Course code:			T/P	C	H/W
22BBOA1			T	3	3
		NTAL STUDIES, PLANT ANATOMY			
Objectives	•	ure and lifehistory of Algae, Fungi, Bryophyte	s Pte	ridoj	phytes
	and Gymnosperms.	storestore of high an ulauta			
		structure of higher plants. e of pollution and deforestation			
Unit -I		ers, structure and life history of <i>Gracilaria</i> (Rhoo	lonhs	1000	•)
Cilit -1	8	ers, Structure and Life history of <i>Agaricus</i> (Basic	1 2		/
	O	haracters, structure and life history of <i>Marchan</i>	•		-
	evelopment)				
Unit -II		Characters, structure and Life history of Mars	ilea	(exc	luding
	evelopment)	•		`	C
		ral Characters, structure and Life history of Pa	inus ((exc	luding
	evelopment)				
Unit -III		ly of the following plant diseases with refere	ence	to c	auses,
	• •	on, Control and preventive measures.			
	Virus Diseases – Bunch	· ·			
17	Bacterial Disease – Citr				
Unit –IV	Environmental science:				
	Pollution – kinds – Cause – Harmful effects including Green House effect and acid rain & control measures. Deforestation, Land Misuse (Indiscriminate tree felling and raising				
	of Plantations) Effects of Deforestation. Afforestation. Social Forestry.				
Unit -V					
	Tissues – Simple and compound permanent tissues. Meristems, types of meristems.				
	rimary and secondary	structure of dicot and monocot stem.			
Reference an					
Alexo	oulos, C.J. <i>Introductor</i>	y Mycology. John wiley& sons, New York			
Cutter	E.G (1969) Plant Anato	omy, Part 1 Addison – Wesley Publishing Co.			
Lee, R	E. (2008). <i>Phycology</i> , C	Cambridge University Press, Cambridge. 4th edition	ion.		
Pande	B. Plant Anatomy				
	B.P. – <i>College Botan</i> cutta.	ny – Algae, Fungi and Bryophytes. Vol. I	S.Cha	and&	c Co.,
	•	A textbook of Bryophytes, Pteridophytes, Gyrional Pvt.Ltd, New Delhi.	nnosį	perm	s and
Sharm	Sharma P.D Elements of Ecology - Rastogi Publishing, Meerut				
Outcomes ➤ The students gain noteworthy knowledge in identification and utilization of Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms. ➤ The students will be able to understand pollution and its effects. ➤ The students will develop the skills in identification of anatomical structure of various plant parts.					

Course code:	: ALLIED PRACTICAL-I A	T/P	С	H/W
22BBOAP1	PLANT DIVERSITY, PLANT PATHOLOGY,	P	2	2
	ENVIRONMENTAL STUDIES, PLANT ANATOMY			
Objectives	➤ To observe, identify and micropreparation of Algae, Fungi, Bryo	phytes,		
	Pteridophytes and Gymnosperms.			
	➤ To make suitable micropreparation of dicot and monocot stem.			
	➤ To learn about pollution, deforestation and Afforestation			
	1. Micro – Preparations and Identification of the Thallophyt	a presc	ribed	in the
	Syllabus(Algae- <i>Gracilaria</i> : Fungi- <i>Agaricus</i>)			
	2. Cutting and Mounting of T.S. of Vegetative parts of Man	chantic	a , Mo	arsilea
	and <i>Pinus</i> .			
	3. Identification /Micropreparation of cones of Marsilea, Pi	nus and	d caps	sule of
	Marchantia.			
	4. To observe and identify spot at sight and make detailed study of the types of disease prescribed in the syllabus			
	5. Cutting, Mounting and identifications of T.S. of dicot and r	nonoco	t stem	
	6. Photographs/models on various pollution, deforestation,	Affore	estatio	n and
	social forestry.			
	Submission of certified and bonafide record note book is mandatory for External			
	Practical.	•		
Outcomes	> Students may able to identify the various forms of Algae, Fungi,	Bryopl	nytes,	
	Pteridophytes and Gymnosperms.			
	Aware the knowledge of non-vascular and vascular cryptogams.			
	>To understand the pollution, deforestation, Afforestation and cor	servati	on.	

