



“Jynana Karanja” **Bidar University, Bidar, Halalli, Bidar**

DEPARTMENT OF STUDIES & RESEARCH IN BOTANY

Choice Based Credit System (CBCS)

As per the New SEP guidelines

**Syllabus Scheme of Examination Pattern of Papers for
B.Sc (Botany) Semester Courses with effect from 2024-25**

B.Sc. Botany Semester 1

Title of the Course Paper

Paper- 1 **DIVERSITY OF MICROBES, ALGAE, FUNGI AND PLANT PATHOLOGY**

B.Sc. Botany Semester 2

Title of the Course Paper

Paper- 2 **DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES GYMNOSPERMS & PALEOBOTANY**

B.Sc. Botany Semester 3

Title of the Course Paper

Paper- 3 **PLANT ANATOMY AND EMBRYOLOGY**

B.Sc. Botany Semester 4

Title of the Course Paper

Paper- 4 **ECOLOGY, BIODIVERSITY AND ITS CONSERVATION**

B.Sc. Botany Semester 5

Title of the Course

Paper -5 A **PLANT MORPHOLOGY AND TAXONOMY OF
FLOWERING PLANTS**

Paper- 5B **CYTOLOGY GENETICS AND MOLECULAR BIOLOGY**

B.Sc. Botany Semester 6

Title of the Course

Paper- 6A **PLANT PHYSIOLOGY AND PLANT TISSUE CULTURE**

Paper- 6B **ECONOMIC BOTANY, ETHANO BOTANY AND
PHARMACOGNOSY**

DISCIPLINE SPECIFIC ELECTIVES

III SEM

3.1 BIOFERTILISERS

3.2 NURSARY AND GARDENING

IV SEM

4.1 PLANTS IN EVERYDAY LIFE

4.2 MUSHROOM FARMING & PRACTICE

SKILL ENHANCEMENT COURSES

1. HERBAL DRUG TECHNOLOGY

2. ALGAL TECHNOLOGY

SEMESTER – I

CORE COURSE: BOTANY PAPER-I

DIVERSITY OF DIVERSITY OF MICROBES, ALGAE, FUNGI & PLANT PATHOLOGY

(Credit: Theory: 04 Practical: 02)

THEORY CONTENTS

Lectures: 60

Unit-1	MICROBES	
	Viruses: Definition, history, living and nonliving characteristics. Structure of lytic and lysogenic cycle. Plant Viral diseases: Bunchy top of Banana, Leaf curl of Papaya. TMV, Vaccines Bacteria: History General characters of Bacteria. Types of Bacteria, ultra-structure of Bacterial cell. Mode of nutrition (Autotrophic heterotrophic), reproduction, recombination. Plant Bacterial diseases: Citrus canker, Angular leaf spot of cotton. Cynobacteria : General characters of Cynobacteria and application of Cynobacteria (industrial and agriculture) structure and reproduction of <i>Nostoc</i> <i>Oscillatoria</i>, <i>Spirulina</i>	15
Unit -2	ALGAE	15
	General characters, Classification (Fritsch 1935). thallus organization and reproduction in algae. Structure and reproduction in <i>Chlorella</i> , <i>Volvox</i> , <i>Oedogonium</i> , <i>Chara</i> , <i>Vaucheria</i> <i>Diatoms</i> , <i>Sargassum</i> and <i>Polysiphonia</i> . Economic importance of Algae	
Unit-3	FUNGI	15
	General characters, Classification (Alexopoulos 1961), Mode of nutrition in fungi. Heterothallism and parasexuality. Structure and reproduction of following: <i>Rhizopus</i> , <i>Aspergillus</i> , <i>Cercospora</i> and. Economic importance of Fungi. Mushroom; Edible and non edible mushrooms, Nutritional Value Mycorrhizae: Definition, types and its application in agriculture Lichens: Concept and its types, uses	
Unit -4	PLANT PATHOLOGY AND PLANT PROTECTION	
	Introduction, Disease triangle, Koch's postulates. Causal organism, symptoms, etiology and control measure of following: Wilt of pigeon pea, Red rot of sugarcane, Grain smut of sorghum, Rust of wheat (<i>Puccinia</i>) Sandal spike, diseases of Mycoplasma. Brief account on Plant protection, methods. Integrated Pest Management (IPM), objectives and concepts	15

