ALLIED/ELECTIVE BOTANY - I
GENERAL BOTANY- I

Title of theCourse	**ALLIED- BOTANY-I**					
Paper Number	Core-General Botany I					
Category	Core	**Year**	I	**Credits**	2	**Course Code 23BBOA1**
		Semester	I			
Instructional Hours per week		**Lecture**	**Tutorial**		**Lab Practice**	**Total**
		3	1		-	4
Pre-requisite	To study the basics of botany.					

Learning Objectives	
C1	To identify the algal species and study structure and reproduction of algae
C2	Find out the overall strategies and techniques to grow different commercial fruits.
C3	Impart knowledge on cultivation methods of some prominent fruit varieties.
C4	Learn about the cultivation methods of subtropical and tropical fruits.
C5	Study about temperate fruits and their propagation methods.

Course outcomes:CO	**On completion of this course, the students will be able to:**	**Programme Outcomes**
CO1	Increase the awareness and appreciation ofhuman friendlyalgae and theireconomic importance.	K1
CO2	Develop an understanding of microbes and Fungi and appreciate theiradaptive strategies	K2
CO3	Developcritical understanding onmorphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.	K3
CO4	Compare the structure and function of cells and explain the development ofcells.	K4
CO5	Understand the core conceptsand fundamentalsof plant biotechnology and geneticengineering.	K5

	CONTENTS
UNIT I	**Algae:** General characters of algae - Structure, reproduction and life cycle of the following genera - *Anabaena* and *Sargassum* and economic importance of algae.
UNIT II	**Fungi, Bacteria and Virus:** General characters of fungi, structure, reproduction and life cycle of the following genera - *Penicillium* and *Agaricus* and economic importance of fungi. Bacteria - general characters, structure and reproduction of *Escherichia coli* and economic importance of bacteria. Virus - general characters, structure of TMV, structure of bacteriophage.
UNIT III	**Bryophytes, Pteridophytes and Gymnosperms:** General characters of Bryophytes, Structure and life cycle of *Funaria*. General characters of Pteridophytes, Structure and life cycle of *Lycopodium*. General characters of Gymnosperms, Structure and life cycle of *Cycas*.
UNIT IV	**Cell Biology:** Prokaryotic and Eukaryotic cell- structure /organization. Cell organelles - ultra structure and function of chloroplast, mitochondria and nucleus. Cell division - mitosis and meiosis.

UNIT V	**Genetics and Plant Biotechnology:** Mendelism - Law of dominance, Law of segregation, Incomplete dominance. Law of independent assortment. Monohybrid and dihybrid cross - Test cross - Back cross. Plant tissue culture - *In vitro* culture methods. Plant tissue culture and its application in biotechnology.
Extended ProfessionalComponent (is a part ofinternal component only, Not to be includedin the External Examinationquestion paper)	Questions related to the above topics, from various competitive examinationsUPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /others to be solved (To be discussed during the Tutorial hour)
Skills acquiredfrom this course	Knowledge, Problem Solving, Analytical ability, ProfessionalCompetency, Professional Communication and Transferrable Skill

Recommended Texts

1. Singh, V., Pande, P.C and Jain, D.K. 2021. A Text Book of Botany.Rastogi Publications,Meerut.
2. Bhatnagar, S.P and Alok Moitra. 2020. Gymnosperms, New AgeInternational (P) Ltd., Publishers, Bengaluru.
3. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd. Delhi.
4. Lee, R.E. 2008. Phycology, IV Edition, Cambridge University Press,New Delhi.
5. Rao, K., Krishnamurthy, K.V and Rao, G.S. 1979. Ancillary Botany,S.Viswanathan Pvt. Ltd., Madras.

