

Govt. College, Ropar
Department of Botany

Syllabus Plan
Session: - 2019-2020 (Semester 3)

Month	<p style="text-align: center;">Paper 5 <u>DIVERSITY AND SYSTEMATICS</u> <u>OF GYMNOSPERMS</u></p>	<p style="text-align: center;">Paper 6 <u>DIVERSITY AND SYSTEMATICS OF</u> <u>ANGIOSPERMS</u></p>	<p style="text-align: center;"><u>PRACTICALS</u></p>
<p>JULY</p> <p>3rd week</p> <p>4th week</p>	<ul style="list-style-type: none"> • General features of gymnosperms and their classification; evolution and diversity of gymnosperms • Geological time scale, fossilization and fossil gymnosperms. Distribution, Cytology and Economic Importance of Indian Gymnosperms. 	<ul style="list-style-type: none"> • Origin and evolution of Angiosperms- giving suitable examples. Primitive and advanced characters of Angiosperms. • Angiosperm taxonomy; brief history, aims and fundamental components 	<ul style="list-style-type: none"> • The following genera are recommended for study. • Ranunculaceae: <i>Ranunculus</i>, <i>Delphinium</i>. • Brassicaceae: <i>Brassica</i>, <i>Iberis</i>. • Malvaceae: <i>Hibiscus</i>, <i>Abutilon</i> • Rutaceae: <i>Murraya</i>, <i>Citrus</i>. • Fabaceae: <i>Faboideae:</i> <i>Lathyrus</i>, <i>Trigonella</i>; • <i>Caesalpinioideae:</i> <i>Cassia</i>; • <i>Mimosoideae:</i> <i>Acacia</i>, <i>Albizia</i>.
<p>AUGUST</p> <p>1st week</p> <p>2nd week</p> <p>3rd week</p>	<ul style="list-style-type: none"> • General characters of Pro-Gymnosperms, morphological features of • <i>Arachaeopteris</i> and <i>Aneurophyton</i>; • origin and evolution of seed habit • General characters of <i>Cycadales</i>. Morphology, anatomy, reproduction and life cycle of <i>Cycas</i> • #TEST 	<ul style="list-style-type: none"> • Different types of taxonomy (alpha-Taxonomy, beta-taxonomy and omega-taxonomy); identification keys. • International code of Botanical nomenclature. • #TEST • Principles and rules; taxonomic ranks; type concept 	<ul style="list-style-type: none"> • <i>Cycas</i> • Study of microsporophyll, megasporophyll and mature seed. • Study through permanent slides – normal root (T.S.) and ovule (L.S.) • Study through hand sections – coralloid root (T.S.), rachis (T.S.), leaflet (V.S.), pollen grains (W.M.) <i>Pinus</i> • Long and dwarf shoot, male and female cones, winged seeds. • Study through permanent slides – root (T.S.), Male cone (L.S.), female cone (L.S.), ovule

4 th week	<ul style="list-style-type: none"> General characters of Coniferales. Morphology, anatomy, reproduction and life cycle of <i>Pinus</i> 	<ul style="list-style-type: none"> Classification of angiosperms, salient features of the systems proposed by Bentham and Hooker 	<p>(L.S.), embryo (W.M.) showing polycotyledonous condition.</p> <ul style="list-style-type: none"> Study through hand sections and preparation of permanent studies in young stem (T.S.), old stem needle (T.S.), pollen grains (W.M.).
SEPTEMBER	General characters of Ephedrales Morphology, anatomy and reproduction and life cycle of <i>Ephedra</i>	<ul style="list-style-type: none"> Classification of angiosperms; salient features of the systems proposed by Hutchinson and Engler and Prantl. Diagnostic features and technical description and taxonomic importance of flowering plants as illustrated by members of families Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae. MST 	<ul style="list-style-type: none"> Ephedra Structure of male and female cones. Hand sections – Stem (T.S.), maceration to show vessel structure; pollen grains (W.M). The following genera are recommended for study. Apiaceae: Coriandrum. Cucurbitaceae: Cucurbita Rosaceae: Rose
1 st week	<ul style="list-style-type: none"> #TEST MST 	<ul style="list-style-type: none"> Diagnostic features and technical description and taxonomic importance of flowering plants as illustrated by members of families Apiaceae, Cucurbitaceae, Rosaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Euphorbiaceae, Asteraceae, Liliaceae and Poaceae. 	<ul style="list-style-type: none"> The following genera are recommended for study. Asclepiadaceae: Calotropis. Solanaceae: Solanum, Withania. Euphorbiaceae: Euphorbia, Phyllanthus. Asteraceae: Helianthus, Ageratum and Sonchus. Lamiaceae: Ocimum, Salvia.
2 nd week			
3 rd week			
4 th week			
OCTOBER	<ul style="list-style-type: none"> General characters of Gnetales. Morphology, anatomy and reproduction and life cycle of <i>Gnetum</i> #TEST 	<ul style="list-style-type: none"> Diagnostic features and technical description and taxonomic importance of flowering plants as illustrated by members of families Apiaceae, Cucurbitaceae, Rosaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Euphorbiaceae, Asteraceae, Liliaceae and Poaceae. 	<ul style="list-style-type: none"> The following genera are recommended for study. Asclepiadaceae: Calotropis. Solanaceae: Solanum, Withania. Euphorbiaceae: Euphorbia, Phyllanthus. Asteraceae: Helianthus, Ageratum and Sonchus. Lamiaceae: Ocimum, Salvia.
1 st week	<ul style="list-style-type: none"> 4. Evolution of gymnosperms #TEST 	<ul style="list-style-type: none"> # REVISION OF FAMILIES 	<ul style="list-style-type: none"> The following genera are recommended for study Liliaceae: Asparagus, Allium. Poaceae: Avena, Triticum.
2 nd week			
NOVEMBER	<ul style="list-style-type: none"> 4. Evolution of gymnosperms #TEST 	<ul style="list-style-type: none"> # REVISION OF FAMILIES 	<ul style="list-style-type: none"> The following genera are recommended for study Liliaceae: Asparagus, Allium. Poaceae: Avena, Triticum.
1 st week	<ul style="list-style-type: none"> 4. Evolution of gymnosperms #TEST 	<ul style="list-style-type: none"> # REVISION OF FAMILIES 	<ul style="list-style-type: none"> The following genera are recommended for study Liliaceae: Asparagus, Allium. Poaceae: Avena, Triticum.
2 nd week			

