

GKSM GOVERNMENT COLLEGE TANDA URMAR

DEPARTMENT OF BOTANY (MONTHLY INSTRUCTION PLAN)

Class: B.Sc. Medical Semester I		
Paper No: Paper A		
Subject: Plant Diversity		
month No.	Topics to be covered	Reference Books/Material
July - August	Bacteria: Salient features, Types and Cell Structure	1. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. Introductory Mycology (4th Edition). Wiley - Blackwell, USA.
	Algae General Characters, Classification	
	Life History of <i>Oscillatoria</i> , <i>Volvox</i>	
August - September	Life History of <i>Cladophora</i> , <i>Vaucheria</i>	2. Dube, H.C., 2007. A Textbook of Fungi, Bacteria and Viruses (3rd edition), Scientific Publishers, India
	Life History of <i>Dictyota</i> , <i>Batrachospermum</i>	
	Economic Importance of Algae, General Characters of Fungi	
September - October	Classification of Fungi, Life History of <i>Albugo</i>	3. Dube, H.C., 2012. An Introduction to Fungi (4th edition), Scientific Publishers., India.
	Life history of <i>Rhizopus</i> , <i>Saccharomyces</i>	
	Life history of <i>Agaricus</i> , <i>Ustilago</i>	
October - November	Life history of <i>Puccinia</i>	4. James W. Brown. (2014). Principles of Microbial Diversity. ASM press, USA.
	Life history of <i>Colletotrichum</i>	
	General account of Lichens & their economic Importance	
		5. Ogunseitan, O. (2004). Microbial Diversity: Form and function in Prokaryotes. Wiley Publishers, USA.
		6. Sharma, O.P., 2004, Text Book of Thallophytes. McGraw Hill Publishing Co., India.
		7. Sharma, P.D., 2004, The Fungi, (2nd Edition) Rastogi Publication, India



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DEPARTMENT OF BOTANY (MONTHLY INSTRUCTION PLAN)

Class: B.Sc. Medical Semester III		
Paper No: Paper A		
Subject: Diversity of Seed Plants and their Systematics-I		
month No.	Topics to be covered	Reference Books/Material
July - August	General characteristics and economic importance of gymnosperms, Differences between gymnosperms and angiosperms; differences between manoxylic and pycnoxylic wood., Geological time Scale	1. Bhatnagar, S.P. and Moitra, A. Gymnosperms, New Age International Limited, New Delhi, 1996. 2. Chopra, G.L. Text book of Gymnosperms, S. Nagin, Delhi, 1976.
August - September	Brief account of fossils, their formation and types <i>Lyginopteris</i> : Introduction, external structure of stem; internal structure of primary stem, root and leaf; reproduction.	3. Dhand, N. Systematics of Spermatophyta. Trueman Publications, Jalandhar, 2012 4. Pandey, B.P. College Botany, Vol. II. S. Chand & Company Ltd., New Delhi, 1994.
September - October	<i>Williamsonia</i> : Introduction, external morphology; internal structure; reproductive organs, male and female flowers. Structure, reproduction (male and female strobilus; structure of ovule; development of male and female gametophytes; pollination, fertilization, development of embryo and structure of seed) and life cycle of <i>Cycas</i> .	5. Singh, V., Pande, P.C. and Jain, D.K. A Text Book of Botany: Diversity and Systematics of Seed Plants, Rastogi Publications, Meerut, 2013. 6. Sporne, K.R. The Morphology of Gymnosperms, Hutchinson & Co (Publishers) Ltd., London, 1965. 7. Srivastava, H.N. Diversity of Seed Plants and their Systematics, Vol. III. Pradeep Publications, Jalandhar, 2014.
October - November	Structure, reproduction (male and female strobilus; structure of ovule; development of male and female gametophytes; pollination, fertilization, development of embryo and structure of seed) and life cycle of <i>Pinus</i> and <i>Ephedra</i> .	



