



UNIVERSITY OF THE PUNJAB

Part – I A/2016
Examination:- B.A./B.Sc.

Roll No.

Subject: Botany-I

PAPER: B (Plant Systematic Anatomy and Development)

TIME ALLOWED: 3 hrs.

MAX. MARKS: 35

Section-I (Objective Type)

Note: Attempt all questions of this section in the first 30 minutes and return the script to the examiner. Marks may be deducted for wrong spellings, erasing or overwriting.

Q. 1 Fill in the blanks (8 marks)

- i. The type of adventitious roots in Banyan is called _____.
- ii. The plants which live for two growing seasons are called _____.
- iii. The type of stem in mint is known as _____.
- iv. The leaves found in seed are called _____.
- v. The condition in which petals are united is called _____.
- vi. The type of placentation in which placenta develop along the fused margins of the carpels is called _____.
- vii. The type of inflorescence in ocimum is called _____.
- viii. The type of fruit in castor oil is called _____.
- ix. *Luffa aegyptica* belongs to family _____.
- x. The family Asteraceae is also known as _____.
- xi. Cruciform corolla is found in family _____.
- xii. The ladder like lignin thickenings of cell wall are called _____.
- xiii. The Vascular bundles are scattered in the stem of _____.
- xiv. Ocimum is a member of family _____.
- xv. The pits which do not have complementary pits are called _____.
- xvi. The simple tissues with uneven thickenings are called _____.

Q. 2 True or False statements (3 marks)

Please select True or False statement by encircling "T" or "F" as appropriate.

- | | | |
|--|---|---|
| i. Cuscuta has parasitic roots. | T | F |
| ii. Ginger is a tuber. | T | F |
| iii. Cladodes are composed of more than one internodes | T | F |
| iv. Axile placentation is found in potato | T | F |
| v. Inflorescence of Banyan is hypanthodium | T | F |
| vi. Xylem is a simple tissue | T | F |

P.T.O.

Q. 3 Multiple Choice Questions (3 marks)

Please encircle the appropriate letter (a, b, c or d) of the correct answer.

- i. Wheat is a member of family:
a. Rosaceae b. Euphorbiaceae c. Poaceae d. Labiatae
- ii. The swollen part of flower having floral leaves is called:
a. Thalamus b. Pedicel c. Peduncle d. None
- iii. The fruit of apple is:
a. Drupe b. Berry c. Capsule d. Pome
- iv. The tuber is found in:
a. Potato b. Ginger c. Onion d. Radish
- v. Secondary wall is increased by:
a. Calcification b. Lignification c. Growth d. None
- vi. Capitulum is present in :
a. Cherry b. Apple c. Mulberry d. Sunflower

Section-II (Subjective Type)

Note: Attempt any three questions. All questions carry equal marks. Draw neat and labeled diagrams along with captions where necessary. (3x7=21)

- Q. 1: (a) What is Rhizome? Explain briefly bulb and tuber (1+3)
(b) Write a short note on Bentham and Hookers system of classification. (3)
- Q. 2: (a) Describe different leaf modifications in flowering plants (4)
(b) Describe different types of Meristem. (3)
- Q. 3: (a) What are capsular fruits? Describe their various types. (1+3)
(b) Describe the chemical composition of cell wall. (3)
- Q. 4: (a) Describe structure and functions of Tracheary elements of xylem tissue. (4)
(b) Write short notes on the following: (1.5+1.5)
i. Cyathium ii. Tap Root
- Q. 5: (a) Describe general characters and economic importance of family Cucurbitaceae. (4)
(b) Describe structure and functions of Sclerenchyma. (3)



UNIVERSITY OF THE PUNJAB

Part-I A/2016
Examination:- M.A./M.Sc.

Roll No.

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

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

- Q1: What are the different types of genetic recombination in bacteria? Explain in detail the process of transformation in bacteria. Illustrate with the help of diagrams.
- Q2: a) Write in detail the structure and mode of replication in viruses.
b) Write down the characteristic features of Chlorophyceae.
- Q3: a) Explain in detail the cell structure, thallus organization and methods of reproduction in class Charophyceae.
b) What do you understand by the term Vaucheria? Explain its structure and reproduction with the help of diagrams.
- Q4: a) Differentiate between Prokaryotic and Eukaryotic Cells with the help of diagrams.
b) Write a note on the economic importance of bacteria
- Q5: a) Write about the habitat, morphological structure and reproduction in Marchantia.
Also draw labeled diagrams.
b) Explain the morphological features and method of reproduction in Batrachospermum.
- Q6: a) Differentiate between bacteria and cyanobacteria.
b) Write in detail the mechanism of bacterial respiration.
- Q7: a) What do you understand by the term Exogenote and Endogenote? Explain with reference to conjugation in bacteria.
b) Write a detailed note on Polytrichum with special reference to its sporophyte.
Illustrate with the help of diagram.
- Q8: a) Write a detailed note on Polysiphonia. Draw labeled diagram to illustrate its morphological features.
b) Write a note on the habitat, morphology and reproduction in Anthoceros.

