



UNIVERSITY OF THE PUNJAB

M.A./M.Sc. Part – I Supply 2020 & Annual– 2021

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) Make a comparison between prokaryotic and eukaryotic cells. (6)
(b) Write a brief note on life cycle of bacteriophage (6)
2. (a) Enlist the general characteristics of bacteria? (6)
(b) What are effects of virus on plants metabolism? (6)
3. (a) What do you know about reproduction in Bacteria? (6)
(b) Write a note about viral symptomatology on leaves of plants? (6)

SECTION – B (Phycology)

4. (a) Write a detailed note on reproduction in *Volvox*. (6)
(b) Discuss the economic importance of Algae (6)
5. (a) Write the methods of reproduction in Diatoms? (6)
(b) What is alternation of generation? Give examples from Phaeophyta? (6)
6. (a) Explain the reproductive structures in *Chara*. (6)
(b) Give a note on general characters of Rhodophyta. (6)

SECTION – C (Bryology)

7. (a) What is economic importance of Bryophytes? (6)
(b) Write down the distinguishing characteristics of Bryopsida. (6)
8. (a) Explain reproduction in *Marchantia*. (6)
(b) Why sporophyte of *Anthoceros* is considered as modern plants? (6)
9. (a) Describe the life cycle of *Polytrichum*. (6)
(b) Describe the origin of sporophyte in bryophytes. (6)



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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.**

Q1: Differentiate between the following. Explain your answer with suitable diagrams.

- i. Chlamyospore and Blastospore
- ii. Ascus and Basidium
- iii. Mushroom and Bracket fungi
- iv. Ectothrixic and Endothrixic

Q2. (a) List the most important characteristics of fungi? (6)

(b) Describe principles of taxonomy and nomenclature of fungi. (6)

Q3. (a) Is Oomycota unicellular or multicellular? Give characteristic of water molds (6)

(b) Explain structure and movement of Zoospore? (6)

Q4. (a) Describe the importance of fungi to the environment (6)

(b) How do deuteromycetes reproduce? (6)

Q5. (a) Describe general characteristics of Zygomycetes. (6)

(b) Can fungi decompose wood? What does wood decaying fungi look like? (6)

Q6. (a) Draw and label life cycle of *Puccinia graminis*. (6)

(b) What do you know about VA mycorrhizae? (6)

Q7. (a) Define lichens. Explain its mutualistic phenomenon. (6)

(b) How are fungi used to control pests? (6)



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M.A./M.Sc. Part – I Supply 2020 & Annual– 2021

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) What are **Fossils**? Describe various types of Plant Fossils and methods used for their study. (06)
- (b) What do you know about **Palynology**? How **Palaeopalynology** plays important role in industry? (06)
- Q.2 (a) Give a detailed account of the “**Geological Time Scale**” with reference to the evolution of Vascular Plants. (06)
- (b) Describe the Salient features and phylogenetic importance of *Rhyniophyta*. (06)
- Q.3 (a) What is **Evolution**? What do genes have to do with evolution? Does evolution proceed towards increasing complexity? (06)
- (b) Differentiate clearly between **Eusporangiate** and **Leptosporangiate** Ferns. Describe in detail synthetic characteristics of **Ophioglossales**. (06)
- Q.4 (a) Compare and contrast **Lycopodiales** and **Selaginellales**. (06)
- (b) Discuss the reproductive biology of **Sphenophyllales**. (06)
- Q.5 (a) Describe general characteristics of **Lycopsids**. What factors led to the immediate and sudden extinction of the magnificent arborescent Lycopsids? (06)
- (b) Write down the synthetic characteristics of **Equisetales**. (06)
- Q.6 (a) Write down the general characteristics of **Coniferales** and **Cycadales** with suitable examples. (06)
- (b) Why **Gnetales** are considered to be an advanced group of Gymnosperms? Discuss. (06)
- Q7. Write a short note on the following:-
- (a) **Heterospory**. (4)
- (b) Morphological Characters of *Welwitschia*. (4)
- (c) **Importance** of Rhynie Chert Deposits. (4)
- Q.8 (a) What do you know about the morphological nature of **Flower**? Describe in detail different parts of a generalized flower with the help of neat and labeled diagrammes. (06)
- (b) Describe briefly the Mechanism of **Dehiscence of Sporangia** in Ferns. (06)
- Q.9 (a) Compare and Contrast **Sphenophyllales** and **Pseudoborniales**? (06)
- (b) How does fertilization occur in **Cycas**? Explain gametogenesis in **Cycas**. (06)



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M.A./M.Sc. Part – I Supply 2020 & Annual– 2021

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. Support your answer with relevant diagram if necessary. Each question carries equal marks.