Reference books:

1. Parihar, N.S. 2012. An introduction to Embryophyta –Pteridophytes -Surjeet Publications, Delhi.
2. Alexopoulos, C.J. 2013. Introduction to Mycology. Willey Eastern Pvt.Ltd.
3. Vashishta, P.C. 2014. Botany for Degree Students Gymnosperms.Chand & Company Ltd, Delhi.
4. Coulter, M. Jhon, 2014. Morphology of Gymnosperms. SurjeetPublications, Delhi.
5. Vashishta, P.C. 2014. Botany for Degree Students Algae. 2014. Chand& Company Ltd, Delhi.
6. Parihar, N.S. 2013. An introduction to Embryophyta –Bryophytes -,Surjeet Publications, Delhi.
7. Pandey B.P. 1986, Text Book of Botany (College Botany) Vol I &II,S.Chand and Co. New Delhi.

Web Resources

1. https://www.kobo.com/us/en/ebook/the-algae-world
2. http://www.freebookcentre.net/biology-books-download/Fungi-(PDF- 15P).html
3. http://scitec.uwichill.edu.bb/bcs/bl14apl/bryo1.htm
4. https://www.toppr.com/guides/biology/plant-kingdom/pteridophytes/
5. https://arboretum.harvard.edu/wp-content/uploads/2013-70-4-beyond- pine-cones-an-introduction-to-gymnosperms.pdf
6. https://www.us.elsevierhealth.com/medicine/cell-biology
7. https://www.us.elsevierhealth.com/medicine/genetics
8. https://www.kobo.com/us/en/ebook/plant-biotechnology-1

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3
CO 3	2	3	3	3	3	1	3	3	3	3
CO 4	3	3	2	3	3	3	2	3	2	3
CO 5	3	2	2	2	2	2	2	1	2	1

S-Strong (3) M-Medium (2) L-Low(1)

ELECTIVE/ALLIED BOTANY – I
GENERAL BOTANY – I - PRACTICALS

Title ofthe Course		**GENERAL BOTANY – I PRACTICALS**					
Paper Number		Core-Allied Practicals-I					
Category	Core	**Year**	I	**Credits**	2	**Course Code 23BBO AP1**	
		Semester	I				
Instructional Hours per week		**Lecture**		**Tutorial**		**Lab Practice**	**Total**
		1		-		3	4
Pre-requisite		Practicals pertaining to above subjects is important to get knowledge on various aspects of plants.					

Learning Objectives	
C1	To enhance information on the identification of each taxonomical group by developing the skill-based detection of the morphology and microstructure ofmicroorganisms, algae, and fungi.
C2	To comprehend the fundamental concepts and methods used to identify Bryophytes,Pteridophytes and Gymnosperms through morphological changes and evolution, anatomy and reproduction.
C3	To be familiar with the basic concepts and principles of plant systematics.
C4	Understanding of laws of inheritance, genetic basis of loci and alleles.
C5	To learn about the physiological processes that underlie plant metabolism.

Course outcomes:CO	**On completion of this course, the students will be able to:**	**Programme Outcomes**
CO1	To study theinternal organization ofalgae and fungi.	K1
CO2	Developcritical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms..	K2
CO3	To study theclassical taxonomy withreferencetodifferent parameters.	K3
CO4	Understandthe fundamental concepts ofplant anatomy and embryology	K4
CO5	To study the effect of various physical factorson photosynthesis.	K5

EXPERIMENTS

1. Make suitable micro preparation of the types prescribed in Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.
2. Micro photographs of the cell organelles ultra structure.
3. Simple genetic problems.
4. Spotters - Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms Embryology, Cell biology and Biotechnology.

Extended Professional Component	Questions related to the above topics, from various

(is a part ofinternal component only, Not tobe includedin the External Examination questionpaper)	competitive examinationsUPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this Course	Knowledge, Problem Solving, Analytical ability, Professional, Competency, Professional Communication and Transferrable Skill

Recommended Texts

1. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd, New Delhi.
2. Sharma, O.P. 2012. Pteridophyta, Tata McGraw-Hills Ltd, New Delhi.
3. Benjamin, A. Pierce. 2012. Genetics- A conceptual Approach. W.H. Freemanand Company, New York, England.