Time: 3 hours Max. Marks- 60

1.	Make suitable micropreparation of "A" and "B". Mount in Glycerin. Draw labeled sketches. Identify and give reason. Submit the slide for valuation.	2 x7= 14
2.	Make suitable micropreparation of "C" Mount in Glycerin. Identify and giving reason. Submit the slide for valuation.	1x 7 = 07
3.	Comments on the etiology of "D"	1 x 4= 04
4.	Identify draw sketches and write notes on (E, F, G, H and I)	5 x5= 25
5	Submission of Record note book	10
	Total	60

KEY AND SCHEME OF VALUATION

1.	Make suitable micropreparation of "A" and B. Mount in	2 x7= 14
	Glycerin.	
	<u>A</u> - (Algae/ Bryophyte), <u>B</u> - Pteridophyte/Gymnosperm	
	(Slide -2, Identification-1, sketch-2, Reason-2)	
2.	Make suitable micropreparation of "C" Mount in Glycerin	1x 7 = 07
	$\underline{\mathbf{C}}$ – (Dicot/monocot stem).	
	(Slide -2, Identification-1, sketch-2, Reason-2)	
3.	<u>D</u> – Etiology specimen prescribed in the syllabus	1 x 4= 04
	(Identification-1, sketch-1, Reason-2)	
4.	E – Reproductive part of Algae, Fungi, Bryophyte,	5 x5 = 25
	Pteridophyte, Gymnosperm.	
	<u>F</u> – Morphology/ reproductive part of fungi	
	<u>G</u> – Green house effect/Acid rain	
	H – Deforestation/ Afforestation/Social forestry	
	<u>I</u> – Simple permanent tissue	
	(Identification-1, sketch-2, Reason-2)	
5.	Submission of Record note book	10
	Total	60

Time: 3 hours	Max. Marks- 40
1. Make suitable micropreparation of "A" and "B". Mount in Glycerin. Draw labeled sketches. Identify and give reason. Submit the slide for valuation.	2 x6= 12
2. Make suitable micropreparation of "C" Mount in Glycerin. Identify and giving reason. Submit the slide for valuation.	1x 6 = 06
3. Comments on the etiology of "D"	1 x 2= 02
4. Identify draw sketches and write notes on (E, F, G, H and I)	5 x3=15
5. Continuous assessment	05
Total	40

KEY AND SCHEME OF VALUATION

1. Make suitable micropreparation of "A <u>A</u> - (Algae/ Bryophyte), <u>B</u> - Pteridoph (Slide -2, Identification-1, sketch-1, l	yte/Gymnosperm
2. Make suitable micropreparation of "C <u>C</u> – (Dicot/monocot stem). (Slide -2, Identification-1, sketch-1, R	·
3. <u>D</u> – Etiology specimen prescribed in to (Identification-½, sketch-½, Reason-	the syllabus $1 \times 2 = 02$
4. <u>E</u> – (Reproductive part of Algae, Fur Gymnosperm, <u>F</u> – Morphology/ reprohouse effect/Acid rain, <u>H</u> – D forestry, <u>I</u> – Simple permanent tissue. (Identification-1, sketch-1, Reason-1)	ductive part of fungi, G – Green eforestation/Afforestation/Social
5. Continuous assessment	05
	Total 40