PRACTICALS

30 hours

1. Study of Microscope and lab instruments
2. Models of virus, photographs of lytic and lysogenic cycle
3. Grams staining technique
4. Study of vegetative and reproduction of Algae (As per syllabus)
5. Structure and reproduction in Fungi (As per syllabus)
6. Study of plant diseases (As per syllabus)
7. Study of lichens forms(Crustose, Foliose, Fruticose)
8. Study of Mycorrhizae
9. Culture technique of Bacteria and Fungi
10. Local plant collection and submission of plant material of Algae Fungi Disease Plant diseased material

Question Paper for practical exam

Time: 2 hours	Max Marks: 40
1. Identify classify the given specimen A B C with reasons	12 Marks
2. Make a temporary slides and stain the given specimen D show the preparation to the examiner	03 Marks
3. Identify the specimen /slide/photograph E F And G	12 Marks
4. Identify the specimen/ photograph with reasons	03 Marks
5. Record and submission	05 Marks
6. Viva voce	05 Marks
Total	40

Scheme for evaluation of practical exam

- 1 Identify classify the given specimen **A B C** with reasons
A-Algae B-Fungi C-Lichens
- 2 Make a temporary slides and stain the given specimen **D** show the preparation to the examiner
D- Grams staining
- 3 Identify the specimen /slide/photograph **E F And G**
E-Cynobacteria ,F- Fungi G-Scientist photograph
- 4 Identify the specimen/ photograph with reasons
H-Plant disease
- 5 Viva voce
- 6 Record and submission (Algae Fungi Disease Plant disease material)

Reference study materials/Suggested readings

1. Kumar H.D.(1999)introductory Phycology,affiliated East west press Pvt. Limited Delhi 2nd edition
2. B.P.Pande :College Botany
3. Sing Pande and Jain college Botany Vol I & II Rastogi Publication
4. A text Book of Microbiology by Dr. R.C. Dubey and Dr.D.K. Maheshwari S. Chand publication
5. P.D.Sharma Microbiology and plant pathology Rastogi publication Meerut
6. Fritsch F.E.(1935) Structure and Reproduction of Algae Cambridge university press England
7. Dhube C H Fungi Bacteria and Viruses agrobio

Theory Question Paper Model

B.Sc. Botany SEMESTER – I

COURSE CODE: BOTT-1

Title: DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS & PALEOBOTANY

Time: 03 Hours

Max Marks: 80

Instructions to the Candidates:

- 1) Answer all the questions
 - 2) Neatness and diagrams enhances beauty of your answers
-

SECTION -A

Q. I Answer all TEN Questions in two three sentences (1 to 10)

10 x 2 = 20

- | | |
|---------|--------------------------------|
| Unit -1 | : Two sub Questions compulsory |
| Unit -2 | : Two sub Questions compulsory |
| Unit -3 | : Two sub Questions compulsory |
| Unit -4 | : Two sub questions compulsory |

SECTION -B

Q. II Answer all Any FOUR of the following (13 to 18)

10 x 4 = 20

- | | |
|---------|------------------------------|
| Unit -1 | : ONE Question is compulsory |
| Unit -2 | : ONE Question is compulsory |
| Unit -3 | : ONE Question is compulsory |
| Unit -4 | : ONE Question is compulsory |

SECTION -C

Q. III Answer all Any FOUR of the following (19 to 24)

10 x 4 = 20

- | | |
|---------|------------------------------|
| Unit -1 | : ONE Question is compulsory |
| Unit -2 | : ONE Question is compulsory |
| Unit -3 | : ONE Question is compulsory |
| Unit -4 | : ONE Question is compulsory |

SEMESTER – II

CORE COURSE: BOTANY PAPER-2

DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES GYMNOSPERMS&PALEOBOTANY

(Credit: Theory: 04 Practical: 02)

