II Jai Sri Gurudev II

Sri Adichunchanagiri Shikshana Trust

BGS Science Academy and Research Center

(Affiliated to Bengaluru North University)

Jnanagangothri Campus, Agalagurki, Chikkaballapura-562103.

DEPARTMENT OF BOTANY

SYLLABUS

B.Sc., BOTANY

QUESTION PAPER FORMAT
THEORY EXAMINATION

Marks for each question	Number of question to be		Total Marks
	Answered	Out of	
A. 2	10	12	20
B. 5	4	6	20
C. 10	3	5	30
Total			70

BENGALURU NORTH UNIVERSITY

B.Sc., Degree Examination
(Undergraduate Credit Based Semester Scheme)
BOTANY
ALL PAPER

Time: 3 hours Max. Marks: 70

A. Explain / Define any ten of the following in **two** or **three** sentences: (10x2=20)

B. Write critical notes on any **four** of the following (4x5=20)

C. Give a comprehensive account on any **three** of the following (3x10=30)

INTERNAL ASSESSMENT

1. **THEORY- 30 MARKS** –
   Class Attendance = 5 (>51%-1, >61%- 2, >71%-3, >81%-4 >90%-5, Long Absent- 0)
   Assignment= 5 (Certificate, content sheet-0.5, Introduction 0.5, description-0.5, pictures or diagrams-1, summary-0.5, references-0.5, correct writing without plagiarism-1 and in time submission -0.5, Absent- 0)
   Seminar = 5 (Presentation: Excellent-5, Good-4, Average-3, Satisfactory-2, Absent- 0)
   Project = 5 (Correct and in time submission-5, Good-4, Average-3, Satisfactory-2, Absent- 0)
   Test = 2 (5 marks each= >85%-5, >70%-4, >55%-3, >35%2, <35%-1, Absent- 0)

2. **PRACTICAL- 15 MARKS** –
   Continues Assessment = 5 (Attendance- 2.5, performance in lab- 2.5)
   Submissions or Maintainance of Plants in the college for lab purpose (2.5) and Regular Record submission (2.5)= **5**,
   Test = 5 (>85%-5, >70%-4, >55%-3, >35%2, <35%-1, Absent- 0)

II SEMESTER

PAPER II: DIVERSITY OF NON-VASCULAR PLANTS – PART - II

MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES AND PLANT ANATOMY 52hrs

UNIT I: **MYCOLOGY** **13hrs**

Introduction: General characters, occurrence, thallus organization, reproduction and classification. Structure, reproduction and life history of *Albugo, Peziza, Puccinia* and *Cercospora.*

Economic importance: Role of fungi in Medicine, Agriculture and Industry

Lichens: General account, Structure and reproduction. Ecological and Economic importance.

Mycorrhiza: General account

Saccharomyces - A model genetic organism.

UNIT II: **PLANT PATHOLOGY** **13hrs**

General account of symptoms, pathogen etiology, mode of Infection, Management of fungal diseases: Koleroga, Coffee rust, Grain smut of *Sorghum*, Blast disease of Rice, Red rot of Sugarcane.

A brief account of Biopesticides: Neem, *Trichoderma and Bacillus thuringiensis*

UNIT III: **BRYOPHYTA** **13hrs**

General characters. Study of distribution, structure, reproduction, classification and alternation of generation in *Marchantia, Anthoceros* and *Funaria*

UNIT IV: **PLANT ANATOMY** **13hrs**

Meristematic Tissues: Structure, function, classification, Organization of Apical Meristems: Tunica-carpus theory and Histogen theory.

Secretary Cells and Tissues: Structure, Classification and significance.

Simple and permanent tissues

Vascular tissues: A brief account

Secondary growth: Dicot stem

Anomalous Secondary growth: A general account (*Dracaena and Boerhaavia*)

PRACTICAL PAPER – II

DIVERSITY OF NON-VASCULAR PLANTS MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES AND PLANT ANATOMY **Total units - 13 Units**

I. Identification and classification of fungi members included in the theory **3 Units**

II. Demonstration of mushroom cultivation, Study of lichens, Study of Mycorrhiza **2 Units**

III. Study of plant diseases- Koleroga, Coffee rust, Grain smut of Sorghum, Blast disease of Rice, Red rot of Sugarcane. **2 Units**

IV. Study of forms of Bryophytes- *Marchantia, Anthoceros* and *Funaria* **3 units**

V. Normal and Anomalous secondary growth in Stem ex. *Tridax*, *Dracaena* stem and *Boerhaavia* stem. **2 Units**

VI. Field visit to study pathogen and host interaction **1 Units**

VII. Report of Field visit: Project report of mushroom cultivation / Application of Bio fertilizers

PRACTICAL QUESTION PAPER - II DIVERSITY OF NON-VASCULAR PLANTS MYCOLOGY, PLANT PATHOLOGY, BRYOPHYTES AND PLANT ANATOMY

Time: 3 hours **Max. Marks: 35**

1. Identify the specimens **A, B & C** with labelled diagrams and reasons **3x3=9**
2. Prepare a temporary Safranin-stained T.S of the material **D** Sketch, label and Identify with reasons, leave the preparation for evaluation **4**
3. Write critical notes on **E** **2**
4. Identify the Slides **F, G, H & I** with labelled diagrams and reasons **4x3=12**
5. Record and submission. **5+3=8**