ALLIED - IB	T/P	C	H/W	
TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY,	T	3	3	
PLANT PHYSIOLOGY				
➤ To provide the knowledge about angiosperms, Binomial no	mencla	ture a	nd the	
classification of plants				
To study about photosynthesis and respiration				
Taxonomy of Angiosperms				
History of Taxonomy, Binomial nomenclature, ICN rules, Herbariu	ım tech	nique	S	
Classification (Benthum and Hooker). Basic Knowledge of Morpho	Classification (Benthum and Hooker). Basic Knowledge of Morphology of			
Angiosperm (Inflorescence and flower).	osperm (Inflorescence and flower).			
Brief study of the following families with special features and economic importance.				
a) Annonaceae, b) Rubiaceae, c) Apocynaceae, d) Euphorb	a) Annonaceae, b) Rubiaceae, c) Apocynaceae, d) Euphorbiaceae, e) Poaceae			
Embryology of Angiosperms:				
Structure of male and female gametophyte, types of Ovules, Embry	ture of male and female gametophyte, types of Ovules, Embryo sac, Fertilization			
- double fertilization, syngamy - significance, endosperm (Nuclean	ble fertilization, syngamy – significance, endosperm (Nuclear, cellular,			
helobial), Structure of dicot and monocot mature embryo.				
Plant Physiology:				
*				
Photosynthesis – Mechanism of Light Reaction – Dark Reaction - O	synthesis – Mechanism of Light Reaction – Dark Reaction - C3, C4 and CAM			
cycle				
•	_	nificar	ice	
Photorespiration – Photoperiodism and Vernalisation, Seed dormar	ncy.			
	TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY, PLANT PHYSIOLOGY To provide the knowledge about angiosperms, Binomial no classification of plants To study about photosynthesis and respiration Taxonomy of Angiosperms History of Taxonomy, Binomial nomenclature, ICN rules, Herbaria Classification (Benthum and Hooker). Basic Knowledge of Morphe Angiosperm (Inflorescence and flower). Brief study of the following families with special features and econ a) Annonaceae, b) Rubiaceae, c)Apocynaceae, d) Euphorb Embryology of Angiosperms: Structure of male and female gametophyte, types of Ovules, Embry – double fertilization, syngamy – significance, endosperm (Nuclear helobial), Structure of dicot and monocot mature embryo. Plant Physiology: Absorption of water – Transpiration and Ascent of sap, translocation Photosynthesis – Mechanism of Light Reaction – Dark Reaction – Cycle Respiration – Mechanism of Aerobic respiration, Fermentation and	TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY, PLANT PHYSIOLOGY ➤ To provide the knowledge about angiosperms, Binomial nomencla classification of plants ➤ To study about photosynthesis and respiration Taxonomy of Angiosperms History of Taxonomy, Binomial nomenclature, ICN rules, Herbarium tech Classification (Benthum and Hooker). Basic Knowledge of Morphology of Angiosperm (Inflorescence and flower). Brief study of the following families with special features and economic in a) Annonaceae, b) Rubiaceae, c)Apocynaceae, d) Euphorbiaceae, Embryology of Angiosperms: Structure of male and female gametophyte, types of Ovules, Embryo sac, double fertilization, syngamy – significance, endosperm (Nuclear, cellul helobial), Structure of dicot and monocot mature embryo. Plant Physiology: Absorption of water – Transpiration and Ascent of sap, translocation of so Photosynthesis – Mechanism of Light Reaction – Dark Reaction - C3, C4 cycle	TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY, PLANT PHYSIOLOGY ➤ To provide the knowledge about angiosperms, Binomial nomenclature as classification of plants ➤ To study about photosynthesis and respiration Taxonomy of Angiosperms History of Taxonomy, Binomial nomenclature, ICN rules, Herbarium technique Classification (Benthum and Hooker). Basic Knowledge of Morphology of Angiosperm (Inflorescence and flower). Brief study of the following families with special features and economic importa a) Annonaceae, b) Rubiaceae, c)Apocynaceae, d) Euphorbiaceae, e) Postembryology of Angiosperms: Structure of male and female gametophyte, types of Ovules, Embryo sac, Fertili – double fertilization, syngamy – significance, endosperm (Nuclear, cellular, helobial), Structure of dicot and monocot mature embryo. Plant Physiology: Absorption of water – Transpiration and Ascent of sap, translocation of solutes, Photosynthesis – Mechanism of Light Reaction – Dark Reaction - C3, C4 and C cycle Respiration – Mechanism of Aerobic respiration, Fermentation and its significant	

Reference and Textbooks

Taxonomy:

Bhojwani, S.S. and Bhatnagar S.P. – The embryology of Angiosperms' Vikas Publishing House P.Ltd., New Delhi.

Kochar, S.L.–Economic Botany – TATA Mc Graw Hill Publishing Co., Ltd., New Delhi.

Vasishta P.C. – Taxonomy of Angiosperms' R.Chandand Co., New Delhi.

Embryology of Angiosperms

Maheswari, P – Introduction to Embryology of Angiosperms – Tata McGraw Hill publishing Ltd., New Delhi.

Plant Physiology

Ray Noggle, G and George J.Frits – Introduction to Plant Physiology. Prentice Hall of India P.Ltd., New Delhi.

Robert M.Devlinn – Plant Physiology. Affiliated East West Press P.Ltd., New Delhi.

Outcomes	➤ The students can learn Binomial nomenclature and plant systematic.
	➤ The students will get knowledge about photosynthesis and respiration of
	plants.

Course code:	ALLIED PRACTICAL – I B	T/P	С	H/W
22BBOAP2	TAXONOMY OF ANGIOSPERMS, EMBRYOLOGY,	P	2	2
	PLANT PHYSIOLOGY			
Objectives	➤ To develop observation technical skill in dissecting floral parts.			
	> To study about plant classification.			
	To know about the important of pollen grains and ovules.			
	To know about the photosynthesis and respiration in plants.			
	Taxonomy of angiosperms and economic Botany:			
	1. Morphological identification of Vegetative and Reproductive parts and their modifications.			
	2. Dissect out the floral parts of plants come under the familie	s preso	cribed	in the
	theory syllabus. Write descriptions in technical terms. Dra and write floral formula/e.	aw flo	ral di	agram
	Embryology: 1. To dissect out and mount Dicot embryo (<i>Tridax</i>) 2. To prepare permanent micro preparations showing types of ovules 3. Micro preparations anther and Take T.S of anther (<i>Datura/Cassia</i>)			
	 Plant Physiology 1. Rate of Photosynthesis – <i>Hydrilla</i> Experiment of Willmont's Bubbler using different colour filters. 2. Separation of photosynthetic pigment by paper chromatography 3. Determination of Osmotic Pressure – Plasmolytic method. 			
	Submission of certified and bonafide record note book is mandatory for External Practical.			
Outcomes	Develop observation and technical skill in dissecting floral parts a techniques.	and he	rbariu	m
	➤ Understand the photosynthesis and respiration plants.			
	➤ Understand the fertilization and developments of fruits			

