



UNIVERSITY OF THE PUNJAB

Part-I A/2018
Examination:- M.A./M.Sc.

Roll No.

Subject: Botany
PAPER: I (Microbiology, Phycology & Bryology)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

Answer any **Five** of the Following. Choosing at least two from each Section. All Questions carry equal Marks.

SECTION – A (Microbiology)

- (a) Differentiate between prokaryotes and eukaryotes. (6)
(b) Give an account on viral architecture (6)
- (a). Write a note on replication of viruses. (6)
(b) How can a virus disturb a plant metabolism (6)
- (a) What are the different methods used in bacterial reproduction (6)
(b) Describe the transduction processes in bacteria (6)

SECTION – B (Phycology)

- (a) Briefly discuss the general account on Red Algae (6)
(d) Write a short note on economic importance of Algae (6)
- (a) How can a diatoms maintain their cell size during reproduction (6)
(b) What are similar characters found in *chara* with green algae and bryophytes (6)
- (a) Define the alternation of generation? How many types found in Pheophyta (6)
(d) What are the important line of evolution found in Cheatophorales (6)

SECTION – C (BRYOPHYTES)

- (a) Describe the distinguishing features of Bryophytes. (6)
(c) Describe the development of Archegonium in any member of Hepaticopsida
- (a) Why sporophyte of *Anthoceros* consider as modern plants (6)
(b) Theories about the origin of Sporophyte of Bryophytes (6)
- (a) Explain the origin of Gametophytes (6)
(b) Differentiate between three division of Bryophyta (6)



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Subject: Botany
PAPER: II (Mycology)

TIME ALLOWED: 3 hrs.
MAX. 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. 4x3=12

- i. Paraphysis and Periphysis
- ii. Ascus and Basidium
- iii. Ectomycorrhiza and Arbuscular mycorrhiza
- iv. Mushroom and pored fungi
- v. Conidium and Spore

Q.2

- A. Describe general characteristics of fungi with suitable examples. (6)
- B. What are Agaricales? How they are classified? (6)

Q.3

- A. Compare Agaricales with Aphyllophorales.(6)
- B. Give role of different kinds of mycorrhizae.(6)

Q.4

- A. What are Lichens? Discuss its various growth forms. (6)
- B. What is an apothecium? Describe its various parts.(6)

Q.5

- A. Differentiate between rust and smut fungi with suitable diagrams.(6)
- B. Describe the symptoms, etiology and disease cycle of 'damping off'.(6)

Q.6

- A. What are the general characters of order Erysiphales.(6)
- B. Describe sporangial tendencies to evolve conidium in Zygomycotina.(6)

Q.7

- A. Describe general characteristics of Gasteromycetes.(6)
- B. Explain life cycle of *Taphrina deformans*. (6)



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Subject: Botany
PAPER: III (Evolutionary Biology Vascular Plants)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

Q.1 (a) Define **Fossils**. How **Petrifactions** differ from **Permineralization** in plant fossilization. (06)

(b) What are **Palynomorphs**? Describe various categories of **Palynomorphs** with the help of neat and labeled diagrammes. (06)

Q.2 (a) Define **stele**. Describe various categories of **Steler System** found in **Pteridophytes**. (06)

(b) Compare and Contrast the **Rhyniophyta** and **Zosterophyllophyta**. What is the importance of **Rhynie Chert Deposits**? (06)

Q.3 (a) What is **evolution**? Discuss the modern concept of evolution. (06)

(b) Compare and contrast the **Lycopodiales** and **Selaginellales** with suitable examples. (06)

Q.4 (a) What are the synthetic Characteristics of **Lepidodendrales** (Giant Scale Trees)? How did they make themselves the climax vegetation of Carboniferous time period? (06)

(b) Why **Gnetales** are considered to be an advanced group of Gymnosperms-Discuss. (06)

Q.5 (a) Describe the synthetic characters of **Ophioglossales**. (06)

(b) **Bennetitales** are considered to be the progenitors of Angiosperms – Comment. (06)

Q.6 (a) Write down the general characteristics, Phylogeny and classification of **Ginkgoales** and **Coniferales**. (06)

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

Q7. Write a short note on the following:-

(a) **Heterospory** (4)

(b) **Placentation**. (4)

(c) Nature of **Endosperm**. (4)

Q.8 (a) Define **Inflorescence**. Describe various types of Inflorescence found in Angiosperms. (06)

(b) Describe briefly the Mechanism of **Dehiscence of Spongia** in ferns. (06)

Q.9 (a) Compare and Contrast **Sphenophyllales** and **Pseudoborniales**? (06)

(b) What are Ferns? Write a note on **Aquatic Ferns**. (06)



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Part-I A/2018
Examination:- M.A./M.Sc.

