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BENGALURU CITY
UNIVERSITY

Office of the Registrar, Central College Campus, Dr. B.R. Ambedkar Veedhi, Bengaluru – 560 001.
Ph.No.080-22131385, E-mail: registrarbcu@gmail.com

No:BCU/BoS/MSc-Plant Sc/ 218 /2020-21 Date: 11.01.2021.

NOTIFICATION

Sub: Syllabus for 1st Semester M.Sc., Plant Science of Bengaluru City University.

Ref: 1. Recommendations of the Board of Studies in Plant Science (PG).
2. Resolution of the Standing Committee of the Academic Council at its meeting held on 04.12.2020.
3. Orders of the Vice-Chancellor dated 11.01.2021.

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In pursuant to the recommendations of the Board of Studies in Plant Science (PG) and the resolution of the Standing Committee of the Academic Council, cited at reference (1) & (2) above, and pending ratification by the Academic Council, the Syllabus for 1st Semester M.Sc., Plant Science of Bengaluru City University is hereby notified for implementation from the academic year 2020-21. As per the decisions of the Standing Committee, the Maximum Marks for Practical Question Paper shall be as follows:

1. For Practicals	..	50 marks
2. For Viva-voce	..	10 marks
3. For Practical Record Book..		10 marks
Total	..	70 marks

The copy of the Syllabus is notified in the University Website: www.bcu.ac.in for information of the concerned.

REGISTRAR

To,
1. The Dean, Faculty of Science, BCU.
2. The Chairman & Members of BoS in Plant Science (PG) , BCU.
3. The Principals of the concerned affiliated Colleges of BCU – through email.
4. The P.S. to Vice-Chancellor/Registrar/Registrar (Evaluation), BCU.
5. Office copy / Guard file/University Website www.bcu.ac.in

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BE BOUNDLESS

BENGALURU CITY UNIVERSITY

Syllabus for M.Sc. Plant Science

(I Semester)

CHOICE BASED CREDIT SYSTEM

(SEMESTER SCHEME)

2020-2021

PROCEEDINGS OF THE MEETING OF THE BOARD OF STUDIES IN PLANT SCIENCE (PG) BENGALURU CITY UNIVERSITY, BENGALURU.

Date: 05-10-2020

Agenda:

1. To finalize the syllabus of Choice Based Credit System (**CBCS**) for I Semester, M.Sc., Plant Science and panel of examiners for approval.

MEMBERS APPROVED THE SYLLABUS:

1	Prof. L. RAJANNA	Chairman
2	Prof. Ch. RAMESH	External Member
3	Prof. G. R. JANARDHANA	External Member
4	Prof. S. MANIAN	External Member
5	Prof. RAJU. K. CHALANNAVAR	External Member
6	Prof. JAYARAM REDDY	Member
7	Dr. ROSHINI RAO	Member
8	Dr. M. SEENAPPA	Co-opted Member
9	Prof. RAJKUMAR H GARAMPALLI	External Member(Co-opt)

MEMBERS NOT RESPONDED:

1	Prof. M. B. SHIVANNA	External Member

MINUTES OF THE MEETING

Chairman sent emails to the respected members of the board for the approval of I Semester M.Sc., Plant Science syllabus on 23.09.2020 and panel of examiners.

a) The draft scheme of the study, Examination and Syllabus of Choice Based Credit System (**CBCS**) for I semester M.Sc., in Plant Science was scrutinized, discussed and approved after changes suggested by the members.
b) The members also approved the panel of examiners for the academic year 2020-21.
c) The Chairman BoS was authorized to make necessary modifications wherever it is required.

Dr. L. RAJANNA
Professor & Chairman BoS
Dept. of Botany
Bangalore University
Jnanabharathi Campus,
Bangalore - 560056.