TD*	EATERNAL QUESTION	Man Manla (O
1 ime:	3 hours <u>A</u> — Work out the specimen and identify the respective families	Max. Marks- 60 1x 9=09
	and describe with technical terms. Take L.S. of flower.	
2.	$\underline{\boldsymbol{B}}$ - Work out the specimen and identify the respective families through elimination process	1x 8=08
3.	$\underline{\mathbf{C}}$ - Take T.S. of dicot anther from the given material. Mount in Glycerin and submit it for valuation. Write notes and draw sketch.	1x 8 =08
4.	<u>D</u> – Taking a lot, ask for requirement, write the procedure, setup and perform the experiment as indicated, collect data/measurements, present them and interpret the results	1 x 10 = 10
5.	E,F,G – Identify, draw sketches and write notes on given specimen	$3 \times 5 = 15$
6.	Submission of Record note book	10_
	Total	60
	KEY AND SCHEME OF VALUATION	
1.	<u>A</u> – Angiosperm specimen selected from prescribed families in the syllabus (Dissection-3, Identification- 1, Sketch-2, Description- 3)	1x 9=09
2.	<u>B</u> – Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-3, Reason-4)	1x 8=08
3.	<u>C</u> - Dicot Anther – <i>Datura</i> material to be given (Slide-3, Identification -1, Sketch-2, Notes-2)	1x 8 =08
4.	<u>D</u> – From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1)	1 x 10 = 10
5.	<u>E</u> – Inflorescence/flower, <u>F</u> - Physiology-Respiration, <u>G</u> – Embryology- ovule (Identification- 1, Sketch – 2, Notes -2)	$3 \times 5 = 15$
6.	Submission of Record note book	10
	Total	60