ReferenceBooks

1. Strickberger, M.W. 2005. Genetics (III Ed). Prentice Hall, New Delhi, India.
2. Nancy Serediak and M. Huynh. 2011. Algae identification lab Guide. Accompanying manual to algae identification field guide, Ottawa Agriculture and Agri food Canada publisher.
3. Mohammed Gufran Khan, Shite Gatew and Bedilu Bekele. 2012. Practical manual for Bryophytes and Pteridophytes. Lambert Academic Publishing.

Web sources

1. https://www.amazon.in/Practical-Manual-Pteridophyta-Rajan-Sundara/dp/8126106883
2. https://www.google.co.in/books/edition/Gymnosperms/3YrT5E3Erm8C?hl=en&gbpv=1&dq=gy mnosperms&printsec=frontcover
3. https://medlineplus.gov/genetocs/understanding/basics/cell/
4. https://www.amazon.in/Manual-Practical-Bryophyta-Suresh-Kumar/dp/B0072GNFX4

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3
CO 3	2	3	3	3	3	1	3	3	1	3
CO 4	3	3	2	3	3	3	3	2	3	3
CO 5	3	2	2	2	2	2	2	1	2	2

S-Strong (3) **M-Medium (2) L-Low(1)**

ELECTIVE/ALLIED BOTANY – I

GENERAL BOTANY – I - PRACTICALS

EXTERNAL QUESTION

Time: 3 hours **Max. Marks- 75**

1.	Make suitable micropreparation of "**A**", "**B**" and "**C**". Mount in Glycerin. Draw sketches and label it. Identify and give reason. Submit the slide for valuation. **(Slide -3, Identification-1, sketch-2, Reason-3)**	**3 x9=27**
2.	Identify, draw sketches and write notes on the given micro photograph of cell organelles of **D,E & F** **(Identification -1, sketch -2, Notes -3)**	**3x6= 18**
3.	**G** write protocol of *In vitro* culture **(Protocol - 7)**	**1x7=7**
4.	Identify & write the genus & group of **H & I** **(Genus - 2, Group - 2)**	**2x4=8**
5.	**J** – Solve the genetic problem & interpret **(Derivation 3-, Interpretation -2)**	**1x5=5**
6.	Submission of Record note book	**10**
	Total	**75**

KEY AND SCHEME OF VALUATION

1.	**A**-(Sargassum), **B** –(Lycopodium/Cycas), **C** – (Agaricus/Funaria) – Vegetative material to be given **(Slide -3, Identification-1, sketch-2, Reason-3)**	**3 x9=27**
2.	**D**-(Anabaeba/Penicillium),**E** (Chloroplast/Nucleus/Mitosis) **& F** (E.coli/TMV) to be given microphotograph of cell organelles ultra structure. **(Identification -1, sketch -2, Notes -3)**	**3x6= 18**
3.	**G** - write protocol of *In vitro* culture **(Protocol - 7)**	**1x7=7**
4.	**H** (Sargassum/Agaricus) **& I** (Funaria/Lycopodium/Cycas) to be given specimen from the syllabus **(Genus - 2, Group - 2)**	**2x4=8**
5.	**J –** Genetic problem (Dihybrid cross/Incomplete dominance) **(Derivation 3-, Interpretation -2)**	**1x5=5**
6.	Submission of Record note book	**10**
	Total	**75**

ELECTIVE/ALLIED BOTANY – I

GENERAL BOTANY – I - PRACTICALS

INTERNAL QUESTION

Time: 3 hours **Max. Marks- 25**

1.	Make suitable micropreparation of "**A&B**"Mount in Glycerin. Draw sketches and label it. Identify and give reason. Submit the slide for valuation. **(Slide -2, Identification-1, sketch-1, Reason-1)**	2x5=10
2.	Identify, draw sketches and write notes on the given micro photograph of cell organelles of **C,** **(Identification -1, sketch -1, Notes -1)**	1x3= 3
3.	**D** write protocol of *In vitro* culture **(Protocol - 3)**	1x3=3
4.	Identify & write the genus & group of **E** (**Genus - 1, Group - 1)**	1x2=2
5.	**F** – Solve the genetic problem & interpret (**Derivation 1-, Interpretation -1)**	1x2=2
6.	Continuous assessment	5
	Total	25

