:

Subject Code	Subject Title	Credits	Practical		Total Marks
			Hrs	Max Marks	
BCP 205	Practical work	8	48	200	200

Practicals related to core theory papers of Semester2 shall be conducted.

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Unit wise marks distribution and the question paper scheme of End Term Examinations

Section A	Questions from each Unit	Questions to be answered	Marks
Unit 1	Five MCQ, Two 5M questions, four 3M questions	MCQ-5 5M questions -1 3M questions –at least 1& maximum 4	35 Marks
Unit 2	5 MCQ, four 5M questions, four 3M questions	MCQ-5 5M questions -1 3M questions –at least 1& maximum 4	
Section B	Questions from each Unit	Questions to be answered	Marks
Unit 3	5 MCQ, four 5M questions, four 3M questions	MCQ-5 5M questions -1 3M questions –at least 1& maximum 4	35 Marks
Unit 4	5 MCQ, four 5M questions, four 3M questions	MCQ-5 5M questions -1 3M questions –at least 1& maximum 4	
		Total	70 Marks

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Department of Botany
Scheme for End Term Examination, KSV

Time: 3 hrs

Date:
SECTION-A

Maximum marks: 70

Q.1 Answer all questions. Each question carries 1 mark (10X1=10 Marks)
(MCQ. Out of these 5 will be from Unit 1 and 5 will be from Unit 2)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9
- 10.

Q. 2 Answer all questions. Each question carries 5 marks (2X5=10M)

A. 5M Question (Unit1)

or

B. 5 M Question (Unit1)

C. 5M Question (Unit2)

or

D. 5 M Question (Unit2)

Q. 3 Answer any 5 questions. Each question carries 3 marks (5X3=15 Marks)
(4 questions from Unit 1 and 4 from Unit 2)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

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P.T.O

SECTION-B

**Q.4 Answer all questions. Each question carries 1 mark (10X1=10 Marks)
(MCQ. Out of these 5 will be from Unit 3 and 5 will be from Unit 4)**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Q. 5 Answer all questions. Each question carries 5 marks (2X5=10M)

A. 5M Question (Unit1)

or

B. 5 M Question (Unit1)

C. 5M Question (Unit2)

or

D. 5 M Question (Unit2)

**Q.6 Answer any 5 questions. Each question carries 3 marks (5X3=15 Marks)
(4 questions from Unit 3 and 4 questions from Unit 4)**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