2. B - Work out the specimen and identify the respective families through elimination process 3. C - Take T.S. of dicot anther from the given material. Mount in Glycerin and submit it for valuation. Write notes and draw sketch. 4. D - Taking a lot, ask for requirement, write the procedure, setup and perform the experiment as indicated, collect data/ measurements, present them and interpret the results 5. E.F.G - Identify, draw sketches and write notes on given specimen 6. Continuous assessment Continuous assessment Description- 2) 2. B - Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification- 1, Sketch-1, Description- 2) 3. C - Dicot Anther - Datura material to be given (Slide-2, Identification- 1, Sketch-1, Notes-1) 4. D - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. E - Inflorescence/flower, F - Physiology-Respiration, G - Embryology- ovule (Identification- 1, Sketch - 1, Notes - 1) 6. Continuous assessment Total 1 x 5=05 Total 1 x 5=05 Total 2 x 3 x 3 = 09 G - Embryology- ovule (Identification- 1, Sketch - 1, Notes - 1) 6. Continuous assessment Total	Time: 1.	3 hours <u>A</u> — Work out the specimen and identify the respective families and describe with technical terms. Take L.S. of flower.	Max. Marks- 40 1x 6=06
Glycerin and submit it for valuation. Write notes and draw sketch. 4. \[\mathbb{D} - Taking a lot, ask for requirement, write the procedure, setup and perform the experiment as indicated, collect data/ measurements, present them and interpret the results 5. \[\mathbb{E}.F.G - Identify, draw sketches and write notes on given specimen 6. \[\text{Continuous assessment} \] \[\mathbb{O} \] \[\mathbb{E} - Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification- 1, Sketch-1, Description- 2) 2. \[\mathbb{B} - Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2) 3. \[\mathbb{C} - Dicot Anther - Datura material to be given (Slide-2, Identification -1, Sketch-1, Notes-1) 4. \[\mathbf{D} - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. \[\mathbb{E} - Inflorescence/flower, \mathbf{E} - Physiology-Respiration, \mathbf{G} - Embryology- ovule (Identification -1, Sketch -1, Notes -1) 6. \[\mathbb{C} - Continuous assessment 05 \]	2.		1x 5=05
and perform the experiment as indicated, collect data/ measurements, present them and interpret the results 5.	3.	Glycerin and submit it for valuation. Write notes and draw	1x 5 =05
5. E.F.G - Identify, draw sketches and write notes on given specimen 6. Continuous assessment Continuous assessment O5 KEY AND SCHEME OF VALUATION 1. A - Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification-1, Sketch-1, Description-2) 2. B - Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2) 3. C - Dicot Anther - Datura material to be given (Slide-2, Identification-1, Sketch-1, Notes-1) 4. D - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. E - Inflorescence/flower, F - Physiology-Respiration, G - Embryology- ovule (Identification-1, Sketch-1, Notes-1) 6. Continuous assessment 05	4.	and perform the experiment as indicated, collect data/	1 x 10 = 10
Total KEY AND SCHEME OF VALUATION 1.	5.	E,F,G – Identify, draw sketches and write notes on given	$3 \times 3 = 09$
 KEY AND SCHEME OF VALUATION A - Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification-1, Sketch-1, Description-2) B - Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2) C - Dicot Anther - Datura material to be given (Slide-2, Identification-1, Sketch-1, Notes-1) D - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) E - Inflorescence/flower, F - Physiology-Respiration, 3 x 3 = 09 C - Embryology- ovule (Identification-1, Sketch-1, Notes-1) Continuous assessment 05 	6.		05
 A - Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification-1, Sketch-1, Description-2) B - Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2) C - Dicot Anther - Datura material to be given (Slide-2, Identification -1, Sketch-1, Notes-1) D - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) E - Inflorescence/flower, F - Physiology-Respiration, 3 x 3 = 09 C - Embryology- ovule (Identification-1, Sketch - 1, Notes-1) Continuous assessment 		Total	40
the syllabus (Dissection-2, Identification- 1, Sketch-1, Description- 2) 2. B – Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason- 2) 3. C - Dicot Anther – Datura material to be given (Slide-2, Identification -1, Sketch-1, Notes-1) 4. D – From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. E – Inflorescence/flower, F - Physiology-Respiration, 3 x 3 = 09 G – Embryology- ovule (Identification-1, Sketch – 1, Notes -1) 6. Continuous assessment 05		KEY AND SCHEME OF VALUATION	
 B - Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2) C - Dicot Anther - Datura material to be given (Slide-2, Identification -1, Sketch-1, Notes-1) D - From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) E - Inflorescence/flower, F - Physiology-Respiration, 3 x 3 = 09 G - Embryology- ovule (Identification-1, Sketch - 1, Notes -1) Continuous assessment 05 	1.	the syllabus (Dissection-2, Identification- 1, Sketch-1,	1x 6=06
(Slide-2, Identification -1, Sketch-1, Notes-1) 4. D – From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. E – Inflorescence/flower, F - Physiology-Respiration, G – Embryology- ovule (Identification-1, Sketch – 1, Notes -1) 6. Continuous assessment 1 x 10 = 10 3 x 3 = 09 3 x 3 = 09	2.	$\underline{\mathbf{B}}$ – Angiosperm specimen selected from prescribed families in	1x 5=05
(Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1) 5. <u>E</u> – Inflorescence/flower, <u>F</u> - Physiology-Respiration, 3 x 3 = 09 <u>G</u> – Embryology- ovule (Identification-1, Sketch – 1, Notes -1) 6. Continuous assessment	3.	_	1x 5 =05
 5. <u>E</u> - Inflorescence/flower, <u>F</u> - Physiology-Respiration, <u>G</u> - Embryology- ovule (Identification- 1, Sketch – 1, Notes -1) 6. Continuous assessment	4.	(Requirements-2, Procedure-3, Setup-3, and Result-1,	1 x 10 = 10
6. Continuous assessment05_	5.	$\underline{\mathbf{E}}$ – Inflorescence/flower, $\underline{\mathbf{F}}$ - Physiology-Respiration, $\underline{\mathbf{G}}$ – Embryology- ovule	3 x 3 = 09
Total 40	6.		05
		Total	40

Course code:		T/P	С	H/W	
22BBOA3	THALLOPHYTA, ARCHEGONIATE, PLANT	T	3	3	
	PATHOLOGY, ECOLOGY, PLANT ANATOMY				
Objectives	To study the structure and life history of Algae,	Fungi,	Bryo	ophytes,	
	Pteridophytes and Gymnosperms.				
	To learn the internal structure of higher plants.				
TT *4 T	To observe the cause of pollution and deforestation				
Unit -I	Thallophyta:	(Dhode	nhria	202)	
	Algae: General Characters, structure and life history of <i>Gracilaria</i> Fungi: General Characters, Structure and Life history of <i>Agaricus</i>				
	Bryophyta: General Characters, structure and life history of <i>Matheus</i>	,	•		
	development)	ırcnanıı	u (ϵ_{λ}	cruding	
Unit -II	Archegoniate:				
	Pteriophyta: General Characters, structure and Life history of	Marsile	ea (ex	cluding	
	development)	1,10,,500	(01)	craamg	
	Gymnosperms: General Characters, structure and Life history	of Pina	us (ex	cluding	
	development)		`	C	
Unit -III	Plant Pathology: Study of the following plant diseases with	referen	ce to	causes,	
	symptoms, dissemination, Control and preventive measures.				
	Virus Diseases – Bunchy top of Banana. Bacterial Disease – Citrus	s Canke	r.		
Unit –IV	Ecology:				
	Pollution – kinds – Cause – Harmful effects including Green House				
	& control measures. Deforestation, Land Misuse (Indiscriminate tr		ng and	l raising	
X 7 •4 X 7	of Plantations) Effects of Deforestation. Afforestation. Social Fore	stry.			
Unit –V	Plant Anatomy: Tissues Simple and compound permanent tissues Marietams turn	as of m	orista	ma	
	Tissues – Simple and compound permanent tissues. Meristems, types of meristems. Primary and secondary structure of dicot and monocot stem.				
Reference an	· · · · · · · · · · · · · · · · · · ·				
	poulos, C.J. <i>Introductory Mycology</i> . John wiley& sons, New York				
Cutter	, E.G (1969) <i>Plant Anatomy</i> , Part 1 Addison – Wesley Publishing C	Co.			
Lee, R	.E. (2008). <i>Phycology</i> , Cambridge University Press, Cambridge. 4th	h editio	n.		
Pande	y B., Plant Anatomy				
1	Pandey B.P College Botany - Algae, Fungi and Bryophytes. Vol. I S.Chand& Co., Calcutta.				
	Sambamurthy, A.V.S.S. 2005. A textbook of Bryophytes, Pteridophytes, Gymnosperms and Paleobotany. I.K. International Pvt.Ltd, New Delhi.				
Sharm	a P.D. – Elements of Ecology – Rastogi Publishing, Meerut				
Outcomes	 The students gain noteworthy knowledge in identification Algae, Fungi, Bryophytes, Pteridophytes and Gymnospern The students will be able to understand pollution and its ef The students will develop the skills in identification of ana various plant parts. 	ns. fects.			

