

**B.Sc. Botany Paper –A**  
**Diversity of Plants**  
**Part-I, Examination 2016**

**Time allowed: 30 Minutes**

**Max. Marks: 14**

**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)**

**Please fill in the blanks with appropriate terms/words**

- i. W.M. Stanley isolated ----- for the first time from tobacco plant.
- ii. The capsule of bacteria is made up of -----.
- iii. *Nostoc* belongs to the class ----- of group algae.
- iv. *Chara* is also known as -----.
- v. The outer covering of *cystocarp* of *Polysiphonia* is known as -----.
- vi. A flask shaped ascocarp is known as -----.
- vii. The first stage of life cycle of *Puccinia* is called -----.
- viii. The lichens which grow on tree trunks are called -----.
- ix. The sporophyte of *Anthoceros* is surrounded by a sheath called -----.
- x. The mature sporophyte of *Polytrichum* consists of three parts, i.e., foot, ----- and capsule.
- xi. The main body of *Bryophytes* is called -----.
- xii. In Siphonostele----- is present in the centre.

- xiii. The aerial portion of stem of *Equisetum* consists of two types of branches called -----  
----- and sterile.
- xiv. The strobilus of *Seleginella* is a compact structure of -----.
- xv. Species of *Marsileaceae* have long, slender ----- that creep along or  
beneath the ground.
- xvi. The male cone of *Cycas* is produced singly at the ----- of the stem.

**Q. 2. True or False statements (3 marks)**

**Please select true or false statement by encircling 'T' or 'F' as appropriate**

- |      |  |   |   |
|------|--|---|---|
| i.   | The male cone of <i>Pinus</i> is comparatively larger than female cone.  | T | F |
| ii.  | <i>Selaginella</i> is a heterosporous plant.                             | T | F |
| iii. | The archegonia of <i>Polytrichum</i> are oval shaped.                    | T | F |
| iv.  | Asexual reproduction in yeasts takes place during favourable conditions. | T | F |
| v.   | <i>Laminaria</i> is called a common kelp.                                | T | F |
| vi.  | In <i>Vaucheria</i> , the sexual reproduction is of isogamous type.      | T | F |

**Q. 3. Multiple Choice Questions (3 marks)**

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

- i) The transformation in bacteria was reported by
- Lederberg and Zinder
  - J. Lederberg and E. Tatum
  - Fred Griffith
  - McCarty
- ii) Which one is called colonial alga
- Chara*
  - Volvox*
  - Vaucheria*
  - Bactrachospermum*

- iii) A disease called late blight in tomato and potato is caused by
- a) Yeasts
  - b) *Albugo*
  - c) *Phytophthora infestans*
  - d) *Alternaria*
- iv) The fused sporangia called synangium is found in
- a) *Equisetum*
  - b) *Marsilia*
  - c) *Selaginella*
  - d) *Psilotum*
- v) The most advanced plant from the evolutionary point of view among the following is
- a) *Ephedra*
  - b) *Cycas*
  - c) *Pinus*
  - d) *Ginkgo*
- vi) Asexual reproduction in *Penicillium* takes place by
- a) Budding
  - b) Akinetes
  - c) Aplanospores
  - d) Conidia

(MODEL PAPER)

**B.Sc. Botany Paper –A**  
**Diversity of Plants**  
**Part-I, Examination 2016**

**Time allowed: 2 hours 30 Minutes**

**Max. Marks: 21**

**Section – II (Subjective Type)**

**Note: Attempt any three questions. All questions carry equal marks. Draw neat and labelled diagrams along with captions where necessary. (3×7=21)**

- Q 1. a) Describe lytic cycle in phage virus. (02)  
b) Write a note on *Megasporophyll of Cycas* (02)  
c) What are different types of flagella found in different Algal group? (03)
- Q 2. a) Discuss the phylogenetic position of *Chara* (04)  
b) Draw a labelled diagram of *Sporogonium of Polytrichum* (03)
- Q 3. a) Write a note on sporocarp of *Marsilea* (02)  
b) Explain methods of asexual reproduction in *Nostoc*. (03)  
c) Name only the basis of classification of bacteria? (02)
- Q 4. a) Explain the structure of gametophyte of *Adiantum* (04)  
b) Explain the basidial stage of life cycle of *Puccinia graminis*. (03)
- Q 5. a) Explain male strobilus of *Ephedra* (04)  
b) Discuss in brief the utilization of algae in industry. (03)

## **KEY FOR OBJECTIVE SECTION**

### **Q. 1. Fill in the blanks**

- i. Tobacco Mosaic Virus
- ii. Polysaccharides
- iii. *Cyanophyceae*
- iv. Stonewort
- v. Pericarp
- vi. Perithecium
- vii. Uredinal stage
- viii. Corticoles
- ix. Involucre
- x. Seta
- xi. Gametophyte
- xii. Pith
- xiii. Fertile
- xiv. Sporophylls
- xv. Rhizomes
- xvi. Apex

