



# UNIVERSITY OF THE PUNJAB

First Semester 2015  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Botany-I (Plant Diversity)  
Course Code: BOT-101

TIME ALLOWED: 2 hrs. & 30 mins.  
MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

## PART II, SUBJECTIVE

### SHORT QUESTIONS (20- Marks)

Q. 2. Answer the following questions briefly.

1. Explain the structure of TOBACCO MOSAIC VIRUS (TMV).
2. What are PLASMIDS? Give their significance.
3. Differentiate between UNILOCULAR and PLURILOCULAR SPORANGIA.
4. Explain the internal structure of *Physcia*.
5. Name different sub-divisions of fungi. Give one example of each group.
6. Define HETEROSPORY. Give importance of heterospory.
7. Write differences between Pteridophytes and Gymnosperms.
8. Describe the structure of archegonium in *Equistem*.
9. What are the very important characteristics of Gymnosperms?
10. Define the term "Ectomycorrhiza".

Q. 3. Answer the following questions.

(30)

1. (a) Give an account on transmission of viruses (05 Marks)  
(b) Describe the ultrafine structure of a typical bacterial cell. (05 Marks)
2. (a) Write a short note on thallus structure found in Algae (05 Marks)  
(b) Describe the structure and development of BASIDIOCARP of *Agaricus*. (05 Marks)
3. (a) Justify the statement "Cycas is a living fossil". (05 Marks)  
(b) Explain internal structure of the stem of *Equisetum*. Also draw its neat and labeled diagram (05 Marks)



Attempt this Paper on this Question Sheet only.

**PART I – OBJECTIVE**

Q. 1. Multiple choice questions: Tick (✓) the correct answer. (10 Marks)

1. The first step in the infection of a host bacterial cell by a Bacteriophage:  
(a) Lysis            (b) Penetration            (c) Adsorption            (d) Replication
2. The transmission of a double stranded piece of DNA from a donor bacterium to recipient through a third party (phage) is known as:  
(a) Transformation            (b) Transduction  
(c) Binary fission            (d) Conjugation
3. Which structure is used by Prokaryotic cells for locomotion?  
(a) Pili            (b) Mitochondria  
(c) Flagella            (d) Endospore
- 4 Which one of the following is not related to globule of *Chara*:  
(a) Pedical cell            (b) Stalk cell            (c) Manubrium            (d) Shield cell
5. Ascocarp without an opening is called as:  
a) Perithecium            (b) Apothecium  
(c) Cleistothecium            (d) Basidium
6. The type of fruiting body formed in *Penicillium* is:  
(a) Perithecium            (b) Apothecium            (c) Basidiocarp            (d) Cleistothecium
7. Aeciospores are carried to wheat leaves where they germinate to form:  
(a) Telia            (b) Basidia            (c) Uredinia            (d) Pycnia
8. Synangium is the characteristic feature of :  
(a) *Lycopodium*            (b) *Selaginella*  
(c) *Marsilea*            (d) *Psilotum*
9. The spore germination results in formation of branched multicellular filament, protonema in:  
(a) *Riccia*            (b) *Funaria*            (c) *Anthoceros*            (d) All bryophytes
10. *Selaginella* belongs to:  
(a) Psilopsida            (b) Lycopsida            (c) Sphenopsida            (d) Pteropsida



# UNIVERSITY OF THE PUNJAB

Roll No. ....

Second Semester 2015

Examination: B.S. 4 Years Programme

**PAPER: Botany-II**  
**(Plant Systematic Anatomy & Development Theory)**  
**Course Code: BOT-103 /**

**TIME ALLOWED: 30 mins.**  
**MAX. MARKS: 10**

*Attempt this Paper on this Question Sheet only.*

## PART - I

Q-1. Each question has four options. Encircle the correct one.