Course code:		ALLIED PRACTICAL- II A	T/P	C	H/W	
22BBOAP3		THALLOPHYTA, ARCHEGONIATE, PLANT	P	2	2	
		PATHOLOGY, ECOLOGY, PLANT ANATOMY				
Objectives	To observe, identify and micropreparation of Algae, Fungi, Bryophytes,					
		ophytes and Gymnosperms.				
		ke suitable micropreparation of dicot and monocot stem.				
		rn about pollution, deforestation and Afforestation				
		Micro - Preparations and Identification of the Thallophyt	a pres	cribed	d in the	
		Syllabus(Algae-Gracilaria: Fungi-Agaricus)				
		Cutting and Mounting of T.S. of Vegetative parts of Marcha	ıntia ,	Mars	<i>ilea</i> and	
		Pinus.				
		dentification /Micropreparation of cones of Marsilea, Pi	<i>nus</i> ar	id cap	sule of	
		Marchantia .			2	
		To observe and identify spot at sight and make detailed st	udy o	the t	ypes of	
	disease prescribed in the syllabus					
		Cutting, Mounting and identifications of T.S. of dicot and monocot stem.				
		Photographs/models on various pollution, deforestation,	Atto	restatı	on and	
	S	ocial forestry.				
	Submission of certified and bonafide record note book is mandatory for External					
0-4	Practica		Derroe	h z z t o o		
Outcomes	Students may able to identify the various forms of Algae, Fungi, Bryophytes,					
	Pteridophytes and Gymnosperms.					
		the knowledge of non-vascular and vascular cryptogams.				
	To understand the pollution, deforestation, Afforestation and conservation.					

Time:	3 hours	Max. Marks- 60
1.	Make suitable micropreparation of "A" and "B". Mount in Glycerin. Draw labeled sketches. Identify and give reason. Submit the slide for valuation.	2 x7= 14
2.	Make suitable micropreparation of "C"Mount in Glycerin. Identify and giving reason. Submit the slide for valuation.	1x 7 = 07
3.	Comments on the etiology of "D"	1 x 4= 04
4.	Identify draw sketches and write notes on (E, F, G, H and I)	5 x5= 25
5.	Submission of Record note book	10
	Total	60
1.	KEY AND SCHEME OF VALUATION Make suitable micropreparation of "A" and B. Mount in	2 x7= 14
1,	Glycerin. <u>A</u> - (Algae/ Bryophyte), <u>B</u> - Pteridophyte/Gymnosperm (Slide -2, Identification-1, sketch-2, Reason-2)	2 77 11
2.	Make suitable micropreparation of "C"Mount in Glycerin <u>C</u> – (Dicot/monocot stem). (Slide -2, Identification-1, sketch-2, Reason-2)	1x 7 = 07
3.	<u>D</u> – Etiology specimen prescribed in the syllabus (Identification-1, sketch-1, Reason-2)	1 x 4= 04
4.	 E - Reproductive part of Algae, Fungi, Bryophyte, Pteridophyte, Gymnosperm. F - Morphology/ reproductive part of fungi G - Green house effect/Acid rain H - Deforestation/ Afforestation/Social forestry I - Simple permanent tissue (Identification-1, sketch-2, Reason-2) 	5 x5= 25
5.	Submission of Record note book	10
	Total	60