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Part-I A/2016
Examination:- M.A./M.Sc.

Roll No.

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)

1. Urediniospores and Teliospores
2. Perithecium and Cleistothecium
3. Ectomycorrhiza and Endomycorrhiza
4. *Mucor* and *Rhizopus*

Q.2:

- a. What is mitic system of hyphae in fungi? Explain its different types. (6)
- b. Explain classification and nomenclature systems of fungi. (6)

Q.3:

- a. Write a note on powdery mildews disease. (6)
- b. What are Pezizales. Give their importance. (6)

Q.4:

- a. Write a note on general characteristics of order Agaricales. (6)
- b. What is symbiotic association of fungi with roots of higher plants? (6)

Q.5

- a. How fungi are economically importance. (6)
- b. Explain life cycle of *Claviceps purpurea*. (6)

Q.6:

- a. What are Entomophthorales? Give important features of this group. (6)
- b. Write a note on disease "Damping off". (6)

Q.7:

- a. What is a Centrum? Give details of centrum types in fungi. (6)
- b. Give various development patterns of conidia in fungi. (6)



UNIVERSITY OF THE PUNJAB

Part-I A/2016
Examination:- M.A./M.Sc.

Roll No.

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 **evolution**. What are modern concepts of evolution? Discuss. (06)
(b) What are **Plant fossils**? Give different **methods** of their study. (06)
- Q.2 (a) What is **stellar system**? Discuss this system in Pteridophytes. (06)
(b) Describe the Salient features and phylogenetic importance of **Psilopsida**. (06)
- Q.3 (a) Compare and contrast **Lycopside**s and **Sphenopsids**. (06)
(b) Describe the synthetic Characteristics of **Calamitales**. (06)
- Q.4 (a) Compare and contrast **Calamopityales** and **Medullosales**. (06)
(b) Describe in detail the vegetative and reproductive biology of **Isoetales**. (06)
- Q.5 (a) Compare and contrast **Tmesipteris** and **Psilotum**. (06)
(b) Elaborate salient features and importance of **Glossopteridales**. (06)
- Q.6 (a) Discuss Primitive characters found in **Cycadales**. (06)
(b) Describe in detail the life cycle of an **angiosperm**. (06)
- Q7. Write short note on the following:-
(a) **Early Vascular Land Plants**. (4)
(b) Nature of **endospermic tissue**. (4)
(c) **Enation Theory** (4)
- Q.8 (a) Define Inflorescence. Differentiate between **cymose** and **racemose** type of Inflorescence. (06)
(b) Give synthetic characters and importance of **Bennettitales**. (06)
- Q.9 (a) Discuss the **Structure** and **Reproduction** in **Pinus**. (06)
(b) Briefly describe the origin and evolution of **Seed Habit**. (06)



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Part-I A/2016
Examination:- M.A./M.Sc.

Roll No.

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

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

PART-I (CELL BIOLOGY)

- Ques. 1 a) Explain meiosis with special reference to spermatogenesis with the help of diagram. Justify that without meiosis no new combination can be formed. 8
- b) Write a comprehensive note on DNA metabolism 4
- Ques. 2.a) Describe the structure and function of Golgi complex and Endoplasmic reticulum? 8
- b) Discuss the genetic consequences of meiosis. 4
- Ques. 3. a) What is cell cycle? How it is controlled? 7
- b) What is the chemical composition of cell wall 5
- Ques. 4. Write short notes on the following: 3 each
- i) Chloroplast
- ii) Mitochondria
- iii) Ribosomes
- iv) Microtubules

PART II (BIOSTATISTICS)

- Ques 5. a) What is Binomial distribution? Give its characteristics. How does it differ from Normal Distribution? 6
- b) The length of leaf is normally distributed with the mean length of 151mm and S.D of 15mm.
- What is the probability that the length of leaves will be?
- a) Between 152 and 155mm
- b) Between 148 and 155mm
- c) More than 155mm
- d) Less than 145mm
- e) Equal to 153mm 6

P.T.O.

