

Environmental Studies

AECC-2 (2 hrs./week)

Credits – 2

(30 hours)

UNIT - I : Ecosystem, Biodiversity & Natural Resources

(15 hrs.)

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic, Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

UNIT – II: Environmental Pollution , Global Issues & Legislation

(15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

❖ **Field Study:**

(5 hours)

- Pond Ecosystem
- Forest Ecosystem

REFERENCES:

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana

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AECC-2

Environmental Studies

Credits – 2

THEORY MODEL PAPER

TIME: 1 ½ HOURS

MAX MARKS: 15

SECTION-A

Answer the following in short:

3x1=3marks

1. Food chains
2. Genetic Diversity
3. Ill – effects of Fire- works

SECTION-B

Answer the following essays:

2x6=12marks

- 1 (a) Define Environmental Studies & write an essay on scope & importance of Environmental Studies

OR

- (b) Write in detail about Energy resources.

- 2 (a) Write the Causes, Effects & Control measures of Air Pollution

OR

- (b) Describe the role of Information technology in environment and human health

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(in ml)

B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

DSC-1B (4 hrs./week)

Theory Syllabus

**Credits- 4
(60 hours)**

UNIT-I

1. Bryophytes: General characters and classification. (3h)
2. Structure, reproduction, life cycle and systematic position of *Marchantia*, *Anthoceros* and *Polytrichum*. (Development stages are not required). (10h)
3. Evolution of Sporophyte in Bryophytes. (2h)

UNIT-II

4. Pteridophytes: General characters and classification (Sporne's) (3h)
5. Structure, reproduction, life cycle and systematic position of *Rhynia*, *Lycopodium*, *Equisetum* and *Marsilea*. (10h)
6. Stelar evolution, heterospory and seed habit in Pteridophytes. (2h)

UNIT-III

7. Gymnosperms: General characters, structure, reproduction and classification (Sporne's). (4h)
8. Distribution and economic importance of Gymnosperms. (3h)
9. Morphology of vegetative and reproductive parts, systematic position and life cycle of *Pinus* and *Gnetum* . (8 h)

UNIT-IV.

10. Palaeobotany: Introduction, Fossils and fossilization ; Importance of fossils. (8 h)
11. Geological time scale; (4 h)
12. Bennettitales: General account. (3 h)

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References:

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). . Chand & Company Ltd, New Delhi.
5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
7. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
8. Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. Botany for Degree Students: Bryophyta. S. Chand & Company Ltd, New Delhi.
9. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. Chand & Company Ltd, New Delhi.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

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A. C. Dutta

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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

Theory Model Question Paper

Time : 2 hrs

Max. Marks: 40

Draw well-labeled diagrams wherever necessary.

1 . Write short notes on any FOUR of the following: -

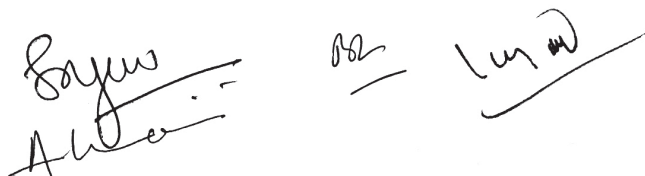
4 X 2 = 8M

- a. Gemma cup.
- b. Protostele .
- c. *Pinus* pollen grain.
- d. *Ptilophyllum*.
- e. *Anthoceros* thallus
- f. Fossilization

II . Essay Questions:

4 X 8 = 32M

- 1. a. Write about the structure & evolution of sporophyte in *Anthoceros* .
(OR)
b. Describe the gametophores of *Marchantia* .
- 2. a. Describe the anatomy of *Equisetum* stem & add a note on its ecological adaptations .
(OR)
b. Discuss in detail the internal structure of the sporocarp of *Marsilea* .
- 3. a. Describe the anatomy of *Pinus* needle with a well labeled diagram.
(OR)
b. Give an account of general characters of Gymnosperms.
- 4. a. Describe the general characters of Bennettitales .
(OR)
b. Write about economic importance of Gymnosperms.

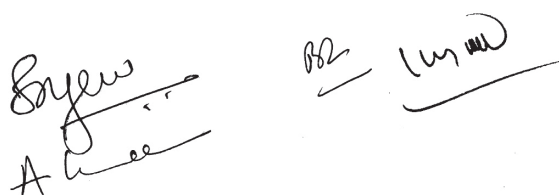


B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

(45 hours)

Practical Syllabus – 2016

1. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Bryophytes: *Marchantia*, *Anthoceros* and *Polytrichum*. (9 h)
2. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Pteridophytes: *Lycopodium*, *Equisetum* and *Marsilea*. (9 h)
3. Study of Anatomical features of *Lycopodium* stem, *Equisetum* stem and *Marsilea* petiole &
rhizome by preparing double stained permanent mounts. (12h)
4. Study of Morphology (vegetative and reproductive structures) of the following taxa:
Gymnosperms: *Pinus* and *Gnetum*. (6 h)
5. Study of Anatomical features of *Pinus* needle and *Gnetum* stem by preparing double stained
permanent mounts. (6h)
6. Fossil forms using permanent slides / photographs: *Rhynia* and *Cycadeoidea*. (3h)


The block contains handwritten signatures and initials. On the left, there is a signature that appears to be 'Sayed' with 'A' written below it. To the right, there are initials 'BR' and a signature that appears to be 'L. M. M.'.

B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

Practical Model Paper

Time : 2 1/2 hrs

Max. Marks: 25

- 1 . Prepare a double stained permanent mount of the given material ' A ' (Pteridophyte)

Draw diagram & give reasons for identification.

7M

- 2 . Prepare a double stained permanent mount of the given material ' B ' (Gymnosperms)

Draw diagram & give reasons for identification.

8M

- 3 . Identify the given specimens C , D , E & F (Bryophyte – 2 , Pteridophyte – 1 & Gymnosperm – 1)

4 X 1 =4M

- 4 . Identify the given slides G , H , I & J (Bryophyte – 2 , Pteridophyte – 1

& Gymnosperm – 1)

4 X 1 =4M

- 5 . Record

2M

*Sayed
A. C.*

*BB
(14/11/20)*