Section – I: Cell Biology

Q-1 Differentiate between the followings:

- a) Amyloplasts vs. Leucoplast
- b) Mitosis and Meiosis

Q-2 Write note on:

- a) Structure and function of Mitochondria
- b) Chromosomes

Q-3 Describe in detail:

- a) Cell Cycle and its phases
- b) Different types of plastids

Q-4 Write a note on:

- a) Molecular organization and functional role of mitotic apparatus
- b) DNA replication

Section – II: Biostatistics

Q.5 Describe the followings:

- a) What is Binomial distribution? Explain the properties of binomial distribution?
- b) A random sample of 100 recorded deaths in the United States during the past year showed an average lifespan of 71.8 years, with a standard deviation of 9.9 years. Does this seem to indicate that the average life span today is greater than 70 years? Use a 0.05 level of significance.

Q.6. From the following data, find A.M, mode, coefficient of variation, standard deviation.

Class interval	21-25	26-30	31-35	36-40	41-45	46-50	51-55
Frequency	3	9	17	21	11	4	1

Q.7. Describe the followings:

- a) Describe the frequency distribution and how to make distribution table.
- b) Find coefficient of correction between X and Y. Also find regression equation X on Y.

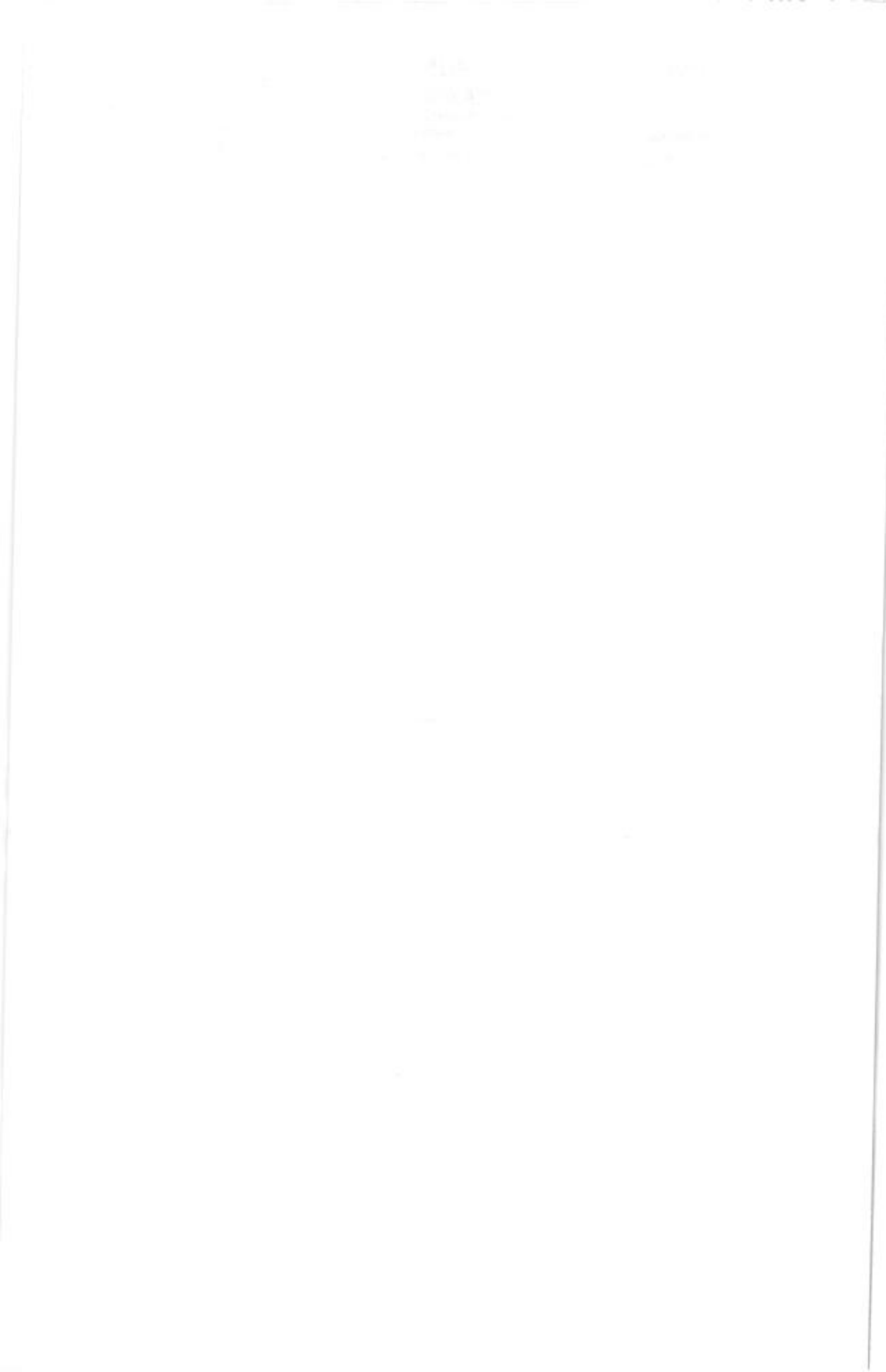
X	79	77	84	75	86	57	31
Y	60	65	43	57	89	35	41

