



UNIVERSITY OF THE PUNJAB

M.A./M.Sc. Part – I Annual Examination – 2020

Roll No.

Subject: Botany

Paper: I (Microbiology, Phycology & Bryology)

Time: 3 Hrs. Marks: 60

NOTE: Attempt any SIX questions by selecting at least TWO questions from each section. All questions carry equal marks.

SECTION – A (Microbiology)

- Q.1. (a) Write a comprehensive note on nutrition in Bacteria (5)
(b) Discuss symptomatology of virus infected plants (5)
- Q.2. (a) Enlist the general characteristics of Cyanobacteria (5)
(b) Write a detail note on biological importance of bacteria (5)
- Q.3. (a) Explain lytic and lysogenic cycle of Bacteriophage (5)
(b) What do you know about history and development of microbiology? (5)

SECTION – B (Phycology)

- Q.4. (a) Write a detailed note on reproduction in Vaucheria (5)
(b) Discuss different life cycles found in algae (5)
- Q.5. (a) Write a comprehensive note on general characteristics of algae (5)
(b) Give a note on general characters of Pheophyta (5)
- Q.6. (a) Explain thallus organization in Polysiphonia (5)
(b) Discuss significance of algae (5)

SECTION – C (Bryology)

- Q.7. (a) Discuss in details the origin of Sporophyte (5)
(b) Write down the characteristics of Bryopsida (5)
- Q.8. (a) Give a general account on Funaria (5)
(b) What is sphagnum? How it reproduces? (5)
- Q.9. (a) Explain the process of alteration of generation in Bryophytes (5)
(b) Discuss economic importance of Bryophytes (5)



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Subject: Botany

Paper: II (Mycology)

**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. (12)
- Mushroom and Bracket Fungi
 - Zygosporangium and Zygothallus
 - Rust and Smut Fungi
 - Ascus and Basidium
- Q2: (a) Give account on system classification stated by Ainsworth and adds a note on its merits. (6)
- (b) What is heterothallism? State different aspects of heterothallism in different fungi. (6)
- Q3: (a) Comment on thallus diversity of lichens. (6)
- (b) Describe economic importance of fungi? (6)
- Q4: (a) Give life cycle of *Ustilago*? (6)
- (b) Write a note on Anthracnose disease? (6)
- Q5: (a) Describe general characteristics of Ascomycota. (6)
- (b) What are yeasts? Is *Taphrina deformans* included in yeast and why? (6)
- Q6: (a) Classify Basidiomycota. Give general characteristics of subclass Holobasidiomycetidae. (6)
- (b) Write a brief note on various modes of nutrition in fungi. (6)
- Q7: (a) Describe parasexual life cycle in Deuteromycota. (6)
- (b) Write a note on mode of reproduction in Ascomycota. (6)



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Paper: III (Evolutionary Biology of Vascular Plants)

Time: 3 Hrs. Marks: 60

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

- Q.1 (a) Define **Fossils**. Describe various patterns of **Plant Fossilization**. (06)
(b) Enlist and describe **forces** involved in **Evolution**. Is evolution a random process? (06)
- Q.2 (a) What is **Stele**? Compare and contrast various types of **Stelar System** found in plants with the help of neat and labeled diagrammes. (06)
(b) Describe the synthetic characteristics of **early Vascular Plants**. (06)
- Q.3 (a) Discuss general Characteristics of **Lycopsiids**. What is the importance of **Isoetales**? (06)
(b) Compare the structure of sporocarp and leaves in **Marseliales and Salviniiales**. (06)
- Q.4 (a) What are **Seed Ferns**? Describe general characteristics of Seed Ferns and their phylogenetic importance. (06)
(b) Why **Caytoniales** are important? Discuss their vegetative and reproductive biology. (06)
- Q.5 (a) Describe general characteristics of **Sphenopsids**. How **Pseudoborniales** differ from **Sphenophyllales**? (06)
(b) Elaborate salient features and importance of **Filicales**. (06)
- Q.6 (a) Write down the general characteristics of **Gymnosperms**. Briefly describe the status of female cone in *Pinus sp.* (06)
(b) Describe in detail the life cycle of an **angiosperm**. (06)
- Q7. Write a short note on the following:-
(a) Morphological Characters of **Wielwitschia**. (4)
(b) **Eugporangium** (4)
(c) Importance of **Rhynie Chert Deposits** (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. (06)
- Q.9 (a) Compare and Contrast **Calamitaceae and Equisetaceae**? (06)
(b) how does fertilization occur in **Cycas**? Explain **gametogenesis** in **Cycas**. (06)