SEMESTER I

Paper Code	Title of the Paper	Theory (Hrs/Week)	Practical (Hrs/Week)	Total No. of Hrs/ Semester	Duration of examination (Hrs)	Max. Marks examination	Internal Assessment	Total Marks	Credits
HCT- 101	SYSTEMATICS AND BIODIVERSITY	4	-	52	3	70	30*	100	4
HCT- 102	ECOLOGY AND ENVIRONMENTAL BIOLOGY	4	-	52	3	70	30*	100	4
HCT- 103	BIOCHEMISTRY AND BIOPHYSICS	4	-	52	3	70	30*	100	4
HCT- 104	CELL BIOLOGY AND GENETICS	4	-	52	3	70	30*	100	4
SCT - 105	PHYTOGEROGRAPHY AND EVOLUTION	3	-	39	3	70	30	100	2
PRACTICAL – I HCP- 106	Of Paper – HCT 101	-	4	52	4	70	30**	100	4
	Of Paper – HCT 102	-	4	52					
PRACTICAL – II HCP -107	Of Paper – HCT 103	-	4	52	4	70	30**	100	4
	Of Paper – HCT 104	-	4	52					

Total marks = 700, Total Credits = 26

*15 marks for Test + 05 marks for assignment + 05 marks for Seminar + 05 marks for Attendance,

**20 marks test +10 marks for Record
(15 marks for each paper HB: 101 & 102 of Practical – I and
15 marks for each paper HB: 103 & 104 of Practical - II)

Dr. L. RAJANNA
Professor & Chairman BOS
Dept of Botany
Bangalore University
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Bangalore - 560056

HCT 101: SYSTEMATICS AND BIODIVERSITY

(4 Credits, 4 hr/week, 52 Lectures)

UNIT I **Fundamental of Systematics:** **13 hrs**

Biological classification, hierarchy of categories and higher taxa. Taxonomical characters – Procedures and keys. Species concepts: varieties, subspecies, sibling species and race. International code of Botanical nomenclatures.

Methodologies in Systematics:

Morphology based taxonomy, numerical taxonomy, cyto-taxonomy and chemotaxonomy. DNA fingerprinting and markers for detection/evaluation of polymorphism.

UNIT II **Modern concepts:** **13 hrs**

Genomic DNA: nuclear, chloroplast and mitochondrial genomes, DNA and RNA based taxonomy in plants Representative genes in modern taxonomy: COI, cyt-b, 16S, 18S, 28S rRNA, mat K, ITS1, ITS2, rDNA and trnl-F. Key features of DNA based phylogeny.

Genomic Data Bases: Genetic diversity-Assessing biodiversity, RFLP, RAPD, Allozymes and PCR. Primary nucleotide, nucleotide sequence databases: Gene Bank, tMBL, DDBL, and BOLDS. SNpedia, Corn, Bioinformatics and Harvester.

UNIT III **Biodiversity in Biosphere -Basic principles:** **13 hrs**

Biodiversity, Domesticated Biodiversity, Agro-biodiversity, Introduced Biodiversity and Native Biodiversity. Components of Biodiversity: Ecosystems: Forests, Wetlands, Grasslands and Mangrove ecosystems. Classification of Habitats: Biomes, Species Diversity: α, β and γ diversity. Endemic species and patterns of distribution with special reference to India. Western Ghats and Silent valley as "biodiversity hot spots". Characterization, generation and maintenance, scope and constrains of biodiversity; genetic diversity, species diversity, eco-system diversity.

UNIT IV **Biodiversity and conservation:** **13 hrs**

Biosphere reserves, resources and management. Global diversity hotspots, effect of manmade alterations of environment on biospheres. Agro based diversity, urban-peri-urban biodiversity, forest diversity. Biodiversity Indices, threat to biodiversity. Modern tools and techniques to assess biodiversity, strategies of conservation. Global programmes and concept of endangered species.

Conservation-approach:

Landscape approach to biodiversity conservation, Corridor approach, individual species approach, habitat conservation approach. National biodiversity strategy and action plan.

REFERENCES:

1. Biodiversity Conservation and Phylogenetic Systematics. Pelleus R and Gandcolas P (2011) Springer.NY.
2. Biodiversity: Perception, Peril and Preservation. PrabodhMaiti and PaulainMaiti (2011). PHI Learning. New Delhi

3. Principles of Animal Taxonomy. Simpson G G (2011). Oxford & IBH Pub.Company.
4. Plant Systematics. Balfour A (2016). SyrawoodPub.House. London
5. Text book of Biosystematics. Pullaiah T (2013). Regency Publishers. USA.
6. Biology of Biodiversity. Kato M (2007). Springer, NY.
7. Description of Taxonomy. Watson M.F., Lyal C.H.C. and Pendry C A. (2015). Cambridge University Press.
8. Biodiversity Taxonomy and Ecology. Sing G.K.M (2008). Alp books
9. Biology. Raven P., Johnson G, Mason K, Losos J and Singer S (2005). McGraw Hill.