Q8. Describe the followings:

- a) The probability that a man aged 50years will die within a year is 0.01125. What is the probability that of 12 such men at least 11 will reach their fifty-first birthday?
- b) Define measure of central tendencies? What are major types of central tendencies? Also define them.

Q.9. Write detailed note on the followings:

- a) Probability
- b) Poisson distribution
- c) Normal Distribution
- d) Population and sample





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Roll No.

Time: 3 Hrs. Marks: 60

Subject: Botany

Paper: V (Plant Biochemistry)

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

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| Q-1 | What is Optical Activity? Differentiate between Configuration and Conformation of Macromolecules. | 12 |
| Q-2 | What are Lipids? Give occurrence and classification. What is their significance? | 12 |
| Q-3 | Write an account of Primary, Secondary, Tertiary and Quaternary structure of Proteins with suitable examples. | 12 |
| Q-4 | Give a brief account of DNA Replication. Write the name of the various proteins involved in DNA replication. | 12 |
| Q-5 | Write an account of DNA sequencing. | 12 |
| Q-6 | What are Enzymes? How do they bring about changes in the activation energy of a certain biological reaction? | 12 |
| Q-7 | a) Write a note on Laws about the energy changes.
b) Differentiate between Oxidation and reduction reactions. | 12 |
| Q-8 | Write an account of the various classes of Lipids along with their major functions. | 12 |
| Q-9 | Write short notes on the following: | 12 |
| | i) Terpenoids | |
| | ii) Amino Acids | |

100

100

100



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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) Define soil. Also discuss in detail the process of soil formation. (6)
b) How the variation in latitude influences the plant vegetation? (6)
- Q.2.** a) How wind and fire play role as ecological factors in different conditions? (6)
b) Discuss the physical components of soil (6)
- Q.3.** a) Define precipitation. Discuss the main types of precipitation? (6)
b) Write a note on plant community structure. (6)
- Q.4.** a) How energy flow consistently through an ecosystem? (6)
b) Define stratification. How this method is useful in treating seed dormancy also elaborate various types of this technique. (6)
- Q.5.** a) Discuss in detail the adaptations of plants on the basis of water availability. (6)
b) Write a note on nitrogen cycle. (6)
- Q.6.** a) What is plant community? Describe its attributes in detail. (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 dual nature of light. (6)
b) Explain in detail the growth models and life tables. (6)
- Q.8.** a) Write down a descriptive note on the vegetation of Pakistan. (6)
b) Define dormancy. Describe its effect on plant growth in detail. (6)