Syllabus for Second Semester
Botany – Paper-II

Code: BOT-201 **Univ Code:**
Contact Hours: 50 Hours **Workload: 4 hours per week**
Credit Points:

Evaluation: Continuous Internal Assessment - 3 marks
Semester and Examination- 70 marks

Paper-II: Bryophytes, Pteridophytes, Paleobotany and Gymnosperms.

Unit 1: BRYOPHYTE:- Introduction, Classification, Structure and reproduction and alternation of generation of the following example.

Marchantia, *Anthoceros* and *Polytrichum*

Brief account of evolution of sporophyte in Bryophytes. **08 Hrs**

Unit 2: PTERIDOPHYTA:- Introduction, Classification, occurrence, external & Internal organization, reproduction and life cycle of the following.

Lycopodium, Selaginella, *Equisetum, Ophioglassum, Adiantum, Marselia*

Brief account on Origin, Stelar Evolution, Heterospory and seed habit.

12Hrs

Unit 3: PALEOBOTANY:- Introduction, process of fossilization types and fossils. Geological time scale. A brief account of *Rhynia, Calamites, Lepidodendron* **10 Hrs**

Unit 4: GYMNOSPERMS:- General characters and classification. Morphology and anatomy of root, stems & leaf. Reproduction and life cycle in *Cycas, Pinus* and *Gnetum*). (Development aspects not required) **10 Hrs**

Reference Books :-

1. Chopra R.N. 1988, Biology of Bryophytes. Willey Eastern Ltd., New- Delhi.
2. Singh, Pandey & Jain, Pteridophyta, Gymnosperm & Paleobotany, Rastogi Publication, Meerut.
3. S.Sundarajan, College Botany, Vol-II., Himalaya Publishing House, New Delhi.
4. Smith, G.M. 1971. Cryptogamic Botany, Vol. II. Bryophytes and Pteridophytes. Tata McGraw Hill Publishing Co., New Delhi.
5. Sharma, O.P. 1990. Text book of Pteridophyta. McMillan India, Ltd.
6. Puri, P. 1980. Bryophyta. Atma Ram & Sons, New Delhi.
7. Parihar, N.S. 1970. An Introduction to Embryophyta. Vol. 1. Bryophyta. Central Book Depot. Allahabad.
8. Sporne, K.R. 1966. Bryophytes.
9. Vashista, B.R. 1978. Bryophytes. S. Chand & Co., Ltd., New Delhi.

10. Bhatnagar, S.P. and Malhotra, A. 1966. Gymnosperms. New Age International Ltd., New Delhi.
11. Gifford, E.M. and Foster, A.S. 1988. Morphology and Evolution of vascular plants. W.H. Freeman and Co., New York.
12. Sporne, K.R. 1965. The Morphology of Gymnosperms. Hutchinson & Co., Ltd. London.
13. Stewart, W.M. 1983. Paleobotany and the Evolution of plants. Cambridge University press. Cambridge.
14. Agashe, S.N. 1995. Paleobotany. Plants of the past, their evolution, paleoenvironment and application in exploration of fossil fuels. Oxoford & IBH., New Delhi.
15. Parihar, N.S. 1977. The morphology of Pteridophytes. Central Book Depot. Allahabad.
16. Rashid, A. 1998. An Introduction to Pteridophyta. II Ed., Vikas Publishing House, New Delhi.
17. Sporne, K.R. 1966. The morphology of Pteridophytes. The structure of ferns and Allied plants. Hutchinson & Co., Ltd. London.

Syllabus for Second Semester Practical question paper

Botany Practical – II

Paper - II: Bryophytes, Ptendophytes, Paleobotany & Gymnosperms

Time : 03 Hrs Max. Marks: 40

1.	Identify the specimens A, B, C and D. Sketch and label giving reasons A - Bryophytes. B - Pteridophyta C - Pteridophyta D - Gymnosperms	12
2.	Describe the anatomy of specimen E and F E - Pterridophyte F - Gymnosperm	06
3.	Mount the given specimen G Identify giving reasons (Gemma cups) *Equisetum* spores, *Pinus* pollen grains)	05
4.	Identify the slides H , I , J and K giving reasons H - Bryophyte I - Pteridophyte J - Gymnosperm K - Fossil - Slide / Impression	12
5.	Submission and Record	05
		Total -40

Note: Every student submits at least 5 specimens from the forms studied.

Scheme of evaluation for Botany Practical – II

		Marks	
I.	Identify the specimens A, B, C and D.	12	
	Identification - 01		
	Sketch & Label - 01		
	Reasons - 01		
II.	Describe the anatomy of specimen E and F		06
	Identification - 01		
	Diagram & reasons - 02		
III.	Mounting of Specimen G	05	
	Identification - 01		
	Labeled diagram - 02		
	Reasons - 02		
IV.	Identify the slides H, I, J , K	12	
	Identification - 01		
	Reasons - 02		
V.	Record and submission	05	
		Total 40	