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Subject: Botany
PAPER: IV (Cell Biology & Biostatistics)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

Attempt any five questions, selecting at least two from each section.

Draw diagrams where necessary. Part-I

- Q.1. a. Discuss the concept of cell theory. 4
 b. What are two main groups into which cells are classified? 8
 Give salient characters of each.
- Q.2. a. What chemical substances and their ratio compose the plasma 4
 membrane?
- b. Discuss the structure of Fluid Mosaic model of cell membrane. 8
- Q.3. Discuss the ultra-structure and functions of chloroplast 12
- Q.4. a. Discuss phases and function of each phase in cell cycle. 4
 b. Discuss the types of histones and their role in stabilizing the structure 8
 of euchromatin.
- Q.5. a. Discuss the molecular organization and functional role of mitotic 8
 apparatus.
- b. Differentiate between Centromere, chromomere and telomere in the 4
 structure of chromosome.
- Part-II
- Q.6. a. Define biostatistics. Describe its importance in biology? 6
 b. What is normal distribution? Define properties of normal distribution. 6
- Q.7. a. Given below is the distribution of weekly income of 100 households 12
 in a locality. Calculate median, quartile deviation, standard deviation &
 variance.

Income	35-39	40-44	45-49	50-54	55-59	60-64	65-69
Frequency	13	15	17	28	12	10	5

- Q.8. a. Describe in detail measure of central tendencies. 7
 b. Write briefly about Binomial distribution. 5
- Q.9. Describe with example:
 (a). Latin square design 6
 (b). Randomized Complete Design 6



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PAPER: V (Plant Biochemistry)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

Serial #		Marks
Q. 1	a) What are Lipids? Draw lipid classification diagram. b) Discuss how Fatty Acids are activated and the role of Carnitine Shuttle for the transportation of fatty acids into the mitochondria for β Oxidation.	06 06
Q. 2	a) Give brief account of PROTEOGLYCANs along with their structure and significance. b) Differentiate Between Stereoisomerism and Chirality.	06 06
Q. 3	Explain the structural role and important characteristics of Polysaccharides.	12
Q. 4	Write in detail a general account of mechanism of protein synthesis.	12
Q. 5	Write note on the following: a) Nick Translation b) Sterols c) Vitamins	12
Q. 6	Write down a note on occurrence, chemical nature, and physiological effects of Alkaloids. Give suitable examples.	12
Q. 7	Describe in detail the role of Allosteric Enzymes and Feedback Inhibition.	12
Q. 8	a) Give brief account of DNA Replication in Prokaryotes? b) Write down the names of various proteins and factors involved in DNA replication?	06 06



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Subject: Botany
PAPER: VI (Plant Ecology)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

- Q.1. (a) How does energy flow consistently in an ecosystem through different trophic levels? Also discuss the drawbacks of this concept. (6)
- (b) Discuss in detail the organic and inorganic components of soil? (6)
- Q.2. (a) Differentiate b/w edaphology and pedology? Also discuss the physical and chemical properties of soil. (6)
- (b) Write a note on the structure of soil? (6)
- Q.3. (a) Write a note on physical and chemical properties of soil. (6)
- (b) Write down the process of soil formation in detail. (6)
- Q.4. (a) What is sampling? Discuss its various types in detail. (6)
- (b) Define shade. How different types of shade influences plant growth. (6)
- Q.5. (a) Define Eco-physiological responses. Describe the plant response towards light in detail? (6)
- (b) Define vernalization. How vernalization helps in breaking dormancy? (6)
- Q.6. (a) Write a note on photoperiodism. (6)
- (b) How the variation of latitude alter the characteristics of light and temperature? (6)
- Q.7. (a) Differentiate b/w quadrat, line intercept and transect methods of sampling. (6)
- (b) Elaborate different types of precipitation and its ecological impact. (6)
- Q.8. (a) How plants are categorized into three main types on the basis of water availability? (6)
- (b) How variation in pH of soil influences the vegetation. (6)
- Q.9. (a) Define plant community dynamics? Describe different steps involved in process of succession. (6)
- (b) Write a note on different forms of precipitation. (6)