HCT 102: ECOLOGY AND ENVIRONMENTAL BIOLOGY

(4 Credits, 4 hr/ week, 52 Lectures)

UNIT I — **13 hrs**

Concept of Ecology and Ecosystem:
Evolutionary ecology, environmental concepts-laws and limiting factors, Ecological models. Nature of ecosystem, production, food webs, energy flow through ecosystem, bio-geochemical cycle, resilience of ecosystem, ecosystem management.

Limiting Factors:
Concept of limiting factors-Liebig's law of the minimum, Shelford's law of Tolerance. Population and community ecology. Natality, mortality, growth rate as factors determining the population density-population interactions. Types of community-structure-community succession and homeostasis.

UNIT II — **13 hrs**

Habitat Ecology:
Freshwater habitat-marine habitat-estuarine habitat-terrestrial habitat. Case study of the Western Ghats and the Silent Valley. Eco-tourism.

Resource Ecology and Management:
Concept-classification; non-renewable and renewable resources conventional and non-conventional source and energy. Conservation of natural resources, use alternate energy sources.

Climate change:
Environmental stresses and their management, global climatic pattern, global warming, atmospheric ozone, acid and nitrogen deposition, coping with climatic variations. El-Nino effect.

UNIT III — **13 hrs**

Environmental Pollution:
Air, water, soil and land pollution. Impact of pollutants on general fauna, flora and ecosystem. Factors influencing environmental concentration of toxicants and toxicity. Environmental monitoring of pollutants. Major conventions and agreements for environmental protection. Rehabilitation of lakes in and around Bangalore.

Toxicology: Principles of Toxicology and types of Toxins, sources, metabolism and Biological monitoring of Arsenic, Mercury, Cadmium, Chromium, Zinc, Lead and Nickel.

UNIT IV — **13 hrs**

Bioremediation:
Major classes of contaminants. Uptake, biotransformation, detoxification, elimination and accumulation of toxicants. Factors influencing bioaccumulation from food and trophic transfer. Pesticides and other chemical in agriculture, industry and hygiene and their disposal. Impact of chemicals on biodiversity of microbes, animals and plants. Bio indicator and biomarkers of environmental health. Biodegradation and bioremediation of chemicals. Rehabilitation of degraded water bodies, mangroves, rural landscape and unbalanced soils.

REFERENCES:

1. Fundamentals of Ecology. Eugene P. Odum(1972). W.B. Saunders company, London
2. Environmental Biology, Michael Reiss and Jenny Chapman (2000) Cambridge Press ,UK

3. Principals of Ecotoxicology. Butler, O.C. (1978). John Wiley & Sons, USA.
4. Environment and Ecology. Majid Husain (2015) Access Publishing.UK
5. Environmental Science. Cunningham and Saigo (1999). McGraw Hill, 5th Edition. London
6. A primer of Conservational Biology. Primark (2001) Sinauer, 2nd Ed.
7. Process of Organic evolution. Stebbins, G.L. (1989). Prentice Hall of India, New Delhi
8. Evolutionary Biology. Douglas, .J. Futuyma. (1997). Sinauer Associates.
9. Evolution: Making Sense of Life. Zimmer C and Elmen D J. (2013). Roberts & Co. NY

HCT 103: BIOCHEMISTRY AND BIOPHYSICS

(4 Credits, 4 hr/ week, 52 Lectures)

UNIT I — 13 hrs

Molecules and their characteristic features:
Review of basic concepts of solution chemistry – acid, base, ionic strength, principles of thermodynamics: chemical potential, free energy, entropy, enthalpy, heat capacity; dimensions of atoms, bonds: covalent and non-covalent bonds and molecules. Dihedral angles, steric conflict, classes of organic compounds and functional groups.

Amino acids, peptides and polypeptides:
Chemical reactions and physical properties, three dimensional structures of proteins, the Ramachandran plot, α helix, β sheet. Structure of collagen, conformational map, tertiary structure, quaternary structure.

UNIT II — 13 hrs

Carbohydrates and Lipids:
Sugars and polysaccharides: chemistry, classification and function; glycoproteins: structure and function. Fatty acids- Saturated, unsaturated and eicosanoids; phosphor and spingolipids- structure, classification, lipoprotein, liposomes and prostaglandins

Nucleic acids:
Nucleotides, single and double- stranded DNA structures, types of DNA, RNA world.