THEORY CONTENTS

Lectures: 60

Unit-1	BRYOPHYTES	15
	General characters, adaptation of Bryophytes. Classification, structure and reproduction in <i>Marchantia</i> , <i>Anthoceros</i> , <i>Funaria</i> and <i>Polytrichum</i> . Evolutionary and ecological significances of bryophytes, Recent advances in Bryophytes study with special reference on <i>Sphagnum</i>	
Unit -2	PTERIDOPHYTES	15
	General Characters, distribution, Classification. Morphology, Anatomy and reproduction in <i>Psilotum</i> , <i>Lycopodium</i> , <i>Selaginella</i> , <i>Equisetum</i> and <i>Marsilea</i> . Stellar evolution in Pteridophytes. Heterospory and Seed Habit. Ecological and Economic importance of Pteridophytes.	
Unit-3	GYMNOSPERMS	15
	General Characters and Classification of Gymnosperms. Morphology, Anatomy and reproduction in <i>Cycas</i> , <i>Pinus</i> and <i>Gnetum</i> . Affinities of Gymnosperms with Pteridophytes and Angiosperms. Economic importance of Gymnosperms	
Unit -4	PALEOBOTANY	
	Introduction of Paleobotany. Geological Time Scale Contribution of Birbal Sahani in the field of Paleobotany. Fossilisation and study of fossils types. Brief study of <i>Rhynia</i> , <i>Lepidodendron</i> , <i>Calamites</i> . Scope of Paleobotany. Brief study of Living fossils/Plant fossils	15

Theory Question Paper Model

B.Sc. Botany SEMESTER – II

PAPER-2

COURSE CODE: BOTT-2

Title: DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS & PALEOBOTANY

Time: 03 Hours

Max Marks: 80

Instructions to the Candidates:

- 3) Answer all the questions
 - 4) Neatness and diagrams enhances beauty of your answers
-

SECTION -A

Q. I Answer all TEN Questions in two three sentences (1 to 10) 10 x 2 = 20

Unit -1	: Two sub Questions compulsory
Unit -2	: Two sub Questions compulsory
Unit -3	: Two sub Questions compulsory
Unit -4	: Two sub questions compulsory

SECTION -B

Q. II Answer all Any FOUR of the following (13 to 18) 10 x 4 = 20

Unit -1	: ONE Question is compulsory
Unit -2	: ONE Question is compulsory
Unit -3	: ONE Question is compulsory
Unit -4	: ONE Question is compulsory

SECTION -C

Q. III Answer all Any FOUR of the following (19 to 24) 10 x 4 = 20

Unit -1	: ONE Question is compulsory
Unit -2	: ONE Question is compulsory
Unit -3	: ONE Question is compulsory
Unit -4	: ONE Question is compulsory

PRACTICALS**30 HOURS**

1. Morphological, Anatomical and reproductive structure of Bryophytes: *Marchantia*, *Anthoceros* and *Funaria*, *Polytrichum*
2. Morphological, Anatomical and reproductive structure of Pteridophytes: *Lycopodium*, *Selaginella*, *Equisetum* and *Marsilea*
3. Morphological, Anatomical and reproductive structure of Bryophytes: *Cycas* (with Coralloid root), *Pinus* and *Gnetum*
4. Observation of Fossil slides and Photographs
5. Field visit: Collection and Submission of Bryophytes, Pteridophytes and Gymnosperms at the time of examination

Note: Certified laboratory Record Book is compulsory to attend the practical examination

PRACTICAL QUESTION PAPER MODEL	
Time: 2 hours	Max Marks: 40
Q. 1 Identify and Classify by giving reasons	12
A: Bryophyte B: Pteridophyte C: Gymnosperm	
Q.2 Morphological and anatomical structure of the following	08
D: Pteridophyte E: Gymnosperm	
Q.3 Identify and comment on the specimens	12
F: Bryophyte G: Pteridophyte H: Gymnosperm I: Fossil	
Q.4 Viva Voce	03
Q.5 Record and Submissions	05

Reference study materials/Suggested readings

1. N K Soni and Vanadana Soni 2007. Fundamentals of Botany Volume- 1 & 2, McGraw Hill Publications
2. Smith G M, 1971, Cryptogamic Botany Vol. II, Bryophytes and Pteridophytes. Tata McGraw Hill Publishing, Co, New Delhi
3. Sharma, O P 1990, Text Book of Pteridophyta, McMillan India Ltd.
4. Puri P 1980, Bryophyta, Atma Ram & Sons, New Delhi
5. Parihar, N.S 1970. An Introduction to Bryophyta, Central Book Depot, Allahabad
6. Vashista B R 1978, Bryophytes, S Chand, & Co. Ltd., New Delhi
7. Sporne K R 1965. The Morphology & Gymnosperms. Hutchison & Co., Ltd. London
8. Agashe, S N 1995, Paleobotany, Plants of the past, their evolution, Paleoenvironment and application in exploration of fossil fuels. Oxford & IBH, New Delhi.
9. Bendre, Kumar, **A Text Book of Practical Botany 1**, Rastogi Publications, Meerut-New Delhi
10. Bendre, Kumar, **A Text Book of Practical Botany 2**, Rastogi Publications, Meerut-New Delhi