

**(Abstract)**

M.Sc. Plant Science with Bioinformatics Programme ( Under Choice Based Credit and Semester System -OBE) in Affiliated colleges w.e.f.2024 admission- - Pattern and Model Question papers of First Semester -Approved - Orders issued

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**ACADEMIC C SECTION**

Acad/C2/6474/NGC/2021

Dated: 02.12.2024

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- Read:-1. U.O No Acad/C2/6474/2021(I) dtd 26/11/2024  
2. E-mail dtd : 26/11/2024 from Dr. E Hari Krishnan, Member, BoS, Botany (PG), along with the Pattern and Model Question papers of M.Sc. Plant Science with Bioinformatics Programme  
3. The Orders of Vice Chancellor dtd.30.11.2024

**ORDER**

1. The Scheme & Syllabus of the M.Sc. Plant Science with Bioinformatics programme under Choice Based Credit and Semester System (in OBE- Outcome Based Education System) in Affiliated Colleges under the University was approved and implemented with effect from 2024 Admission vide paper read (1) above.
2. Subsequently, vide paper read (2) above, the Pattern and Model Question papers of the First Semester M.Sc. Plant Science with Bioinformatics Programme in affiliated College was submitted for approval as the approved Syllabus does not contain the same.
3. The Vice Chancellor, after considering the matter and in exercise of the powers of the Academic Council conferred under Section 11(1), Chapter III of the Kannur University Act 1996, **approved the Pattern and Model question papers ( of the 1 st Semester only) of the M.Sc. Plant Science with Bioinformatics programme under Choice Based Credit and Semester system (in OBE- outcome Based Education system) and accorded sanction to implement the same in Affiliated Colleges under the University w.e.f. 2024 Admission, subject to reporting to the Academic Council.**
4. The Pattern and Model Question papers of the M.Sc.Plant Science with Bioinformatics programme under Choice Based Credit and Semester System (in OBE- Outcome Based Education System) in affiliated Colleges under the University, applicable with effect from 2024 Admission are appended with this U.O. and uploaded in the University website.

Orders are issued accordingly.

P.T.O



sd/-

**ANIL CHANDRAN R**  
**DEPUTY REGISTRAR (ACADEMIC)**  
For REGISTRAR

To: The Principals of Affiliated College offering M.Sc. Plant Science with Bioinformatics programme

Copy To: 1.The Examination Branch (Through PA to CE)

2. PS to VC/PA to R

3. DR/AR (Acad)

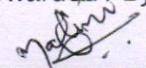
4. EXCI/ EG I/ AR III/ AR I/ JR II (Exam)

5.The IT Cell, Computer Programmer (for uploading in the website)

6. Chairperson BoS in Botany (PG)

7. SF/DF/FC

Forwarded / By Order

  
SECTION OFFICER

KV



# M. Sc PLANT SCIENCE WITH BIOINFORMATICS

(2024 Admission onwards)

## END SEMESTER EVALUATION

### Question Paper Pattern

Part	No. of questions	No. of Questions to be answered	Mark for each question	Total	Cognitive level	No. of Questions	Example for verbs
A	6	5	3	15	<b>Remembering</b> -Recognising and Recalling facts	3	Cite, define, describe, identify, label, list, name and outline
					<b>Understanding</b> -understanding what fact means	3	Classify, compare, explain, give examples of, illustrate, interpret and summarise
					<b>Evaluating</b> -Judging value of information or ideas	4	Assess, conclude, criticize, discriminate, Justify, review and validate
B	5	3	6	18	<b>Creating</b> -combining parts to make a new whole	1	Design, formulate, rearrange, reconstruct, revise and write
					<b>Application</b> -Applying the rules, facts and ideas	3	Apply, demonstrate, modify, outline, predict and solve,
C	5	3	9	27	<b>Analysis</b> -breaking down information into component parts	2	Classify, Compare and contrast, differentiate, distinguish, integrate and relate
TOTAL MARKS				60			

