



UNIVERSITY OF THE PUNJAB

M.A./M.Sc. Part – I Annual Exam – 2019

Subject: Botany

Paper: I (Microbiology, Phycology & Bryology)

Roll No.
Time: 3 Hrs. Marks: 60

**NOTE: Attempt any FIVE questions by selecting at least TWO questions from each Section.
All questions carry equal marks.**

SECTION – A (Microbiology)

1. (a) Explain the general characteristics of archaebacteria and cyanobacteria. (6)
(b) Give an account on transmission of viruses. (6)
2. (a). Write a note on Structure and chemistry of viruses. (6)
(b) Explain the effect of virus on infected plant metabolism (6)
3. (a) What are the basis of bacterial classification (6)
(b) How can bacteria! DNA transfer from one to another cell? (6)

SECTION – B (Phycology)

1. (a) Briefly discuss about the classification of Algae (6)
(b) Discuss in brief the utilization of Algae in Industry (6)

P.T.O.

2. (a) Post fertilization changes in the life history of *Polysiphonia* (6)
(b) Role of Blue green Algae in Agriculture (6)
3. (a) Describe the types of life cycle found in algae (6)
(b) Discuss the methods of reproduction in *Chara* (6)

SECTION – C (BRYOPHYTES)

1. (a) Give a brief account of the life history of *Polytichum* (6)
(b) Describe the development of Antheridium and Archegonium in *Marchantia*. (6)
2. (a) Describe the Sporophyte of *Anthoceros* (6)
(b) Explain the Homologous theory (6)
3. (a) Explain the origin of sporophyte (6)
(b) Differentiate between three divisions of Bryophyta (6)



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Subject: Botany

Paper: II (Mycology)

Roll No.

Time: 3 Hrs. Marks: 60

**NOTE: Attempt any FIVE questions in all. Question No. 1 is compulsory.
All questions carry equal marks.**

- Q.1. Differentiate between the following. Explain your answer with suitable diagrams. (4 x 3 = 12)
- | | | | |
|------|-----------------------------------|-----|----------------------------|
| i. | Paraphysis and Pseudoparaphysis | ii. | Ascus and Basidium |
| iii. | Ectomycorrhiza and Endomycorrhiza | iv. | Apothecium and Perithecium |
| v. | Aspergillus and Penicillium | | |
- Q.2. a) Describe general characteristics of fungi with suitable examples. (6)
b) Describe phenomenon of "Heterothalism" in order Mucorales. (6)
- Q.3. a) What are Agaricales? Give their few characteristics. (6)
b) Write beneficial role of VA mycorrhiza in agriculture. (6)
- Q.4. a) What are Lichens? Discuss its various growth forms. (6)
b) Discuss fungi as predators with examples. (6)
- Q.5. a) Give life cycle of Puccinia Graminis. (6)
b) Describe the symptoms, etiology and diseases cycle of "Downy Mildews". (6)
- Q.6. a) What are the general characters of order Endomycetales. (6)
b) How Zygosporangia are formed? Give some examples. (6)
- Q.7. a) Describe general characteristics of Gastromycetes. (6)
b) Explain life cycle of Claviceps Purpurea. (6)



UNIVERSITY OF THE PUNJAB

M.A./M.Sc. Part – I Annual Exam – 2019

Subject: Botany Paper: III (Evolutionary Biology of Vascular Plants)

Roll No.

Time: 3 Hrs. Marks: 60

NOTE: Attempt any FIVE questions. All questions carry equal marks.

- Q.1 (a) Define **Fossils**. Describe various types of Plant Fossils and methods used for their study. (06)
- (b) Define **stele**. Describe various categories of **Stelar System** found in **Pteridophytes**. (06)
- Q.2 (a) What is **evolution**? Describe various types of **evolutionary forces and trends**. (06)
- (b) Describe the Salient features and phylogenetic importance of **Psilopsida**. (06)
- Q.3 (a) Compare and contrast the **Selaginellales** and **Equisetales** with neat and labeled diagrammes. (06)
- (b) Describe in detail the vegetative and reproductive biology of **Lepidodendrales**. (06)
- Q.4 (a) Compare and contrast **Glossopteridales** and **Caytoniales**. (06)
- (b) **Bennetitales** are considered to be the progenitors of Angiosperms – Comment. (06)
- Q.5 (a) Discuss the importance and distribution of **Gymnosperms** in Pakistan. (06)
- (b) Describe the morphological status of a **flower** with neat and labeled diagrammes. (06)

P.T.O.

Q.6 (a) Highlight the Synthetic Characters of *Pseudoborniales* and *Pleuromiales* along with their **Evolutionary Implications**. Give examples. (06)

(b) Elaborate salient features and importance of *Marseliales*. (06)

Q7. Write a short note on the following:-

(a) **Bennettitalean Flower** (4)

(b) **Sparganum Cortex** (4)

(c) Nature of **Endospermic Tissue**. (4)

Q.8 (a) Define **Placentation**. Describe various types of Placentation found in Angiosperms with the help of neat and labeled diagrammes. (06)

(b) Differentiate between **cymose and racemose** type of Inflorescence with neat and labeled diagrammes. (06)

Q.9 (a) Describe in detail the origin and evolution of Seed Habit. (06)

(b) Describe the Life Cycle of an **Angiosperm** with the help of neat and labeled diagrammes. (06)



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M.A./M.Sc. Part – I Annual Exam – 2019

Subject: Botany

Paper: IV (Cell Biology & Biostatistics)

Roll No.