### **Q. 2. True and False**

- i. False
- ii. True
- iii. False
- iv. False
- v. True
- vi. False

### **Q. 3. MCQs**

- i. C
- ii. B
- iii. C
- iv. D
- v. A
- vi. D

**B.Sc. Botany Paper – B**  
**Plant Systematics, Anatomy and Development**  
**Part-I, Examination 2016**

**Time allowed: 30 Minutes**  
**Marks: 14**

**Max.**

**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. An annual green small sized plant is called \_\_\_\_\_.
- ii. The condition in which stamens consist of fused anthers and filaments is called\_\_\_\_\_.
- iii. The ripened ovary containing seeds is called \_\_\_\_\_.
- iv. The indehiscent, many-seeded fleshy fruit in which mesocarp and endocarp forms pulp is called \_\_\_\_\_.
- v. The process of deposition of suberin is called \_\_\_\_\_.
- vi. \_\_\_\_\_ are non-living conducting tissues.
- vii. Vascular bundles having cambium between xylem and phloem are called \_\_\_\_\_ type.
- viii. The type of inflorescence in family *Euphorbiaceae* is \_\_\_\_\_.

- ix. The process of cytokinesis is initiated by the formation of \_\_\_\_\_ in plants.
- x. The fruit of Apple is \_\_\_\_\_ type of fleshy fruits.
- xi. Secondary growth includes the formation of secondary vascular tissues and \_\_\_\_\_.
- xii. The endodermis in the absorbing region of roots is characterized by the presence of \_\_\_\_\_.
- xiii. The chamber of a bordered pit is connected with the \_\_\_\_\_ through the pit canal.
- xiv. Fibres and sclereids are two types of \_\_\_\_\_ cells.
- xv. Cutin together with its embedded waxes forms the \_\_\_\_\_.
- xvi. The vacuole in plant cells is bounded by cytoplasmic membrane called \_\_\_\_\_.

**Q. 2. True or False statements (3 marks)**

**Please select true or false statement by encircling 'T' or 'F' as appropriate.**

- |     |  |   |   |
|-----|--|---|---|
| i   | The unisexual spike with a large and membranous bract is called strobilus.                                       | T | F |
| ii  | Sunflower has two types of small flowers, disc florets and ray florets.  | T | F |
| iii | The replum remains attached to the pedicle. It is the characteristic of fruit of the family <i>Leguminosae</i> . | T | F |
| iv  | <i>Pyrus malus</i> is an example of family <i>Brassicaceae</i> .   | T | F |
| v   | Pectic substances in cell walls are polymers of uronic acid.   | T | F |
| vi  | The pit membrane of bordered pit develops an oval thickening in the middle. It is called torus.                  | T | F |

**Q. 3 Multiple Choice Questions (3 marks)**

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

- i. According to the Linneaus system which of the following class stamens are fused to their carpels:
  - a. Polygamia
  - b. Cryptogamia
  - c. Gynandria
  - d. Syngenesia
  
- ii. The crystalline aggregate of cellulose molecules are:
  - a. Microfibrils
  - b. Micelles
  - c. Macrofibrils
  - d. Plasmodesmata
  
- iii. The condition in which one or more sepals form a long hollow tube is:
  - a. Globose
  - b. Bilabiate
  - c. Hooded
  - d. Spurred
  
- iv. Which of the following bract enclose spikelet?
  - a. Lema
  - b. Palae
  - c. Glume
  - d. Leafy
  
- v. Fruit of mustard is:
  - a. Legume
  - b. Siliqua
  - c. Follicle
  - d. Silicule
  
- vi. Cambium is usually absent in:
  - a. Monocot
  - b. Dicot
  - c. Gymnosperm
  - d. None

**B.Sc. Botany Paper – B**  
**Plant Systematics, Anatomy and Development**  
**Part-I, Examination 2016**

**Time allowed: 2 hours 30 Minutes**  
**Marks: 21**

**Max.**

**Section – II (Subjective Type)**

**Note: Attempt any three questions. All questions carry equal marks. Draw neat and labeled diagrams along with captions where necessary. (3×7=21)**

- Q. 1: (a) Briefly explain the cell wall formation during cell division  
(3)  
(b) Write the differences between corm and bulb.  
(2)  
(c) Give significance of the Binomial nomenclature.  
(2)
- Q. 2: (a) Explain different types of leaf modifications in Angiosperms.  
(4)  
(b) Write merits and demerits of Engler and Prantle's system of classification. (3)
- Q. 3: (a) What are treachery elements of xylem? Explain their structure and functions.  
(4)  
(b) What is thalamus? Write difference between anthophore and gynophore.  
(3)
- Q. 4: (a) What is periderm? Explain structure and function of periderm in secondary  
plant body.  
(4)  
(b) Explain different developmental changes that take place in the embryo  
of

*Capsella bursa pastoris.*

(3)

Q. 5 (a) Write distinguishing features of family *Solanaceae*. Give its economic importance.

(3)

(b) Differentiate between tap root & adventitious root.