# MODEL QUESTION PAPERS FOR FIRST SEMESTER

## FIRST SEMESTER M.Sc. PLANT SCIENCE WITH BIOINFORMATICS DEGREE EXAMINATION

(2024 Admission onwards)

### MSPSB01C01 MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY

#### MODULE WISE WEIGHTAGE OF QUESTIONS

	Module 1	Module 2	Module 3	Module 4
SECTION A	2	2	1	1
SECTION B	1	1	2	1
SECTION C	1	1	2	1
Total	4/16	4/16	4/16	4/16

### MSPSB01C01 MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY

Time: 3 hrs

Maximum Marks: 60

#### **PART-A** (*Answer any five questions. Each question carries 3 marks*)

1. Write a short note on sterilisation methods during microbial culture.
2. What is the importance of DNA barcoding?
3. Describe parasexuality in fungi.
4. Give an account on aflatoxins.
5. Define Phytoalexins. What is their role in plant life?
6. Explain the structure of fungal cell wall.

5 x 3 = 15

#### **PART-B** (*Answer any three questions. Each question carries 6 marks*)

7. Microbes are essential for the industrial advancement in any country. Substantiate the statement with proper examples.
8. Compare and contrast the vegetative and reproductive features of Oomycetes and Zygomycetes.
9. Design an experiment to test the Koch's postulates by taking diseases in Rubber as examples.
10. Make a critical evaluation of plant disease management with suitable cases and examples from Kerala.
11. Recently there are several cases of zoonotic diseases that are becoming global pandemic. Write a critical review on this condition.

3 x 6 = 18

**PART-C (Answer any three questions. Each question carries 9 marks)**

12. Give an outline of the characteristics and classification of viruses. Write a short note on ICTV.
13. Explain the classification of Fungi by Alexopoulos *et al.* Add a note on the merits and demerits of the classification.
14. Give an account on any three fungal diseases in plants.
15. Write a detailed account on host parasite interaction. Explain the concept of disease triangle.
16. Describe the features of lichens along with a detailed account on the significance of these organisms in economy and ecology.

3 x 9 = 27

FIRST SEMESTER M. Sc. PLANT SCIENCE WITH BIOINFORMATICS  
DEGREE EXAMINATION

(2024 Admission onwards)

**MSPSB01C02 PHYCOLOGY, BRYOLOGY AND PTERIDOLOGY**

MODULE WISE WEIGHTAGE OF QUESTIONS

	Module 1	Module 2	Module 3	Module 4
SECTION A	2	1	2	1
SECTION B	2	1	1	1
SECTION C	1	1	2	1
Total	5/16	3/16	5/16	3/16

**MSPSB01C02 PHYCOLOGY, BRYOLOGY AND PTERIDOLOGY**

**Time: 3 hrs**

**Maximum Marks: 60**

**PART-A (Answer any five questions. Each question carries 3 marks)**

1. What are the major contributions of M.O.P. Iyengar?
2. Give an account on algal culture media.
3. Write a short note on DNA barcoding in bryophytes.
4. Differentiate eusporangiate from leptosporangiate with suitable examples.
5. Explain the method of spore staining in pteridophytes.
6. What is the importance of *Azolla* cultivation in agriculture?

5 x 3 = 15

**PART-B (Answer any three questions. Each question carries 6 marks)**

7. Do you agree with the statement: “‘alga’ is considered as a synthetic term”. Write down the reasons in support of your view.
8. Consumption of fishes and shell fishes at the time of algal blooms is found to be risky. State the arguments.
9. Compare and contrast the features of Jungermaniales and Anthocerotales.
10. PPG-2016 is a different classification approach. Substantiate it with a comparison with other Pteridophyte classifications.
11. Prepare a review on the salient features of algae and bryophytes and add a note on ecological significance of these two groups.

3 x 6 = 18

**PART-C (Answer any three questions. Each question carries 9 marks)**

12. Give an outline of algal classification by Lee.
13. Describe various methods of spore production and dispersion mechanisms in bryophytes. Add a note on thallus diversity.

