UNIVERSITY OF THE PUNJAB

Part-I A/2017
Examination:- M.A./M.Sc.

Roll No. .....

Subject: Botany **TIME ALLOWED: 3 hrs.**
PAPER: I (Microbiology, Phycology & Bryology **MAX. MARKS: 60**

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

1-(a) Explain the term chemotaxis? (6)

(b)Write a note on sexual reproduction in Bacteria? (6)

2-(a) Write a note on classification and replication of viruses? (6)

(b)What are internal and external symptoms of virus infected plants? (6)

3-(a) Write a note on Nostoc? (6)

(b)Write a note on general characteristics of Cyanophyta? (6)

4-(a) Write a note on reproductive structure of Charophyta? (6)

(b)How many types of thallus found in algae? (6)

5-(a) Write a note on characteristics of Rhodophyta? (6)

(b)Write a note on Ectocarpus? (6)

6-(a) Write a note on Batrachospermum? (6)

(b) Write a note on Polysiphonia? (6)

7-(a) Differentiate between three division of Bryophyta ? (6)

(b)Write a note on Funaria? (6)

8-(a) What characters of *Anthoceros* are made this bryophyte as advance type? (6)

(b)Write a note on alternation of generation and origin of sporophyte of Bryopsida? (6)

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Subject: Botany **TIME ALLOWED: 3 hrs.**
PAPER: II (Mycology) **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)

a) Ectomycorrhiza and Arbuscular mycorrhiza
b) Paraphysis and Periphysis
c) *Agaricus* and *Amanita*
d) Epigeous and Hypogeous fruiting bodies
e) Spore and Conidium

Q.2:
A. What are fungi? Describe the general characteristics of fungi with suitable examples. (6)
B. Write a note on sexual and asexual reproduction in Mucorales. (6)

Q. 3:
A. Differentiate between rust and smut fungi with suitable diagrams. (6)
B. Describe the symptoms, etiology and disease cycle of the disease 'Gram Blight.' (6)

Q.4:
A. What are yeasts? How they are important to man? (6)
B. Give various development patterns of conidia in fungi. (6)

Q.5:
A. Write a note on powdery mildew disease. (6)
B. Explain life cycle of *Claviceps purpurea.* (6)

Q.6:
A. Write a note on general characters of order Aphyllophorales. (6)
B. Write a note on general characters of Pezizales. (6)

Q.7:
A. Write beneficial role of fungi in ecosystem. (6)
B. Fruiting bodies in Erysiphales and Eurotiales are round. How one can compare their fruiting bodies. (6)

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Roll No. .....

Subject: Botany **TIME ALLOWED: 3 hrs.**
PAPER: III (Evolutionary Biology Vascular Plants) **MAX. 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 **Steler 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 **Lycopsids.** What is the importance of **Isoetales**? (06)

(b) Compare the structure of sporocarp and leaves in ***Marseliales and Salviniales***. (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 ***Welwitschia.*** (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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Roll No. .....

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

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

Attempt any ***FIVE*** questions, selecting atleast ***TWO*** from each section.
Draw diagrams where necessary

Part- I

Q1: Differentiate between:

a) Active and passive transport of materials through plasma membrane 6

b) LEUCOPLASTS and CHLOROPLAST 6

Q2: a) What is the chemical composition of CELL WALL? 5

b) Write in detail about the significance of HISTONE proteins in packaging of DNA. 7

Q3: a) What do you mean by the G1, S and G2 phases of CELL CYCLE? Explain in detail. 8

b) Write a short note on CENTRIOLES. 4

Q4: Write short notes on 12

a) FLAGELLA

b) GOLGI COMPLEX

c) MITOCHONDRIA

Part-II

Q5: a) Describe in detail measures of CENTRAL TENDENCIES. 7

b) Write briefly about BINOMIAL DISTRIBUTION. 5

Q6: a) Write a detailed account of REGRESSION. 6

b) Calculate linear regression equations: 6

X: 5, 6, 8, 10, 12, 13, 15, 16, 17

Y: 16, 19, 23, 28, 36, 41, 44, 45, 50

Q7: a) Define VARIANCE. 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

P.T.O.

Q8: Write short notes on: 12

a) LATIN SQUARE DESIGN

b) RANDOMIZED COMPLETE BLOCK DESIGN

c) FACTORIAL DESIGN

Q9: a) The weight of 10 plants is as follows : 6

30, 35, 20, 30, 35, 40, 30, 20, 30, 20

Calculate the MEAN and STANDARD DEVIATION from the above given data using frequency table.

b) What will be the MODE if data is 3,5,5,5,6,6,6,7,8,9,9? 3

c) Why statistical methods are needed in biology? 3

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Subject: Botany **TIME ALLOWED: 3 hrs.**
PAPER: V (Plant Biochemistry) **MAX. MARKS: 60**

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

		Marks
Q-1	a) What are enzymes? Classify them on the basis of reactions.	4
	b) Explain your view point on specificity and catalysis of enzymes.	8
Q-2	a) What are Lipids? Draw a lipid classification diagram.	6
	b) Discuss how fatty acids are activated and the role of carnitine shuttle for the transportation of fatty acids into mitochondria for β-Oxidation.	6
Q-3	a) Define Carbohydrates. Discuss various roles of carbohydrates in living system.	6
	b) What is Gluconeogenesis? Discuss the bypass reactions.	6
Q-4	Give a general account of structural lipids along with their types and biological role.	12
Q-5	a) Differentiate between reducing and non-reducing sugars.	4
	b) What are alkaloids? Give brief explanation of physiological effects of Nicotine.	8
Q-6	Write a note on any **three** of the following.	4 each
	i) Stereoisomerism	
	ii) Chirality	
	iii) Nick translation	
	iv) Shine-Delgarno sequence	
Q. 7	Name and very briefly explain the relatively common mechanisms responsible for the folding and processing of the nascent polypeptide chain into its biologically active form.	12

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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.

Q1. (a) Discuss in detail the process of soil formation. (6)

(b) How living organisms influence the soil composition and its properties? (6)

Q2. (a) Describe in detail how the variation in latitude influences the vegetation? (6)

(b) What is plant competition? Discuss the types of competition found among plant communities. (6)

Q3. (a) How does energy flow consistently in an ecosystem? Discuss. (6)

(b) Discuss in detail the organic and inorganic components of soil? (6)

Q4. (a) Define plant succession. Discuss in detail its main types. (6)

(b) What is ordination? Discuss the significance of ordination? (6)

Q5. (a) What are physical properties of light? Discuss in detail the dual nature of light. (6)

(b) What is dormancy? Describe its types in detail. (6)

Q6. (a) Discuss in detail the adaptations of plants to water availability. (6)

(b) What are ecophysiological responses of plants? Discuss how variations in critical day length influence flowering response in different plants? (6)

Q7. (a) Describe in detail different methods of plant community sampling. (6)

(b) Discuss how light influences plant growth and development. (6)

Q8. (a) How resource allocation influences plant diversity? Also describe life history patterns in detail. (6)

(b) Write a note on plant community structure (6)

Q9. (a) What role wind and fire play in the plant growth and diversity? (6)

(b) Define precipitation. Discuss the main types of precipitation? (6)