1. Takhtajan's system of classification is a good example of  
a) Artificial system    b) Natural system    c) Phylogenetic system    d) Modern system
2. The non-photosynthetic plants having root  
a) Climbing root    b) Aquatic root    c) Parasitic root    d) Prop root
3. Onion is an example of  
a) Root    b) Stem    c) Leaves    d) Fruit
4. The spines that have no vascular tissues are called as  
a) Prickles    b) Pubescent    c) Hair    d) All of these
5. The floral formula represents  
a) Calyx and Corolla    b) Androecium    c) Gynoecium    d) All of these
6. Sunflower is the example of inflorescence type  
a) Spadix    b) Umbel    c) Capitulum    d) Hypentodium
7. Palisade cells are the member of  
a) Parenchyma    b) Collenchyma    c) Pseudo parenchyma    d) Sclerenchyma
8. The main component of plant cell wall is  
a) Cellulose    b) Hemicellulose    c) Pectin    d) All of these
9. The seeds having hairs or wings are mainly dispersed by  
a) Water    b) Air    c) Animals    d) By plants itself
10. The Circumference of the stem increase due to  
a) Xylem    b) Phloem    c) Secondary xylem    d) Secondary phloem



# UNIVERSITY OF THE PUNJAB

Second Semester 2015  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Botany-II  
(Plant Systematic Anatomy & Development Theory)  
Course Code: BOT-103 /

TIME ALLOWED: 2 hrs. & 30 mins.  
MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

## PART – II

### SHORT QUESTIONS

20 Marks

Q-2. Answer briefly the following questions. Each question carries two marks.

- i. Differentiate between Tap Root and Adventitious Root.
- ii. Define stipules. Enlist its various kinds.
- iii. What is underground stem? Give examples.
- iv. Define inflorescence. Give three name of special types of inflorescences.
- v. What is phylogenetic system of classification?
- vi. Give three economic importance of family Fabaceae.
- vii. What is the chemical composition of plant cell wall?
- viii. Differentiate between sap wood and heart wood.
- ix. What are Annual Rings? How they are formed.
- x. Give two botanical names of family Rosaceae.

### SUBJECTIVE QUESTIONS

30 Marks

- Q-3. Describe briefly the Takhtajan system of classification. 10
- Q-4. Describe in detail the chemical composition and structure of Cell Wall. 10
- Q-5. a) Describe diagnostic characters of family Poaceae. 05
- b) Draw neat and labeled diagram of T.S. of Dicot Stem. 05



# UNIVERSITY OF THE PUNJAB

Third Semester 2015  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Botany-III (Cell Biology, Genetics and Evolution) TIME ALLOWED: 2 hrs. & 30 mins.  
Course Code: BOT-201/ . 36 MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

## *SUBJECTIVE PART*

**Q2. Short Questions / Answers.**

**10 X 2 = 20**

- i) Differentiate between Cytokinesis and Karyokinesis.
- ii) Describe the Semi-Conservative Replication.
- iii) Define Translocation.
- iv) Describe Fluid Mosaic model.
- v) What is Antisense Strand?
- vi) What is Synapsis?
- vii) Differentiate between Allelomorphs and Gynandromorphy.
- viii) What is Complete Linkage?
- ix) Differentiate between Monohybrid and Dihybrid cross.
- x) Describe Homology.

**Q3. Answer the following.**

**3 X 10 = 30**

1. Explain the four Mechanisms of Sex Determination.
2. Explain Prophase-I of Meiosis in detail.
3. Give an account of Euploidy.



*Attempt this Paper on this Question Sheet only.*

**OBJECTIVE PART**

**Q1. Every question has 4 options. ✓ the correct answer. 2 X 5 = 10**

- i) Synapsis is the characteristic of
  - a. Leptotene
  - b. Zygotene
  - c. Pachytene
  - d. Diplotene
  
- ii) Genetic linkage is
  - a. the tendency of alleles that are located close together on a chromosome to be inherited together during meiosis.
  - b. genes whose loci are nearer to each other are less likely to be separated onto different chromatids during chromosomal crossover.
  - c. tendency for two or more non-allelic genes to be inherited together, because they are located more or less closely on the same chromosome.
  - d. All three.
  