SCHEME OF VALUATION

1. Two specimens from Fungi and one from Bryophyta (Identification -**1**- mark, Labelled diagram with reasons **2** marks)
2. Any one of the following may be given-stem of *Tridax, Dracaena* or *Boerhaavia* (Staining and mounting- **2** marks, sketch and labelling- **1** mark, Identification with reasons- **1** mark)
3. One diseased plant/Lichens/Mycorrhiza (Identification-**1** mark & critical points**1** mark)
4. Two from Bryophytes, One from Fungi and One from Anatomy (Identification & Classification -**2**- mark, labelled diagrams with reasons-**2** marks)
5. Record & Submission: 3 Herbarium sheets from Plant pathology (marks **5+3**)

REFERENCES

1. Alexopoulos, C. J. 1992. **An introduction to Mycology**, New Age International, New Delhi. (http://libgen.li/ads.php?md5=6a790acc73845a33e9dd3dda584d675f)
2. Indra Kala Kunwar; K. V. Mallaiah; C. Manoharachary; K. V. B. R. Tilak, 2016. **Mycology and microbiology: a textbook for UG and PG courses**, SCIENTIFIC PUBLISHERS (INDIA) (http://libgen.li/ads.php?md5=65bc7817e0a04192b9ec700d53de26e3)
3. Chelin Rani Gnanam, 2013, **Introduction to mycology**, MJP Publishers (http://libgen.li/ads.php?md5=ce6fa7cbbc31570de6639ed9288e65f4)
4. Cutter, D.G.1971.**Plant Anatomy-Part I & II**, Edward Arnold, London.
5. Fahn, A.1985. **Plant Anatomy**, Pergaon Press, Headington Hill Hall, Oxford.
6. Crang, Richard;Lyons-Sobaski, Sheila;Wise, Robert, 2018, **Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants,** Springer International Publishing, Switzerland. (http://libgen.li/ads.php?md5=c07921a86088e34b71a109350dad5918)
7. David F. Cutler, Ted Botha, Dennis Wm. Stevenson, 2008, **Plant Anatomy an Applied Approach**, Wiley-Blackwell, Singapore (http://libgen.li/ads.php?md5=2dafb546cb1e2c5a80422eb92800d18a)
8. Jim Deacon, 2007, **Fungal Biology 4 ed**., First Indian reprint, Blackwell publishing Ltd., India. (http://libgen.li/ads.php?md5=aa1f38745cd24cde37806068bc18c7dc)
9. Katherine Easu, 1993. **Anatomy** 2 ed., Wiley Eastern Pvt., Ltd., New Delhi.
10. Ray F. Evert, Susan E. Eichhorn - **Esau's Plant Anatomy_ Meristems, Cells, and Tissues of the Plant Body_ Their Structure, Function, and Development,** 3rd Edition (2006, Wiley-Liss) (http://libgen.li/item/index.php?md5=A5535CE05855317EF77730A905C5EC8E)
11. Pandey, B. P. 2001. **College Botany Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta.** S. Chand and Company Pvt.Ltd., New Delhi.
12. Parihar, N. S. 1970. **An Introduction to Embryophyta**, **Vol. I Bryophyta** Central Book Depot, Allahabad.
13. Rashid, A.1998. **An Introduction to Bryophyta**. Vikas Publishing House Pvt. Ltd., New Delhi.
14. Sambamurthy, A. V. S. S. 2006. **A text book of Plant Pathology,** I. K. International Pvt. Ltd., New Delhi.
15. Sharma, O.P.1992. **Textbook of Thallophyta**, Mc Graw Hill Publishing Co., New Delhi.
16. Singh, R. S 1978. **Plant Diseases 4 ed**., Oxford and IBH, New Delhi.
17. Smith, G. M. 1994. **Cryptogamic Botany Vol II, 2 ed.**, Tata Mc Graw Hill, New Delhi. (https://www.pdfdrive.com/cryptogamic-botany-d138712589.html)
18. Sporne, K. R. 1966. **Bryophytes**, 4 ed., B. I. Publishing Pvt., Ltd., India.
19. Thakur, A. K. and S. K. Bassi, 2008. **A Textbook of Botany: Diversity of Microbes and Cryptogams**. S Chand and Company Ltd., New Delhi.
20. Vashishta, B. R 1990. **Botany for degree students: Fungi.** S Chand and Company Ltd., New Delhi.
21. Vashishta. B. R. Sinha, A.K. and Adarsha Kumar. 2009. **Botany for Degree Students: Bryophyta**. S Chand and Company Ltd., New Delhi.
22. Watson, E. V. 1974. **The Structure and life of Bryophytes**, B. I Publication, New Delhi