Time: 3 hours		Max. Marks- 40
1.	Make suitable micropreparation of "A" and "B". Mount in Glycerin. Draw labeled sketches. Identify and give reason. Submit the slide for valuation.	2 x6= 12
2.	Make suitable micropreparation of "C" Mount in Glycerin. Identify and giving reason. Submit the slide for valuation.	$1x\ 6=\ 06$
3.	Comments on the etiology of "D"	1 x 2= 02
4.	Identify draw sketches and write notes on (E, F, G, H and I)	5 x3=15
5.	Continuous assessment	05
	Total	40
	KEY AND SCHEME OF VALUATION	
1.	Make suitable micropreparation of "A" and B . Mount in Glycerin. <u>A</u> - (Algae/ Bryophyte), <u>B</u> - Pteridophyte/Gymnosperm (Slide -2, Identification-1, sketch-1, Reason-2)	2 x6= 12
2.	Make suitable micropreparation of "C" Mount in Glycerin <u>C</u> – (Dicot/monocot stem). (Slide -2, Identification-1, sketch-1, Reason-2)	1x 6= 06
3.	<u>D</u> – Etiology specimen prescribed in the syllabus (Identification-½, sketch-½, Reason-1)	1 x 2= 02
4.	$\underline{\mathbf{E}}$ – (Reproductive part of Algae, Fungi, Bryophyte, Pteridophyte Gymnosperm, $\underline{\mathbf{F}}$ – Morphology/ reproductive part of fungi, \mathbf{G} – Gr house effect/Acid rain, $\underline{\mathbf{H}}$ – Deforestation/Afforestation/Soforestry, $\underline{\mathbf{I}}$ – Simple permanent tissue. (Identification-1, sketch-1, Reason-1)	een
5.	Continuous assessment	05
	Total	40

Course code:	ALLIED COURSE – II B	T/P	С	H/W		
22BBOA4	SYSTEMATIC OF ANGIOSPERMS, EMBRYOLOGY,	T	3	3		
	PLANT PHYSIOLOGY					
Objectives	> To provide the knowledge about angiosperms, Binomial no	mencla	ture a	nd the		
	classification of plants					
	To study about photosynthesis and respiration					
Unit -I	Taxonomy of Angiosperms					
	History of Taxonomy, Binomial nomenclature, ICN rules, Herbarium techniques					
	Classification (Benthum and Hooker). Basic Knowledge of Morphology of					
	Angiosperm (Inflorescence and flower).					
Unit -II	Brief study of the following families with special features and economic importance.					
	b) Annonaceae, b) Rubiaceae, c) Apocynaceae, d) Euphorbiaceae, e) Poaceae					
Unit -III	Embryology of Angiosperms:					
	Structure of male and female gametophyte, types of Ovules, Embryo sac, Fertilization					
	– double fertilization, syngamy – significance, endosperm (Nuclear, cellular,					
	helobial), Structure of dicot and monocot mature embryo.					
Unit -IV	Plant Physiology:					
	Absorption of water – Transpiration and Ascent of sap, translocation of solutes,					
	Photosynthesis – Mechanism of Light Reaction – Dark Reaction - C3, C4 and CAM					
	cycle					
Unit -V	Respiration – Mechanism of Aerobic respiration, Fermentation and its significance			ıce		
	Photorespiration – Photoperiodism and Vernalisation, Seed dormancy.					

Reference and Textbooks

Taxonomy:

Bhojwani, S.S. and Bhatnagar S.P. – The embryology of Angiosperms' Vikas Publishing House P.Ltd., New Delhi.

Kochar, S.L.–Economic Botany – TATA Mc Graw Hill Publishing Co., Ltd., New Delhi.

Vasishta P.C. – Taxonomy of Angiosperms' R.Chandand Co., New Delhi.

Embryology of Angiosperms

Maheswari, P – Introduction to Embryology of Angiosperms – Tata McGraw Hill publishing Ltd., New Delhi.

Plant Physiology

Ray Noggle, G and George J.Frits – Introduction to Plant Physiology. Prentice Hall of India P.Ltd., New Delhi.

Robert M.Devlinn - Plant Physiology. Affiliated East West Press P.Ltd., New Delhi.

Outcomes	➤ The students can learn Binomial nomenclature and plant systematic.
	➤ The students will get knowledge about photosynthesis and respiration of
	plants.