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**DEPARTMENT OF BOTANY
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Class: B.Sc. Medical Semester V Paper No: Paper A Subject: Plant Physiology		
month No.	Topics to be covered	Reference Books/Material
July - August	Importance of water to plant life; physical properties of water; imbibition, diffusion, osmosis, plasmolysis and deplasmolysis, concept of osmotic potential, water potential and pressure potential; absorption of water, active and passive mechanism of water absorption; transport of water, mechanism and theories to explain ascent of sap; transpiration types, mechanism of opening and closing of stomata, mechanism of transpiration, factors affecting transpiration, antitranspirants.	<ol style="list-style-type: none"> 1. Bhatia, K.N. Plant Physiology- A Modern Treatise, Trueman Book Co. Jalandhar, 2015. 2. Hopkins, W.G. Introduction to Plant Physiology. John Wiley & Sons, Inc. New York, U.S.A., 1995. 3. Salisbury, F.B. and Ross, C.W. Plant Physiology (4th Edition) Wadsworth Publishing Co. California, USA, 1992. 4. Srivastava, H.S. Plant Physiology, Bio-chemistry & Bio-technology, Rastogi Publications, Meerut, 2008. 5. Taiz, L. and Zeiger, E. Plant Physiology (5th edition), Sinauer Associates, Inc., Publishers, Massachusetts, USA, 2010 6. Verma, B. Plant Physiology (1st Edition), Athena Academic, St. John Street, London, UK, 2007.
August - September	Hydroponics and its importance; essential macro-and micro elements, essentiality criteria, deficiency symptoms and their role; mineral uptake; mechanism of mineral uptake (active, passive absorption and modern concepts).	
September - October	Biological nitrogen fixation; importance of nitrate reductase and its regulation; ammonia assimilation. Structure and function of lipids; β - oxidation; saturated and unsaturated fatty acids.	
October - November	Classification, role and structure (primary, secondary and tertiary) of proteins. Basics of enzymology: Discovery and nomenclature; classification, structure, properties, factors affecting enzyme activity, mechanism of enzyme action.	

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DEPARTMENT OF BOTANY (MONTHLY INSTRUCTION PLAN)

Class: B.Sc. Medical Semester II		
Paper No: Paper A		
Subject: Plant Diversity II		
month No.	Topics to be covered	Reference Books/Material
January - February	Bryophyta: General characters; systematic position, structure, reproduction and life cycle of <i>Marchantia</i> and <i>Riccia</i> (Hepaticopsida) excluding developmental stages.	1. Goyal, J. P. Dhand, Neelam and Saini, Aruna 2011. Foundations of Botany. Trueman Book Company Jalandhar. 2. Pandey, B.P. 2009. Botany for Degree Students. S. Chand & Co. Ltd., New Delhi
February - March	Systematic position, structure, reproduction and life cycle of <i>Anthoceros</i> (Anthocerotopsida) and <i>Funaria</i> (Bryopsida) excluding developmental stages.	3. Puri, P. 1980. Bryophyta. Atma Ram & Sons. Delhi. 4. Sharma, O.P. 1990. Text Book of Pteridophyta, McGraw Hill Publishing Co., New Delhi.
March - April	Pteridophyta: General characters; systematic position, structure, reproduction and life cycle of <i>Rhynia</i> (Psilophytopsida) and <i>Selaginella</i> (Lycopsida) excluding developmental stages.	5. Singh, V. Pandey, P.C. and Jain, D.K. 2012. Text Book of Botany, Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut & New Delhi.
April - May	Systematic position, structure, reproduction and life cycle of <i>Equisetum</i> (Sphenopsida) and <i>Pteris</i> (Pteropsida) excluding developmental stages.	6. Smith, G.M. 1971. Cryptogamic Botany. Vol. II, Bryophytes and Pteridophytes, Tata McGraw Hill Publishing Co., New Delhi. 7. Srivastava, H.N. 2013. Pradeep's Botany Vol. I (Diversity of Microbes and Cryptogams), Pradeep Publications, Jalandhar (India). 8. Vishishta, B. R. 1999. Botany for Degree Students. Bryophyta. S. Chand and Company Ltd., New Delhi.