KEY AND SCHEME OF VALUATION

1.	**A** - (Sargassum/Lycopodium/Cycas), **B –** (Agaricus/Funaria) – Vegetative material to be given **(Slide -2, Identification-1, sketch-1, Reason-1)**	2 x5=10
2.	**C**-(Anabaeba/Penicillium/Chloroplast/Nucleus/Mitosis/ /E.coli/TMV) to be given microphotograph of cell organelles ultra structure. **(Identification -1, sketch -1, Notes -1)**	1x3= 3
3.	**D** - write protocol of *In vitro* culture **(Protocol - 3)**	1x3=3
4.	**E** (Sargassum/Agaricus/Funaria/Lycopodium/Cycas) specimen to be given from the syllabus **(Genus - 1, Group - 1)**	1x2=2
5.	**F –** Genetic problem (Dihybrid cross/Incomplete dominance) **(Derivation 1-, Interpretation -1)**	1x2=2
6.	Continuous assessment	5
	Total	25

ELECTIVE/ALLIED BOTANY – II

GENERAL BOTANY – II

Title ofthe Course	ALLIED BOTANY-II						
Paper Number	Core- General Botany II						
Category	Core	**Year**	I	**Credits**	2	**CourseCode**	**23BBOA2**
		Semester	II				
Instructional Hours per week	**Lecture**		**Tutorial**		**Lab Practice**	**Total**	
	3		1		-	4	
Pre-requisite	To study basics of botany.						

Learning Objectives	
C1	To be familiar with the basic concepts and principles of plant systematics.
C2	Learn the importance of plant anatomy in plant production systems.
C3	Understand the mechanism underling the shift from vegetative to reproductive phase.
C4	To learn about the physiological processes that underlie plant metabolism.
C5	To know the application of plant growth hormones

Course outcomes:CO	**On completion of this course, the students will be able to:**	**Programme Outcomes**
CO1	Classify plant systematics andrecognizethe importance of herbarium and virtual herbarium.	K1
CO2	Understand the fundamental concepts of plant anatomy and embryology.	K2
CO3	Analyze and recognizethe different organs ofplants and secondar y growth.	K3
CO4	Understand waterrelation of plantswith respect to various physiological processes	K4
CO5	Classify aerobic and anaerobic respiration.	K5

UNIT	**CONTENTS**
UNIT I	**MORPHOLOGY** Leaf types- simple and compound. Phyllotaxy and types. Inflorescence - Racemose, Cymose and Special types. Terminology with reference to flower description.
UNIT II	**TAXONOMY:** Study of the range of characters and plants of economic importance in the following families: Rutaceae, Caesalpiniaceae, Asclepiadaceae, Euphorbiaceae and Cannaceae
UNIT III	**ANATOMY** Tissue and tissue systems: Simple and complex tissues. Anatomy of monocot and dicot stem and leaves
UNIT IV	**EMBRYOLOGY** Structure of mature anther and ovule - Types of ovules, structure of embryo sac, pollination -double fertilization, structure of dicotyledonous and monocotyledonous seeds.

UNIT V	**PLANT PHYSIOLOGY** Absorption of water, photosynthesis - light reaction - Calvin cycle; respiration - Glycolysis - Krebs cycle - electron transport system. Growth hormones -auxins and cytokinins and their applications.
Extended Professional Component (isa part ofinternal component only,Not to be included in theExternal Examination question paper)	Questions related to the above topics, from various competitiveexaminationsUPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this Course	Knowledge, Problem Solving, Analytical ability, ProfessionalCompetency, Professional Communication and Transferrable Skill