Course code:	ALLIED PRACTICAL – II B	T/P	С	H/W	
22BBOAP4	SYSTEMATIC OF ANGIOSPERMS, EMBRYOLOGY,	P	2	2	
	PLANT PHYSIOLOGY				
Objectives	➤ To develop observation technical skill in dissecting floral parts.				
	To study about plant classification.				
	To know about the important of pollen grains and ovules.				
	To know about the photosynthesis and respiration in plants.				
	 Taxonomy of angiosperms and economic Botany: Morphological identification of Vegetative and Reproductive parts and their modifications. Dissect out the floral parts of plants come under the families prescribed in the 				
	theory syllabus. Write descriptions in technical terms. Draw floral diagram and write floral formula/e.				
	Embryology: 1. To dissect out and mount Dicot embryo (<i>Tridax</i>) 2. To prepare permanent micro preparations showing types of ovules 3. Micro preparations anther and Take T.S of anther (<i>Datura/Cassia</i>)				
	 Plant Physiology 1. Rate of Photosynthesis – <i>Hydrilla</i> Experiment of Willmont's Bubbler using different colour filters. 2. Separation of photosynthetic pigment by paper chromatography 3. Determination of Osmotic Pressure – Plasmolytic method. 				
	Submission of certified and bonafide record note book is mandatory for External Practical.				
Outcomes	 Develop observation and technical skill in dissecting floral parts a techniques. Understand the photosynthesis and respiration plants. Understand the fertilization and developments of fruits 	and he	rbariu	ım	

EXTERNAL QUESTION					
Time:	3 hours	Max. Marks- 60			
1.	<u>A</u> – Work out the specimen and identify the respective families and describe with technical terms. Take L.S. of flower.	1x 9=09			
2.	$\underline{\mathbf{B}}$ - Work out the specimen and identify the respective families through elimination process	1x 8=08			
3.	$\underline{\mathbf{C}}$ - Take T.S. of dicot anther from the given material. Mount in Glycerin and submit it for valuation. Write notes and draw sketch.	1x 8 =08			
4.	<u>D</u> – Taking a lot, ask for requirement, write the procedure, setup and perform the experiment as indicated, collect data/ measurements, present them and interpret the results	1 x 10 = 10			
5.	E,F,G – Identify, draw sketches and write notes on given specimen	$3 \times 5 = 15$			
6.	Submission of Record note book	10			
	Total	60			
	Total				
	WENT AND COMENTS OF MALE MARKON				
	KEY AND SCHEME OF VALUATION				
1.	<u>A</u> – Angiosperm specimen selected from prescribed families in the syllabus (Dissection-3, Identification- 1, Sketch-2, Description- 3)	1x 9=09			
2.	<u>B</u> – Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-3, Reason-4)	1x 8=08			
3.	<u>C</u> - Dicot Anther – <i>Datura</i> material to be given (Slide-3, Identification -1, Sketch-2, Notes-2)	1x 8 =08			
4.	<u>D</u> – From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1)	1 x 10 = 10			
5.	$\underline{\mathbf{E}}$ – Inflorescence/flower, $\underline{\mathbf{F}}$ - Physiology-Respiration, \mathbf{G} – Embryology- ovule	$3 \times 5 = 15$			
	(Identification- 1, Sketch – 2, Notes -2)				
6.	Submission of Record note book	10			
٠.	Total	60			
	Total				

Time:	3 hours	Max. Marks- 40
1.	<u>A</u> – Work out the specimen and identify the respective families and describe with technical terms. Take L.S. of flower.	1x 6=06
2.	$\underline{\mathbf{B}}$ - Work out the specimen and identify the respective families through elimination process	1x 5=05
3.	$\underline{\mathbf{C}}$ - Take T.S. of dicot anther from the given material. Mount in Glycerin and submit it for valuation. Write notes and draw sketch.	$1x\ 5 = 05$
4.	<u>D</u> – Taking a lot, ask for requirement, write the procedure, setup and perform the experiment as indicated, collect data/ measurements, present them and interpret the results	1 x 10 = 10
5.	E,F,G – Identify, draw sketches and write notes on given specimen	$3 \times 3 = 09$
6.	Continuous assessment	05
	Total	40
	KEY AND SCHEME OF VALUATION	
1.	<u>A</u> – Angiosperm specimen selected from prescribed families in the syllabus (Dissection-2, Identification- 1, Sketch-1, Description- 2)	1x 6=06
2.	$\underline{\mathbf{B}}$ – Angiosperm specimen selected from prescribed families in the syllabus (Identification-1, elimination-2, Reason-2)	1x 5=05
3.	<u>C</u> - Dicot Anther – <i>Datura</i> material to be given (Slide-2, Identification -1, Sketch-1, Notes-1)	1x 5 =05
4.	D – From physiology Major experiments (Requirements-2, Procedure-3, Setup-3, and Result-1, Interpretation-1)	1 x 10 = 10
5.	$\underline{\mathbf{E}}$ – Inflorescence/flower, $\underline{\mathbf{F}}$ - Physiology-Respiration, $\underline{\mathbf{G}}$ – Embryology- ovule (Identification- 1, Sketch – 1, Notes -1)	3 x 3 = 09
6.	Continuous assessment	05_
	Total	40