Time: 3 Hrs. Marks: 60

NOTE: Attempt any FIVE questions, selecting at least TWO from each part.

Draw diagrams where necessary.

Part-I

- | | | | |
|------|----|---|----|
| Q. 1 | a. | Discuss the development of Cell theory in detail | 4 |
| | b. | Discuss general organization of Prokaryotic cell. How do they differ from Eukaryotic cell? | 8 |
| Q. 2 | a. | Discuss the concept of cell permeability, passive permeability, passive ionic diffusion and active transport. | 6 |
| | b. | Describe cell cycle. How interphase play critical role? | 6 |
| Q. 3 | | Discuss the distribution, ultrastructure and function of Mitochondria | 12 |
| Q. 4 | a. | Write down the types of chromosomes on the basis of their morphology with diagram. | 4 |
| | b. | Describe the molecular organization of histone proteins in packing DNA and gene expression. | 8 |
| Q. 5 | a. | Discuss molecular organization and functional role of amitotic apparatus. | 9 |
| | b. | What biochemical events take place in G1, S and G2 phase of cell cycle. | 3 |

P.T.O.

Part-II

- Q. 6 a. Define biostatistics. Describe its importance in Biology. 5
b. Test the hypothesis that the means of four samples is equal. 7

Samples:- 12,5,8,9
15,14,16
2,9,8,15,12
22,25,26,29,32

- Q. 7 a. What is binomial experiment? Write down the properties of binominal distribution. 6

- b. Write in detail measure of central tendances. 6

- Q. 8 a. Define linear regression and correlation. 5

- b. Estimate regression line for the following demand and supply relation. 7

Demand	40	20	70	10	50	30	60
Supply	50	60	20	70	40	30	10

- Q. 9. Write notes on three of the following: 12
(i) Normal distribution
(ii) Variable and constant
(iii) Randomization
(iv) T-test



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M.A./M.Sc. Part – I Annual Exam – 2019

Subject: Botany

Paper: V (Plant Biochemistry)

Roll No.
Time: 3 Hrs. Marks: 60

NOTE: Attempt any FIVE questions. All questions carry equal marks.

- Q-1 a) What are Lipids? Draw Lipid classification diagram. 4
b) Discuss how Fatty Acids are activated and the role of Carnitine shuttle for the transportation of fatty acids into Mitochondria for β Oxidation. 8
- Q-2 Write down the principle of Sanger sequencing for DNA macromolecules. How is DNA sequencing made possible over a relatively shorter span of time? 12
- Q-3 Give general account of structural Lipids along with their types and Biological roles. 12
- Q-4 Describe various reactions of β -Oxidation for Saturated Fatty Acids. 12
- Q-5 a) Write a short note on Vitamins. 6
b) What are Alkaloids? Give brief explanation of physiological effect of nicotine. 6
- Q-6 Write notes on the following: 6+6
i) Terpenoids
ii) Reducing and Non-reducing sugars

P.T.O.

- Q-7 What are Enzymes? What role they play in cellular metabolism? Why do they need to be specific? How do they influence energy barriers to bring about cellular metabolism at a reasonable rate? 12
- Q-8 What are the various hierarchical levels of Protein structure? Explain with examples. Why is it important to study Proteins in this manner? 12
- Q-9 Write notes on the following: 6+6
- a) Amino acid can act as acids and Bases. Explain with Curve.
 - b) Protein Sequencing



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M.A./M.Sc. Part – I Annual Exam – 2019

Subject: Botany

Paper: VI (Plant Ecology)

Roll No.

Time: 3 Hrs.

Marks: 60

NOTE: Attempt any FIVE questions. All questions carry equal marks.

- Q.1. (a) How availability of water alters the plant occupation. Also discuss energy flow in an ecosystem? (6)
- (b) What is biodiversity? How variations in temperature affects the distribution of plants and biodiversity? (6)
- Q.2. (a) What kind of crucial role wind and fire play in the plant growth and diversity? (7)
- (b) Define precipitation. Discuss the main types of precipitation? (5)
- Q.3. (a) How variation in pH of soil influences the vegetation. (6)
- (b) What is altitude? How variations in altitude affect the growth of plants? (6)
- Q.4. (a) How allocation influences plant diversity? Also describe history pattern in detail. (6)
- (b) Write a note on plant community structure. (6)
- Q.5. (a) What is relationship between soil and plant atmosphere? (6)
- (b) Explain in detail the growth models and life tables. (6)

P.T.O.

- Q.6. (a) Discuss in detail the adaptations of plants on the basis of water availability. (6)
(b) Define Eco-physiological responses. How variations in critical day lengths influence flowering response in different plants? (6)
- Q.7. (a) Discuss in detail the process of soil formation. (6)
(b) How living organism influence the soil composition? (6)
- Q.8. (a) Define succession. Discuss its main types. (6)
(b) Define ordination. Discuss the significance of ordination? (6)