Recommendd Texts

1. Sharma, O.P. 2017. Plant Taxonomy. (II Edition).The McGraw Hill Companies.
2. Bhojwani, S.S. Bhatnagar, S.P and Dantu, P.K. 2015. The Embryology of Angiosperms (6th revised and enlarged edition). Vikas Publishing House, New Delhi.
3. Maheshwari, P. 1963. Recent Advances in Embryology of Angiosperms. Intl. Soc. Plant Morphologists, New Delhi.
4. Salisbury, F. B.C.W. Ross.1991. Plant Physiology. Wassworth Pub. Co. Belmont.
5. Ting, I.P. 1982. Plant Physiology. Addison Wesley Pb. Philippines.

Referencebooks

1. Lawrence.G.H.M. 1985. An Introduction to Plant Taxonomy, Central BookDepot, Allahabad.
2. Bhojwani, S.S and Bhatnagar, S.P. 2000. The Embryology of Angiosperms (4threvised and enlarged edition). Vikas Publishing House, New Delhi.
3. Pandey, B.P. 2012. Plant Anatomy. S Chand Publishing.
4. Jain, VK. 2006. Fundamentals of Plant Physiology, S. Chand and CompanyLtd.
5. Rajni Gupta. 2012. Plant Taxonomy: Past, Present and Future. Vedams (P)Ltd. New Delhi.
6. Jain, V.K. 2006. Fundamentals of Plant Physiology, S.Chand and CompanyLtd., New Delhi.
7. Verma, S.K. 2006. A Textbook of Plant Physiology, S.K.Chand & Co., NewDelhi.

Web Resources

1. https://books.google.co.in/books/about/Plant_Taxonomy.html?id=0bYs8F0Mb9gC&redir_esc=y
2. https://books.google.co.in/books/about/PLANT_TAXONOMY_2E.html?id=Roi0lwSXFnUC&redir_esc=y
3. https://archive.org/EXPERIMENTS/plantanatomy031773mbp
4. https://www.amazon.in/Embryology-Angiosperms-6th-S-P-Bhatnagar-ebook/dp/B00UN5KPQG
5. https://www.crcpress.com/Plant-Physiology/Stewart-Globig/p/book/9781926692692

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3
CO 3	2	3	3	3	3	1	3	3	3	3
CO 4	3	3	2	3	3	3	3	2	3	2
CO 5	3	2	2	2	2	2	2	1	2	2

S-Strong (3) M-Medium (2) L-Low(1)

ELECTIVE/ALLIED BOTANY – II
GENERAL BOTANY- II PRACTICAL

Title ofthe Course	GENERAL BOTANY PRACTICAL – II						
Paper Number	Core-Allied Practicals-II						
Category	Core	**Year**	I	**Credits**	2	**Course Code 23BBO AP2**	
		Semester	II				
Instructional Hours per week		**Lecture**	**Tutorial**		**Lab Practice**	**Total**	
		1	-		3	4	
Pre-requisite	Practicals pertaining to above subjects is important to get knowledge on various aspects of plants.						

Learning Objectives	
C1	To be familiar with the basic concepts and principles of plant systematics.
C2	To understand the basic structure and functions of cell organells
C3	To learn about the physiological processes that underlie plant metabolism.
C4	To study the development embryology
C5	To study the primary and secondary structure of stem and root

Course outcomes:CO	**On completion of this course, the students will be able to:**	**Programme Outcomes**
CO1	To study the classical taxonomy with reference to different parameters.	K1
CO2	To study the morphology characters of plants	K2
CO3	Developcritical understanding the anatomy of plants	K3
CO4	Understandthe fundamental concepts of plant embryology	K4
CO5	To study the effect of various physical factors on photosynthesis.	K5

EXPERIMENTS

1. To describe in technical terms, plants belonging to any of the family prescribes and to identify the family.
2. To dissect a flower, construct floral diagram and write floral formula.
3. Demonstration experiments
   Ganong's Light screen
   Ganong's respiroscope
4. Study the Growth hormones -auxins and cytokinins
5. To make suitable micro preparations of anatomy materials prescribed in the syllabus.
6. Study the simple permanent tissues
7. Dissect and display the T.S of (young and mature) anther - *Datura* or *Cassia* flower and any one stage of embryo - *Tridax*
8. Study the types of ovules- Anatropous, Orthotropous, Circinotropous, Amphitropous, Campylotropous.(Permanent slides)