Enzymology:
Classification, specific activity, coenzymes. Kinetics of enzyme reactions, regulation of enzymatic activity. Isoenzymes: structure and function.

UNIT III — 13 hrs

Light and Biomolecules:
Properties of light and laser light, Polarisation of light, linear and circular dichroism (CD), CD spectra of protein and nucleic acids.

Spectrometry and X-ray diffraction:
Principles of spectroscopy, ionization, protein mass determination, MALDI-MS, ESI-MS. Methods of glowing crystals, theory of x-ray diffraction, Bragg's law, x-ray scattering in reciprocal space, low-angle x-ray scattering, fibre diffraction of helices.

UNIT IV — 13 hrs

Fluorescence and Infrared spectroscopy (IR):
Phenomenon of fluorescence, fluorescence life time, fluorescence anisotropy, fluorophores, linear polarization of fluorescence, Fluorescence resonance energy transfer (FRET) and its biological applications.

Electron Spin Resonance (ESR) and Nuclear Magnetic Resonance (NMR) Spectroscopy: Magnetic phenomena, principles, spin labels, free radicals. Theory of nuclear resonance, chemical shift and shielding, spin-spin interaction, coupling constant and coupling behaviour, two-dimensional NMR in protein structural studies. NMR in bio-medical research.

REFERENCES:

1. Basic concepts of Biochemistry. Gilbert H.F. (2002). McGraw Hill Professional. New York.
2. Biochemistry. Down M.B. (1999). Lipincott Willam & Wilkins. London

3. Biochemistry. Cambell M and Farrell D (2005). Thomas Books/Cole.
4. Biochemistry. Stryer L. (1999). Freeman and Company, New York.
5. Biochemistry with clinical correlations. Devlin, T.M. (2006). Wiley-Liss Inc. NY.
6. Biochemistry. Mathew, Van Holde and Ahem (2001). 3rd Ed. Pub Pearson education
7. Biochemistry & Molecular Biology of plants. American Society of Plant Physiologists. (Buchanan, B.B., W.Gruissem & Jones R.L. (2015),2nd edition) Rock Ville, USA, Maryland.
8. Principles of Biochemistry. Cox, M., Michael, Nelson,L.D. (2008 5th edition.W.H. Freeman and company, Newyork.
9. Biochemistry. Voet, D and Voet, J.G. (2011), 4th edition J.Wiley and sons.

HCT 104: CELL BIOLOGY AND GENETICS

(4 Credits, 4 hr/ week, 52 Lectures)

UNIT I — 13 hrs

Biomembranes:
Structural organization: Phospholipid bilayer, integral proteins and fluid mosaic model; transport across cell membrane.

Cell organelles:
Structure, functions and biogenesis of ER, Golgi bodies, Mitochondria, Chloroplast, Lysosomes, Nucleolus.

Protein Sorting and Targeting:
Processing through endomembrane system, synthesis and targeting of mitochondrial and chloroplast and peroxisomal proteins. Insertion of membrane proteins into ER, receptor mediated endocytosis, exocytosis and molecular mechanism of vesicular traffic.

UNIT II — 13 hrs

Cell Cycle, Signalling and Programed Cell Death:
Cell growth, division and differentiation, mechanism regulating mitotic events, cell-cycle control in mammals and checkpoints in cell-cycle regulation. Cell-cell interactions, Cell surface and intracellular receptors, interaction of signalling pathways, signalling from plasma membrane to nucleus. Secondary messengers. Apoptosis; mitochondrial dependent and independent pathways, factors influencing apoptosis, role of secondary messengers in cell death. Necrosis and necroptosis.

UNIT III — 13 hrs

Mutations and mutagenesis:
Mutations- Spontaneous induced mutation, conditional lethal mutations –base substitution mutation, Missense, Nonsense and Silent mutations; Chemical, Physical and Biological mutagenesis and Detection of mutations. Molecular basis and applications. Concept of gene- Fine structure of gene, Split gene, Jumping gene, Overlapping gene & multiple genes.

Sex Determination and dosage compensation: Sex chromosomes, Chromosomal and molecular basis of sex determination in *C. elegans*, *Drosophila*, man and *Melandrium*. Dosage compensation- Genic balance, Gene dose.

UNIT IV — 13 hrs

Molecular organisation of eukaryotic chromosome:
Centromere, Telomere, Nucleosome, Nucleomere, Kinetochore, Chromosome banding.