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**DEPARTMENT OF BOTANY
(MONTHLY INSTRUCTION PLAN)**

Class: B.Sc. Medical Semester IV

Paper No: Paper A

Subject: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II

month No.	Topics to be covered	Reference Books/Material
January - February	General characters of Angiosperms. Plant nomenclature and International Code of Botanical Nomenclature : Common names and scientific names, principles and rules; taxonomic ranks; type concept (Holotype, Isotype, Syntype, Paratype, Lectotype, Neotype & Topotype); principle of priority, aims and objectives of plant taxonomy. A brief account of Bentham and Hooker's System of classification, its merits and demerits.	1. Chopra, G.L. Angiosperms: Systematic and Life Cycle, Pradeep Publications, Jalandhar, 1987. 2. Dhand, N. Systematics of Spermatophyta, Trueman Publications, Jalandhar, 2012. 3. Maheshwari, J.K. Flora of Delhi, CSIR, New Delhi, 1963. 4. Singh, G. Plant Systematics: Theory and Practice, Oxford and IBH Pvt. Ltd., New Delhi, 1999.
February - March	Terminology pertaining to floral description. General account and diagnostic features of the following families (excluding economic importance) : Liliaceae : <i>Asphodelus/Asparagus</i> Gramineae (Poaceae) : <i>Triticum</i> Ranunculaceae : <i>Ranunculus, Delphinium</i> Brassicaceae : <i>Brassica</i>	5. Singh, V., Pande, P.C. and Jain, D.K. A Text Book of Botany: Diversity and Systematics of Seed Plants, Rastogi Publications, Meerut, 2013. 6. Srivastava, H.N. Diversity of Seed Plants and their Systematics, Vol. III, Pradeep Publications, Jalandhar, 2006.
March - April	General account and diagnostic features of the following families (excluding economic importance): Rutaceae : <i>Citrus, Murraya</i> Malvaceae : <i>Hibiscus</i> Fabaceae : <i>Lathyrus, Cassia</i> and <i>Acacia</i> Umbelliferae (Apiaceae) : <i>Coriandrum</i>	7. Vasishta, P.C. Taxonomy of Angiosperms. R. Chand & Co., New Delhi, 1997.
April - May	General account and diagnostic features of the following families (excluding economic importance) : Compositae (Asteraceae) : <i>Helianthus/Ageratum</i> Asclepiadaceae : <i>Calotropis</i> Solanaceae : <i>Solanum</i> and <i>Petunia</i> Labiatae (Lamiaceae) : <i>Ocimum</i> Chenopodiaceae : <i>Chenopodium</i>	

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Class: B.Sc. Medical Semester VI Paper No: Paper A Subject: PLANT PHYSIOLOGY-II		
month No.	Topics to be covered	Reference Books/Material
January - February	Photosynthesis: Significance, historical aspect; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems, cyclic and non- cyclic photophosphorylation: Calvin cycle; C4 pathway; CAM plants: photorespiration; factors affecting photosynthesis; transport of organic substances; Mechanism of phloem transport, source-sink relationship, factors affecting translocation.	1. Bhatia, K.N. Plant Physiology- A Modern Treatise, Trueman Book Co. Jalandhar, 2015. 2. Bhojwani, S.S. Plant Tissue Culture: applications and Limitations. Elsevier Science Publishers, New York, USA, 1990. 3. Hopkins, W.G. Introduction to Plant Physiology. John Wiley & Sons, Inc. New York, U.S.A., 1995.
February - March	Respiration: ATP – The biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (Chemi-osmotic theory); redox potential; oxidative phosphorylation; pentose phosphate pathway; respiratory quotient.	4. Salisbury, F.B. and Ross, C.W. Plant Physiology (4th Edition) Wadsworth Publishing Co. California, USA, 1992. 5. Srivastava, H.N. Plant Physiology, Biochemistry & Bio-technology. Pradeep Publication, Jalandhar, 2008.
March - April	Growth and development: Definitions; phases of growth and development; kinetics of growth, factors affecting growth; plant movements; the concept of photoperiodism, physiology of flowering; florigen concept; roles of plant hormones– auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery.	6. Srivastava, H.S. Plant Physiology, Bio-chemistry & Bio-technology, Rastogi Publications, Meerut, 2008. 7. Srivastava, H.S. and Shankar, N. Plant Physiology and Bio-chemistry. Rastogi Publications, Meerut, 2012.
April - May	Biotechnology: Functional definition; basic aspects of plant tissue culture, its applications and somatic hybridization.	8. Verma, B. Plant Physiology (1st Edition), Athena Academic, St. John Street, London, UK, 2007. 9. Taiz, L. and Zeiger, E. Plant Physiology (5th edition), Sinauer Associates, Inc., Publishers, Massachusetts, USA, 2010