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oxidation; saturated and
unsaturated fatty acids.

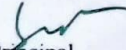
- **#TEST-REVISION**

chemical tests.

- To determine the seed
viability through Triphenyl
Tetrazolium chloride and
actual germination tests.



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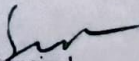
Session: - 2019-2020 (Semester 4)

Month	<p style="text-align: center;">Paper 7 <u>PLANT ANATOMY</u></p>	<p style="text-align: center;">Paper 8 <u>DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS</u></p>	<p style="text-align: center;"><u>PRACTICALS</u></p>
<p>January 4th week</p>	<ul style="list-style-type: none"> Fundamental: parenchyma, collenchyma, and sclerenchyma; Vascular system. 	<ul style="list-style-type: none"> Vegetative Reproduction: Applications in floriculture and horticulture 	<ul style="list-style-type: none"> To study the anatomy of Dicot and Monocot root, stem and leaves from the locally available material.
<p><u>February</u> 1st week 2nd week 3rd week</p>	<ul style="list-style-type: none"> The root system: the root apical meristem and its histological organization; 1.(d) Anatomical details of Dicot and Monocot roots. #TEST 	<ul style="list-style-type: none"> Apomixis: a general account Flower: a modified shoot; structure, development of flower; Inflorescence types; structure of anther and pistil #TEST Male and female gametophytes; types of pollination; pollen-pistil interaction 	<ul style="list-style-type: none"> Study of anomalous secondary growth in <i>Boerhavia</i>, <i>Nyctanthus</i>, <i>Bougainvillea</i>, <i>Mirabilis</i>. Nuclear and cellular endosperm. Embryo development in monocots and dicots. (Permanent slides) Maceration of wood to study different tracheary elements.

<p>March</p> <p>1st week</p> <p>2nd week</p> <p>3rd week</p> <p>4th week</p>	<ul style="list-style-type: none"> • The shoot system: The shoot apical meristem and its histological organization. • Anatomical details of Dicot and Monocot stems; Cambium and its functions • MST • Secondary growth including anomalous secondary growth of stem 	<ul style="list-style-type: none"> • self Incompa tibility. • Double fertilization And its further explanations. • MST • Post fertilization changes, endosperm and embryo development; seed structure, development. 	<ul style="list-style-type: none"> • Examination of flowers for their pollination mechanism (<i>Salvia, Ficus, Calotropis, Triticum</i>). • Structure of anther, microsporogenesis (using slides) and pollen grains and pollinia (using whole mounts). • Study of Pollen viability using glycerol-acetocarmine. • Structure of ovule and embryo sac. (Permanent slides)
<p>April</p> <p>1st week</p> <p>2nd week</p>	<ul style="list-style-type: none"> • Leaf: Anatomy in Dicots and Monocots and modification with special reference to their function. Study of stomatal types • #TEST 	<ul style="list-style-type: none"> • Dormancy and dispersal; fruit development and types. • #TEST 	<ul style="list-style-type: none"> • Study of placentation, fruit types and seed types. • Testing percentage seed viability through tetrazolium chloride and actual seed germination.



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