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Paper: IV (Cell Biology & Biostatistics)

Time: 3 Hrs. Marks: 60

**NOTE: Attempt any FIVE questions, selecting at least TWO from each part.
Draw diagrams where necessary.**

Part-I

- Q1: a) Write in detail about the ultrastructure of CYTOSKELETON. 5
b) Write in detail about CHLOROPLAST, CHROMOPLAST and LEUCOPLASTS. 7
- Q2: a) Write a note on the structure and function of Mitochondria. 6
b) Write a note on the structure and function of Endoplasmic Reticulum. 6
- Q3: a) Explain the active and passive transport of materials through plasma membrane with the help of examples. 7
b) Write a brief note on the ultrastructure of cell wall. 5
- Q4: Explain various phases of MEIOSIS- I and MEIOSIS- II in detail. 12
Draw diagrams to explain.

Part-II

- Q5: a) Define BIOSTATISTICS. 2
b) The weight of 10 plants are as follows : 10
30, 35, 20, 30, 35, 40, 30, 20, 30, 20
Calculate the MEAN and STANDARD DEVIATION from the above data using frequency table.
- Q6: a) Calculate the mean deviation from MEDIAN and MEAN of the following data: 5
6,3,2,5,4,3,2,5,7
b) What is BINOMIAL DISTRIBUTION? Explain the properties of binomial distribution. 7
- Q7: Differentiate between: 12
a. SURVEY and EXPERIMENT
b. SAMPLE and POPULATION
c. MEAN DEVIATION and STANDARD DEVIATION
d. F-TEST and t-TEST
- Q8: a) What do you understand by the term PROBABILITY? 2
b) Find the CORRELATION COEFFICIENT for the following values of x and y. 10
x= 1,2,3,4,5.
y= 2,5,3,8,7
- Q9: a) Write a brief note on CHI-SQUARE test. 6
b) Explain RANDOMIZED COMPLETE BLOCK design. 6



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Paper: V (Plant Biochemistry)

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Time: 3 Hrs. Marks: 60

Subject: Botany

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

- Q-1 Give a general account of structural Lipids along with their types and biological role. 12
- Q-2 Give brief account of Tertiary and Quaternary structure of Proteins. 12
- Q-3 a) Write a note on Laws about the energy changes. 12
b) Briefly explain the classification and role of Terpenoids.
- Q-4 a) Describe structure and function of DNA. 12
b) What is RNA? Give brief account of its types and role in Protein synthesis.
- Q-5 What are Enzymes? How would you define Isozymes and Co-factors? Explain the factors affecting enzyme activity. 12
- Q-6 a) What is the biological role of proteins? Explain major techniques used for protein separation and characterization. 12
b) What are Alkaloids? Explain the physiological effect of Caffeine.
- Q-7 a) Write Salient features of the Genetic Code. 12
b) Write down a general account of Vitamins.
- Q-8 What is Optical activity? How would you differentiate between Configuration and Conformation of macromolecules? Write a short note on Cellulose and Starch. 12
- Q-9 Write short notes on the following: (3×4) = 12
a) Purine and Pyrimidine bases
b) Feedback mechanism
c) Reverse Transcription



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Subject: Botany

Paper: VI (Plant Ecology)

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

- Q.1. a) Define sampling. Write down its types in detail and also discuss their significance (6)
b) How the formation of soil influence from parent material? (6)
- Q.2. a) Define stratification. Also elaborate its role in breaking dormancy. (6)
b) Write a note on physical properties of light. (6)
- Q.3. a) Define Ecosystem. What are its components? Also discuss energy flow in an ecosystem. (6)
b) Elaborate different types of precipitation and its ecological impact. (6)
- Q.4. a) Write down in detail the process of physical and chemical weathering. (6)
b) Write a note on plant community structure. (6)
- Q.5. a) How plants are categorized into three main types on the basis of water availability? (6)
b) Discuss in detail the organic and inorganic components of soil? (6)
- Q.6. a) Define competition. Also discuss the types of competition among plant community. (6)
b) Explain the basic differences in controlling measurements of seed and bud dormancy. (6)
- Q.7. a) Define Eco-physiological responses and write a note on Thermoperiodism (6)
b) Write down a descriptive note on the vegetation of Pakistan. (6)
- Q.8. 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)