Mendelian Genetics and deviation:
Mendelian laws, allelic variation and gene function, Incomplete dominance, multiple allele, gene action, gene interaction, penetrance, expressivity, epistasis, pleiotropy, Chromosomal theories of inheritance. Non disjunction as proof, Sex linked inheritance.

Population Genetics:
Genotype and allelic frequency, Hardy-Weinberg equilibrium, non-random mating. Consequences of homozygosity, factors affecting gene frequencies, inbreeding, heterosis, mutation-effect on allele frequencies, migration and genetic drift.

REFERENCES:

1. Cell Biology. Karp, G. (2016). McGraw Hill book Co. NY, 16th Edition.
2. The Cell: Molecular approach. Cooper, G.M. (2009). ASM Press, USA.

3. Molecular Biology of the Cell. Alberts M, Johnson A, Raff M, Bray D and Lewis J (2008) 6th edition. Garland Sciences, NY
4. 4. Molecular Biology. Lodish, Berk, Zipursky, Matsudaira, Baltimore and Darnell (2006). Freeman Press, London.
5. Cell Biology. Pollard P and Earnshaw W.C. (2002). Saunders.
6. Genes. Benjamin Lewin. (1995). Oxford University Press.
7. Principles of Genetics. Snustad D.P. & Simmons M.J. (2015) John Wiley.
8. An Introduction to Genetic Analysis. Griffith A J P, Miller J H, Suzuki D T, Lewontin R C, Gelbert W M (2002). Freeman and Company.
9. Essential Genetics: A Genomic Perspective. Hartl D L.and Jones E W. (2002). Jones & Bartlet.
10. Lewin's Genes XI. Krebs, J. E., Goldstein E.S., Kilpatrick S.T. (2014). Jones & Bartlet
11. Modern Genetic analysis: Integrating Genes and Genomes. Griffiths A J G, Gilbert W M and Miller J H and Lewontin R C. (2003). W.H. Freeman Co. NY.

SCT 105: PHYTOGEOGRAPHY AND EVOLUTION

(2 Credits, 3 hr/ week, 39 Lectures)

UNIT I **Introduction and History** – Physical features of the world (climate deserts) Aims, methods and principles of plant geography. Islands of botanical interest. Continental drift and evidence in its favour. Biogeographical regions of the world phytochoria of Indian sub-continent. Floristic regions of the world; Hansen classification and Ronald Good's Classification. **13 hrs**

UNIT II **Plant Distribution**: Continuous, discontinuous, Centre of origin endemism, age and area hypothesis, bathymetric distribution, Centre of origin of crop plants, Evolution and Plant Migration, Dispersal, isolation, migration and barriers, Vicarious species, Relict species, isofloras, polytopy, centers of origin of crop plants. **13 hrs**

UNIT III **Evidences and Elemental forces of evolution:** Paleobiological- concepts of stratigraphy and geological time scale; fossil study. Anatomical- vestigial organs; homologous and analogous organs (concept of parallelism and convergence in evolution). Taxonomic – Transitional forms/evolutionary intermediates; living fossils. Phylogenetic- a) Fossil based. B) Molecular based-protein model (Cyt-C); C) Gene model (ne). Mutation, Selection (types of selection, selection coefficient, selection in natural population). Random genetic drift, Migration. **13 hrs**

REFERENCES:

1. Cain, S.A. 1944. Foundations of Plant Geography. Harper & Bros, NY.
2. Futuyama, D. J, 2005, Evolution, Sinaur Associates, Inc.
3. Good, R.D. 1974. The Geography of flowering Plants. 3rd edition, Long Mans, London.
4. Hall, B. K, and Hallgrimsson. B, 2008 Strickberger's Evolution, Jones and Bartelett pub.
5. Jha, A. P. 1993. Genes and Evolution. Mac Millan India Ltd, New Delhi.
6. Lawrence, G.H.M. 1965. Taxonomy of vascular plants. The McMillan Company, New York.
7. Strickberger, M. W, 2002. **Evolution.** Jones and Barlett Publishers. Sudbury.
8. Teresa Andesirk, Gerald Audesirk and Bruce, E. Byers. 2003. **Biology-Life on Earth.** 6th edition. Prentice Hall University of Massachusetts, Amherst.
9. Valentine, D.H. 1972. **Taxonomy, Phytogeography and Evolution.** Academic Press, London. New York.
10. Webber, P and Punnett, N. 1999. **Physical geography and people Stanley.** Thomas