14. Write an essay on stellar evolution with the help of suitable diagrams.
15. Write a detailed account on fossil pteridophytes.
16. Give an account on diversity of habitats in pteridophytes in comparison with that of bryophytes.

3 x 9 = 27



FIRST SEMESTER M.Sc. PLANT SCIENCE WITH BIOINFORMATICS  
DEGREE EXAMINATION

(2024 Admission onwards)

**MSPSB01C03 GYMNOSPERMS, ANGIOSPERM ANATOMY AND EMBRYOLOGY**

MODULE WISE WEIGHTAGE OF QUESTIONS

	Module 1	Module 2	Module 3	Module 4
SECTION A	2	1	2	1
SECTION B	1	2	2	
SECTION C		2	2	1
Total	3/16	5/16	6/16	2/16

**MSPSB01C03 GYMNOSPERMS, ANGIOSPERM ANATOMY AND EMBRYOLOGY**

Time: 3 Hours

Maximum Marks: 60

**PART-A (Answer any five questions. Each question carries 3 marks)**

1. What are the salient reproductive features of Welwitschiales?
2. Give an account on Birbal Sahni's contribution to Paleobotany.
3. Write a short paragraph on reversion of reproductive apex to vegetative apex.
4. Describe the ultrastructural changes in tapetum during microspore/pollen development.
5. Write a brief note on intra-ovarian pollination and its significance.
6. Define adventive embryony. What are the outcomes of this phenomenon?

5 x 3 = 15

**PART-B (Answer any three questions. Each question carries 6 marks)**

7. Compare and contrast the vegetative and reproductive features of Cycadales with Gnetales.
8. Write a critical note on the controversies on phylogenetic trend in nodal anatomy and root stem transition.
9. How does anatomy of seeds help for drought resistance and seed dormancy? Make a detailed review.
10. Give a detailed account on coevolution of pollinators and flowers by citing suitable cases and examples.
11. Write a critical evaluation on anatomical changes in fruits during fruit development and ripening.

3 x 6 = 18

**PART-C (Answer any three questions. Each question carries 9 marks)**

12. Explain the wood anatomy of teak and Jack with a critical evaluation on its uses.



13. Describe the variation in anomalous secondary thickening with examples and diagrammatic sketches.
14. Describe the ultrastructure of components in female gametophytes of angiosperms with the help of labeled diagrams.
15. Describe various types of pollen-pistil interaction and their mechanism.
16. Give a detailed account on the ecological and economic importance of gymnosperms. Add a note on its similarities with pteridophytes.

3 x 9 = 27

FIRST SEMESTER M.Sc. PLANT SCIENCE WITH BIOINFORMATICS  
DEGREE EXAMINATION

(2024 Admission onwards)

**MSPSB01C04 EVOLUTION, MICROTECHNIQUE AND BIOINSTRUMENTATION**

MODULE WISE WEIGHTAGE OF QUESTIONS

	Module 1	Module 2	Module 3	Module 4
SECTION A	2	2	1	1
SECTION B	1	1	2	1
SECTION C	2		2	1
Total	5/16	3/16	5/16	3/16

**MSPSB01C04 EVOLUTION, MICROTECHNIQUE AND BIOINSTRUMENTATION**

**Time: 3 Hours**

**Maximum Marks: 60**

**PART-A (Answer any five questions. Each question carries 3 marks)**

1. Briefly explain the Urey Miller experimental set up and its outcomes.
2. Differentiate sympatric and parapatric speciation.
3. Give an account on dehydrating agents used in microtechnique.
4. Define whole mount and add an account on various type of whole mounts used in biology.
5. What are the major difference between FISH and GISH.
6. Give a brief account on types of fossils.