- iii) A change in the loss of DNA is
  - a. Inversion
  - b. Deletion.
  - c. Duplication.
  - d. Translocation
  
- iv) Each Amino acid is activated by an enzyme before attaching to
  - a. mRNA
  - b. rRNA
  - c. tRNA
  - d. RNA
  
- v) DNA polymerase III is thought to add nucleotides
  - a) to the 5' end of the RNA primer
  - b) to the 3' end of the RNA primer
  - c) on single stranded templates without need for an RNA primer
  - d) in the 3' to 5' direction



# UNIVERSITY OF THE PUNJAB

Fourth Semester 2015  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Botany-IV (Plant Physiology and Ecology) TIME ALLOWED: 2 hrs. & 30 mins.  
Course Code: BOT-203 / MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

## PART – II

Q 2. Answer the following questions with short answers. Each question carries two marks.

- i. Define weathering. Give type of weathering.
- ii. Differentiate between water potential and pressure potential.
- iii. Differentiate between oxygenic and non-oxygenic photosynthetic mechanisms.
- iv. What is abscission? Give role of an appropriate growth regulator in it.
- v. What is passive transport of nutrients?
- vi. What is meant by photophosphorylation?
- vii. What is Humification?
- viii. Give two physiological roles along with two deficiency symptoms of nitrogen.
- ix. Differentiate between food chain and food web.
- x. Differentiate between phototropic and nastic movements.

Q 3. Answer the following questions with brief answers. (3 X 10 MARKS EACH = 30 MARKS)

- 1) a. Explain the difference between C3 and C4 plants.  
b. What are Cytokinins? Give their role in plants.
- 2) a. What is the role of Phytochromes in higher plants?  
b. Differentiate between Quadrat and Line intercept method of sampling.
- 3) a. Write a note on biological nitrogen fixation.  
b. What do you understand by electron transport chain?





# UNIVERSITY OF THE PUNJAB

Roll No. ....

Fourth Semester 2015  
Examination: B.S. 4 Years Programme

PAPER: Botany-IV (Plant Physiology and Ecology)  
Course Code: BOT-203 /

TIME ALLOWED: 30 mins.  
MAX. MARKS: 10

*Attempt this Paper on this Question Sheet only.*

## PART – I

Q 1. Each question is followed by four possible answers. Choose the correct (most appropriate) answer by encircling it.

- i. A soil in which sand, silt and clay particles are present in equal proportions is called
  - a. Coarse sand
  - b. Fine sand
  - c. Clay
  - d. Loam
- ii. The capacity of a plant to complete its life cycle is called as
  - a. Stratification
  - b. Floristics
  - c. Periodicity
  - d. Vitality
- iii. The number of individuals living in a unit area is called
  - a. Density
  - b. Natality
  - c. Mortality
  - d. Dispersion
- iv. The basic role of an organism in a community is called
  - a. Synecology
  - b. Autecology
  - c. Niche
  - d. Biomes
- v. The bacteria involved in de-nitrification are
  - a. Pseudomonas
  - b. Rhizobium
  - c. Nitromonas
  - d. Clostridium
- vi. The main force for ascent of sap in higher plants is
  - a. Root pressure
  - b. Transpirational pull
  - c. Atmospheric pressure
  - d. Capillarity
- vii. The first stable product of dark reaction of photosynthesis is
  - a. 3PGA
  - b. 3PGAld
  - c. 1-3 bis PGA
  - d. None of these
- viii. Which of the following hormones is an inhibitor?
  - a. Auxins
  - b. Gibberellins
  - c. Abscissic acid
  - d. none of these
- ix. Photorespiration is also known as
  - a. Glycolate Cycle
  - b. C2 Cycle
  - c. C4 cycle
  - d. both A & B
- x. Mg is an important component of
  - a. Chlorophyll
  - b. Cytochromes
  - c. Nucleic Acid
  - d. Hemoglobin