Extended Professional Component (is a part ofinternal	Questions related to the above topics, from various

component only, Not tobe includedin the External Examination questionpaper)	competitive examinationsUPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this Course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill

Recommended Texts

1. Porter, C.L. 1982. Taxonomy of Flowering Plants, Eurasia PublicationsHouse, New Delhi
2. Noggle G.R and G.J. Fritz. 2002. Introductory Plant Physiology. Prentice Hall ofIndia, New Delhi.
3. Sundara, R. S. 2000. Practical manual of plant anatomy and embryology. Anmol Publ. PVT LTD, New Delhi
4. Sharma, H.P. 2009. Plant Embryology: Classical and Experimental, Bombay Popular Prakashan, ISBN-8173199698, 9788173199691.
5. Pandey, B.P.2015. Plant Anatomy S. Chand Publ. New Delhi.

ReferenceBooks

1. Hutchinson, J. 1973. The Families of Flowering plants , Oxford Universitypress, London
2. Steward, F.C. 2012. Plant Physiology Academic Press, US;
3.Maheswari, P.1991. An Introduction to Embryology of Angiosperms,Tata McGraw Hill Publishing Co. Ltd.,
4. Fahn, A. 1974. Plant Anatomy. Pergmon Press, USA.

Web sources

1.https://www.amazon.in/Practical-Taxonomy-Angiosperms-R-Sinha/dp/9380578210
2.https://www.amazon.in/Advances-Plant-Physiology-P-Trivedi-ebook/dp/B01JP5L0YA
3.https://www.amazon.in/PLANT-ANATOMY-EMBRYOLOGY- BIOTECHNOLOGY-ebook/dp/B07H5JYFBJ/ref=asc_df_B07H5JYFBJ/?tag=googleshopdes-2
4.https://www.kobo.com/us/en/ebook/a-textbook-of-plant-anatomy

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3	3	3	3	3	3
CO 2	3	3	3	3	3	3	3	3	3	3
CO 3	2	3	3	3	3	1	3	3	1	3
CO 4	3	3	2	3	3	3	3	2	3	3

CO 5	3	2	2	2	2	2	2	1	2	2

ALLIED – BOTANY – II -PRACTICAL
EXTERNAL QUESTION

1.	**A** Dissect out the specimen and identify, draw L.S of flower, floral diagram and write floral formula and notes in respective family. **Identification-1, L.S of flower-2, flower diagram-2, floral formula-1, Floral Characters- 4)**	1x10= 10
2.	**B** – Work out the specimen and identify their respective family through elimination process **(Identification-1, Elimination process-3, Reason-2)**	1x6= 06
3.	**C** – Identify, draw sketches and write notes on the given setup **Identification-1, Diagram-2, Notes-2)**	1x5=05
4.	Take T.S of given material **D**. Stain, mount in Glycerin and submit the slide for valuation. Identify, Draw, sketches and label it. Give reasons. **(Section - 3, Identification-1, Diagram - 2, Notes-2)**	1x8= 8
5.	**E&F** – Take T.S of anther and Dissect and display anyone stage of embryo of the given material, mount in Glycerin and submit it for valuation. Write notes and draw sketch. **(Slide-3, Identification -1, Notes-2, Sketch-2)**	2x8= 16
6.	Identify and write notes on **G&H** **(Identification-1, Notes-4)**	2x5=10
7.	Identify, draw, Sketches and write notes on **I** **(Identification-1, Diagram – 2, Notes-2)**	1x5=05
	Submission of Herbarium specimens	5
	Submission of Record note book	10
	Total =	**75**

