



**Paper 3a BRYOLOGY, PTERIDOLOGY AND GYMNOSPERMOLOGY**

M. Sc. va (Candidates admitted from the academic year 2008-2009)

**Core Theory**

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### Core Theory

#### Bryology

##### UNIT I

General account of habit, habitat, ecology and distribution of bryophytes. Characteristics of bryophytes as true plants. Classification of bryophytes. Distinguishing features of Hepaticopsida, Anthocerotopsida and Bryopsida.

##### UNIT II

Range of vegetative and reproductive structures, modes of reproduction in **liverworts** (Sphaerocarpaceae, Marchantiales, Monocleales, Haplomitriales, Takakiales, Metzgeriales and Jungermanniales); **hornworts** (Anthocerotales); and **mosses** (Sphagnales, Andreaeales and Bryales). Adaptations for land habit. Fossil bryophytes. Phylogeny of bryophytes. Culture of bryophytes. Economic importance.

**Key words:** Heteromorphic Alternation of Generation, Rhizoids, Scales, Fragmentation, Adventitious Branches, Persistent Apices, Tubers, Gemma, Protonema, Elaters, Elatophore, Columella, Amphithecium, Endothecium, Antheridiophore, Archegoniophore, Perigynium, Perichaetium, Apophysis, Operculum, Peristome, Annulus, Peat, Bog.

#### Pteridology

##### UNIT III

Features of Seedless Vascular Plants : Organisation of sporophyte, stele, microphylls and megaphylls, homosporous, heterosporous, gametophytes and embryos. Classification of fossil and living pteridophytes. Origin and evolution of early vascular plants. Significance of extinct Divisions: Rhyniophyta (*Rhynia*, *Cooksonia*); Zosterophyllophyta (*Zosterophyllum*); Trimerophyta (*Trimerophyton*). Selected fossil lycopods (*Asteroxylon*, *Lepidodendron*), equisetophytes (*Sphenophyllum*, *Calamites*) and ferns (Coenopteridales).

##### UNIT IV

Survey of structure and reproduction in living pteridophytes. Psilotophyta (*Psilotum*); Lycopodiophyta (Lycopodiales, Selaginellales, Isoetales); Equisetophyta (*Equisetum*); Pterophyta (Ophioglossales, Filicales, Marsileales).

**Key words:** Telome theory, Compression, Impression, Petrification, Heterospory, Mixed protostele, Plectostele, Actinostele, Siphonostele, Solenostele, Dictyostele, Circinate vernation Urostachya, Raphalostachya, Ligule, Velum, Rhizophore, Vallecular canal, Carinal canal, Protocorm, Rhizomorph, Sporocarp, Sporophore, Glossopodium, Sorus, Eusporangiate, Leptosporangiate.

## Gymnospermology

### UNIT V

Characteristics of gymnosperms. Evolution of seed habit. Classification of gymnosperms and their interrelationships. Distribution of Gymnosperms in India. Groups of fossil gymnosperms : progymnosperms (*Archaeopteris*), pteridosperms (*Lyginopteris* and *Medullosa*), glossopterids (*Glossopteris*), cycadeoids (*Williamsonia* and *Cycadeoidea*), Pentoxylon.

### UNIT VI

Distribution, reproduction and interrelationships of Cycadophyta (*Cycas*), Coniferophyta (*Pinus*, *Araucaria* and *Taxus*), Ginkgophyta (*Ginkgo*) and Gnetophyta (*Gnetum*, *Ephedra* and *Welwitschia*). Evolutionary Origin of Angiosperms - Relationship between extant, primitive early Angiosperms and Gymnosperms.

**Key words:** Manoxylic, Pycnoxylic, Cone dome, Haplochellic, Syndetochelic, Saccate Pollen, Feeder, Pavement tissue, Cupules, Spicules, Tent pole, Collar, Tertiary thickenings, Homoxylus wood.

### Suggested Reading

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