HCP 101 & 102: SYSTEMATICS AND BIODIVERSITY & ECOLOGY AND ENVIRONMENTAL BIOLOGY (4 Credits)

HCP 101: (4 hr/week, 52hrs)

1. Construction of dichotomous key
2. Construction of Cladogram
3. Identification and classification of wild Plants found in any localities
4. Study of significant characters viz., pollinia, thalloid angiosperms,open carpel and bulbils
5. Identification (photographs) – Critically endangered, endangered and vulnerable plants of India.
6. Biodiversity indices -Problem solving: Shannon -Wiener diversity index, Simpson index, Sorenson index, Evenness index, and Marglef species richness index.
7. Field activities: Field visits, survey and forests.

HCP 102: (4 hr/week, 52hrs)

1. Estimation of chloride, sulphate in water samples.
2. Estimation of the B.O.D. (Demonstration) and C.O.D. in water sample
3. Estimation of carbon-di-oxide and oxygen during photosynthesis in aquatic bodies.
4. Thermal lag studies in terrestrial habitat.
5. Study of vegetation by quadrate method.
6. Estimation of soil biomass and soil organisms. (Wet and dry methods)
7. Ecological instruments: Thermometers (Wet and dry), Anemometer, Altimeter, Barograph, Thermograph and Rain gauge.

HCP 103 & 104: BIOCHEMISTRY AND BIOPHYSICS & CELL BIOLOGY AND GENETICS (4 Credits)

HCP 103: (4 hr/week, 52hr)

1. pH : Structure and operation of pH meter; Preparation of phosphate and citrate buffers
2. Colorimetric/Spectrophotometric estimation of biomolecules:
   a) Total free amino acids (Ninhydrin reagent method)
   b) Total Protein (Lowry et al 1951 method)
   c) Total soluble carbohydrate (Anthrone reagent method)
   d) Total cholesterol (Zlatkis et al method)
3. Effect of Temperature, pH and substrate concentration on salivary amylase activity.
4. Estimation of inorganic phosphate (Fiske-Subburao method)
5. Absorption spectra of amino acids, protein and nucleic acids by Spectrophotometer
6. Verification of Beer Lambert Law
7. Fluorescent Microscopy; Staining with fluorescent dyes & image processing

HCP 104: (4 hr/week, 52hr)

1. Vital staining of mitochondria
2. Squash and smear preparation of mitotic and meiotic chromosomes (*Allium cepa* and *Rhoeo* sp.,)
3. Karyotype study (at least two species)
4. Preparation of polytene chromosomes
5. Counting of cells by haemocytometer
6. Preparation of semi-permanent slides
7. Genetic problems

Scheme of Examination for I Semester (M. Sc. Plant Science)

THEORY

Duration of the Examination: 3 Hours

A: Comprises **12(Twelve)** questions, of which 10 questions to be answered. Each question carry **two** marks (Questions should be from all units). 10x2=20 marks

B: Comprises 6(**six**) questions, of which **four** questions to be answered. Each question carry **five** marks (questions should be from any **six** units based on teaching hours/unit). 4x5=20 marks

C: Comprises 5(**five**) questions, of which three questions to be answered. Each question carry **ten** marks (questions should be from any **five** units based on teaching hours/unit). 3x10=30 marks

Total:	70 marks

PRACTICAL

Duration of the Examination: 6 Hours

HCP 101 & 102: Practical Examination- 60 marks + Viva voce 10 marks= 70

HCP 103 & 104: Practical Examination- 60 marks + Viva voce 10 marks= 70

Total	140

Internal Assessment:

Theory papers: 30 marks for each Theory paper (Test-15 marks, Seminar-5 marks, Assignment-5 marks & Attendance-5 marks) (15+5+5+5 = 30 marks)

Practical papers: 30 marks for each Practical paper (Test-20 marks + 10 marks record)

Model question paper

I Semester M.Sc. Degree Examination, January/February 2021

(CBCS)

PLANT SCIENCE

HCT: 101-105

Time: 3 Hours Max. Marks: 70

A. Explain/Define **any ten** of the following: (10x2=20)

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

11)

12)

B. Write critical notes on **any four** of the following: (4x5=20)

13)

14)

15)

16)

17)

18)

C. Give a comprehensive account on **any three** of the following: (3x10=30)

19)

20)

21)

22)

23)