KEY AND SCHEME OF VALUATION

1.	**A** – Angiosperm specimen to be given from the prescribed syllabus **(Identification-1, L.S of flower-2, flower diagram-2, floral formula-1, Floral Characters- 4)**	1x10= 10
2.	**B** - Angiosperm specimen to be given from the prescribed syllabus **(Identification-1, Elimination process -3, Reason -2)**	1x06= 06
3.	**C** - Plant Physiology Experiments (Ganong's Light screen/ Ganong's respiroscope) (**Identification-1, Diagram-2, Notes-2)**	1x5=05
4.	**D – (**Dicot and monocot stem and leaves) Material to be given from plant anatomy **(Section - 3, Identification-1, Diagram - 2, Notes-2)**	1x8= 08
5.	**E** (Anther- *Datura* or *Cassia* Flower) & **F** - (Embryo-*Tridax* flower) Material to be given from Embryology **Slide-3, Identification -1, Notes-2, Sketch-2)**	2x8=16
6.	**G** (Auxin/Cytokinin), **& H** (Glycolysis/ Kreb/ Calvin cycle) photograph//models/materials to be given **(Identification-1, Notes-4)**	2x5=10
7.	**I** (Parenchyma/Collenchyma.Sclerenchyma) Permanent slides/Photographs to be given (**Identification-1, Diagram – 2, Notes-2)**	1x5=05
	Submission of Herbarium specimens (5 herbarium sheets)	5
	Submission of Record note book	10
	Total =	**75**

ALLIED – BOTANY – II -PRACTICAL
EXTERNAL QUESTION

1.	**A** Dissect out the specimen and identify, draw L.S of flower, floral diagram and write floral formula and notes in respective family. **(Identification-1, flower diagram - 0.5, floral formula - 0.5, Floral Characters- 2)**	1x4= 4
2.	**B** – Work out the specimen and identify their respective family through elimination process **(Identification-1, Elimination process-1, Reason-1)**	1x3= 03
3.	**C** – Identify, draw sketches and write notes on the given setup **Identification-1, Diagram-1, Notes-1)**	1x3=03
4.	Take T.S of given material **D**. Stain, mount in Glycerin and submit the slide for valuation. Identify, Draw, sketches and label it. Give reasons. **(Section - 1, Identification-1, Diagram - 1, Notes-1)**	1x04= 4
5.	**E** – Take T.S of anther/ Dissect and display anyone stage of embryo of the given material, mount in Glycerin and submit it for valuation. Write notes and draw sketch. **(Slide-1, Identification -1, Notes-1, Sketch-1)**	1x4= 04
6.	Identify and write notes on **F** **(Identification-1, Notes-1)**	1x2=2
	Continuous Assessment	5
	Total	**25**

KEY AND SCHEME OF VALUATION

1.	**A** – Angiosperm specimen to be given from the prescribed syllabus **(Identification-1, flower diagram - 0.5, floral formula - 0.5, Floral Characters- 2)**	1x4= 4
2.	**B** - Angiosperm specimen to be given from the prescribed syllabus **(Identification-1, Elimination process-1, Reason-1)**	1x3= 03
3.	**C** - Plant Physiology Experiments (Ganong's Light screen/ Ganong's respiroscope) **(Identification-1, Diagram-1, Notes-1)**	1x3=03
4.	**D – (**Dicot and monocot stem and leaves) Material to be given from plant anatomy **(Section - 1, Identification-1, Diagram - 1, Notes-1)**	1x04= 4
5.	**E** (Anther- *Datura* or *Cassia* Flower) & **F** - (Embryo-*Tridax* flower) Material to be given from Embryology **(Slide-1, Identification -1, Notes-1, Sketch-1)**	1x4= 04
6.	**F-** (Auxin,Cytokinin/Glycolysis,Kreb,Calvin cycle/ Parenchyma, Collenchyma, Sclerenchyma) photograph//models/Permanent slides/materials to be given **(Identification-1, Notes-1)**	1x2=2
	Continuous Assessment	5
	Total	**25**