Ques. 6. a) Write a brief note on linear regression.

6

b) From the given data find if the two variables X and Y are correlated.

6

| | | | | | | | |
|---|----|----|----|----|----|----|----|
| X | 97 | 57 | 64 | 85 | 66 | 47 | 21 |
| Y | 50 | 55 | 33 | 47 | 99 | 25 | 36 |

Ques.7. a) What is a frequency distribution? How it is constructed?

5

b) From the following data find A.M., Mode, Coefficient of variation and Standard deviation.

7

| | | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|-------|
| Class interval | 21-23 | 24-26 | 27-29 | 30-32 | 33-35 | 36-38 | 39-41 |
| Frequency | 3 | 9 | 17 | 21 | 11 | 4 | 1 |

Ques. 8 a) What are Simple Randomized Block and Latin Square Designs? Differentiate between them.

5

b) The following table gives the yield of a hybrid variety of wheat in quintals per acre from 17 trial plots of land treated with four different fertilizers.

7

| | | | | | |
|---|----|----|----|----|----|
| A | 24 | 39 | 35 | | |
| B | 39 | 41 | 33 | 40 | 45 |
| C | 31 | 25 | 26 | 21 | |
| D | 38 | 32 | 35 | 34 | 26 |

Test whether there is any significant difference in the mean yield of wheat due to difference in fertilizer application

Ques. 9. Write short notes on the following:

3 each

- T- test
- Laws of Probability
- Chi square test
- Measures of Central tendencies



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Part-I A/2016
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Roll No.

Subject: Botany
PAPER: V (Plant Biochemistry)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

- Q1 a) What are Amino Acids? Give an account of amino acid titration curves (8 marks)
b) Narrate the Chargaff's rules proposed for the DNA structure (4 marks)
- Q 2 a) What are Triglycerides? Write a brief note on hydrogenation of fats and oils (6 marks)
b) What is Rancidity? Give and explain its types (6 marks)
- Q 3 a) Describe structure and function of Nucleic Acids (6 marks)
b) What is RNA? Give its types and corresponding functions in some detail (6 marks)
- Q 4 a) What are enzymes? Give classification of enzymes on the basis of reaction they perform (6 marks)
b) Explain principles that explain the catalytic power and specificity of enzymes (6 marks)
- Q 5 a) What is ATP? What is so special about this molecule? (6 marks)
b) Differentiate between oxidation and reduction reactions giving suitable example (6 marks)
- Q 6 a) What are Amino Acids? Give some electrochemical properties and reactions of amino acids (6 marks)
b) What is the biological role of Proteins? (6marks)
- Q 7 a) What are Alkaloids and where do they occur? (4 marks)
b) Describe the physiological effects of alkaloids with particular emphasis on Nicotine (8 marks)



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Part-I A/2016
Examination:- M.A./M.Sc.

Roll No.

Subject: Botany
PAPER: VI (Plant Ecology)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 60

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

- Question 1:** (a) Write a note on physical and chemical properties of soil. (5)
(b) Write a note on soil organisms and describe in detail their role in the development of soil structure. (7)
- Question 2:** (a) What is the significance of sampling in plant community? Describe line intercept, nearest neighbor and random sampling methods of vegetation sampling. (8)
(b) Write a note on plant community structure. (4)
- Question 3:** (a) Define plant community dynamics? Describe different steps involved in process of plant succession. (8)
(b) Write a note on different forms of precipitation. (4)
- Question 4:** (a) Differentiate between Photoperiodism and Thermoperiodism. (4)
(b) How the variations of latitude alter the characteristics of light and temperature? (8)
- Question 5:** (a) Write down a descriptive note on physical and chemical weathering. (6)
(b) Discuss in detail the role of temperature in diversity and distribution of plants. (6)
- Question 6:** (a) Discuss in detail how water influences the distribution and diversity of plants? (7)
(b) Define Stratification. Discuss its role in breaking dormancy. (5)
- Question 7:** (a) Write down a descriptive note on the vegetation types of Pakistan? (6)
(b) Describe the major Formations of the world. (6)
- Question 8:** (a) How variation in soil pH influences the vegetation. (4)
(b) What is an altitude? How it is different from latitude? Discuss how these two factors affect the distribution of plants. (8)
- Question 9:** (a) How energy flows consistently through an ecosystem? (7)
(b) Write a note on nitrogen cycle. (5)