5 x 3 = 15

**PART-B (Answer any three questions. Each question carries 6 marks)**

7. State Hardy-Weinberg law. Add a critical note on its significance in Evolutionary biology.
8. For killing and fixation in microtechnique, a group of reagents are used instead of single chemical solutions. Explain with reasons.
9. Electron microscopy helped in the advancement of biology. Explain it with a detailed account on uses of SEM and TEM in biology.
10. Spectrophotometric analysis helps in the quantitative and qualitative estimation of chemicals. How does it help in such estimations? Add a note on various types of spectrophotometry.
11. Separation of protein molecules, especially enzyme molecules, using High speed centrifuge is very difficult. Are you agreeing with the statement? Substantiate your arguments.

3 x 6 = 18

**PART-C (*Answer any three questions. Each question carries 9 marks*)**

12. Explain biological evolution with a brief description of theories related to that. Add a note on endosymbiotic theory.
13. What are the major differences in the concept of species? Give a detailed account on isolation mechanisms that leads to speciation.
14. Describe various types of blotting techniques and their applications used in molecular biology.
15. Give an account on SDS PAGE and PFGE.
16. Describe Maxam Gilbert's method and Sanger's Method in DNA sequencing.

3 x 9 = 27

FIRST SEMESTER M.Sc. PLANT SCIENCE WITH BIOINFOMATICS  
PRACTICAL EXAMINATION

**MODEL QUESTION PAPER: MSPSB01C05 - PRACTICAL I**

MSPS01C05 – Microbiology, Mycology, Plant Pathology, Phycology, Bryology, Pteridology, Gymnosperms, Angiosperm Anatomy, Embryology Evolution, Microtechnique and Bioinstrumentation

**Time: 4 Hours**

**Total**

**Marks: 48**

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1. Take T.S. of the material **A**. Prepare double stained permanent slide and submit for valuation and explain the anomaly (Section-2, Double staining-3, Identification of anomaly-1, Reasons-2)  $1 \times 8 = 8$
2. With the help of micro preparations, identify the specimens **B** and **C** with reasons. (Preparation 2, Identification 1, Reason 2)  $2 \times 5 = 10$
3. Prepare the microbial specimen **D** for staining special structure. (Preparation 2, Procedure, 2, Result and Identification 1) OR
- Make suitable micro preparation of **D** by acetolysis. Describe the pollen morphology (two) with the aid of a diagram. (Preparation-3, Viva-2)  $1 \times 5 = 5$
4. Make clean mount of two algae **E** and **F**. Draw labeled diagrams and identify giving important reasons. (Preparation 1, Identification with Reasons 1, Diagram 1)  $2 \times 3 = 6$
5. Determine the pH of the given sample solution **G** using pH meter. (Procedure-3, Viva-2, Result-1) OR  
Estimate the quantity of pigments using spectrophotometer. (Procedure-3, Calculation-2, Result-1)  $1 \times 6 = 6$
6. Identify and write the principle and working of the given equipment **H** (Identification-1, Principle and working -3)  $1 \times 4 = 4$
7. Identify the specimens with reasons, I, J and K (Identification-1, Reasons-2)  $3 \times 3 = 9$

**Record + Submissions = 12 marks**  
**(Total 60)**



**M.Sc. PLANT SCIENCE WITH BIOINFOMATICS PRACTICAL  
EXAMINATION**

**MSPSB01C05 - PRACTICAL I**

MSPS01C05 – Microbiology, Mycology, Plant Pathology, Phycology, Bryology,  
Pteridology, Gymnosperms, Angiosperm Anatomy, Embryology Evolution,  
Microtechnique and Bioinstrumentation

**Key to the Specimens**

- A. Angiosperm stem/root cuttings with anatomical anomalies
- B. Algae/Fungi/Pathology
- C. Bryophyte/Pteridophyte/Gymnosperm
- D. Microbial specimen/pollen grains
- E. F. (Mixture may include filamentous, colonial and unicellular)
- G. Solution for pH checking/pigment extract
- H. An instrument/its photograph in the syllabus
- I. -J. Reproductive part of Algae, Fungi, Bryophyte, Pteridophyte or Gymnosperm.
- K. A diagram of evolutionary significance