(2)

(c) Give structure of bordered pit pair and half bordered pit pair.

(2)

(MODEL PAPER)

**B.Sc. Botany Paper – C**  
**Cell Biology, Genetics and Evolution**  
**Part-II, Examination 2016**

**Time allowed: 30 Minutes**

**Max. Marks: 14**

**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)**

**Please fill in the blanks with appropriate terms/words**

- i. \_\_\_\_\_ can take place in haploid and in diploid cells in all parts of the body.
- ii. A condition in which the organisms have more than complete sets of chromosomes is called\_\_\_\_\_.
- iii. The study of transfer of hereditary characters from parent to offspring is called\_\_\_\_\_.
- iv. A gamete without any sex chromosome is called \_\_\_\_\_ gamete.
- v. Linked genes can be separated by \_\_\_\_\_.
- vi. RNA polymerase can initiate transcription at specific DNA sequence called\_\_\_\_\_.
- vii. All the chemical reactions taking place within a cell are collectively called\_\_\_\_\_.
- viii. The covalent bond between two monosaccharides is called\_\_\_\_\_.

- ix. Acylglycerols are composed of glycerol and\_\_\_\_\_.
- x. Transfer of genetic material from one bacterium to another is called\_\_\_\_\_.
- xi. Recombinant DNA is introduced into the host cell by means of a\_\_\_\_\_.
- xii. Glyoxisomes are most abundant in plant \_\_\_\_\_ storage tissues.
- xiii. The preservation of gene pool is called\_\_\_\_\_.
- xiv. \_\_\_\_\_ is the part of the gene that will become a part of final mature RNA.
- xv. \_\_\_\_\_reduces the chances of genetic recombination and variations among offspring.
- xvi. The double helical structure was first discovered by\_\_\_\_\_.

**Q. 2. True or False statements (3 marks)**

**Please select true or false statement by encircling ‘T’ or ‘F’ as appropriate**

- i. Chloroplast and mitochondria do not have hereditary material. T F
- ii. The nuclear membrane is actually a nuclear envelope composed of three membranes. T F
- iii. Genes are the units of inheritance. T F
- iv. The position of gene on the chromosome is called its locus. T F
- v. The cross in which one trait is followed at a time is called dihybrid cross. T F
- vi. Random mating occurs in natural populations. T F

**Q. 3. Multiple Choice Questions (3 marks)**

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

**i.** Nucleic acids are polymers of units called:

- a. Nucleotides
- b. Fatty acids
- c. Amino acids
- d. Isoprenoid units

**ii.** A cell consists of three major components which are nucleus, cytoplasm and:

- a. Mitochondria
- b. Cell plasma membrane
- c. Protoplast
- d. Chloroplast

**iii.** Translocation is an example of:

- a. Chromosomal structural aberrations
- b. Point mutation
- c. Transcription
- d. Polysome

**iv.** Mendel's hereditary factors have been given the name of:

- a. Units
- b. Elementens
- c. Genes
- d. Representatives

**v.** Green colour blindness is called:

- a. Protanopia
- b. Deuteranopia
- c. Greenopia
- d. Tritanopia

**vi.** Which of the following are nonsense codons?

- a. UAA, UAG, UGA
- b. UAA, UCU, ACA
- c. CUA, UUA, UUG
- d. AUG, AUA, AUU

(MODEL PAPER)

**B.Sc. Botany Paper – C**  
**Cell Biology, Genetics and Evolution**  
**Part-II, Examination 2016**

**Time allowed: 2 hours 30 Minutes**

**Max. Marks: 21**

**Section – II (Subjective Type)**

**Note: Attempt any three questions. All questions carry equal marks. Draw neat and labelled diagrams along with captions where necessary. (3×7=21)**

- Q.1 a) What are Carbohydrates? Give an account on Polysaccharides. (3)  
b) Differentiate between a test cross and a back cross. (2)  
c) Explain the role of polyploidy in evolution. (2)
- Q.2 a) Describe the structure and functions of nucleus. (4)  
b) Describe the strategies of genetic conservation. (3)
- Q.3. a) Give an account on physical properties and functions of ribosomes. (3)  
b) Differentiate between duplication and deletion mutation. (2)  
c) What is speciation? Give an example. (2)
- Q.4. a) Write a note on physio-chemical nature of plasma membrane (4)  
b) What is incomplete dominance? Explain it with examples. (3)
- Q.5. a) Describe the basic genetic engineering technique. (4)  
b) Differentiate the reproduction in somatic and embryogenic cells. (3)

**B.Sc. Botany Paper-D**  
**Physiology and Ecology**  
**Part-II, Examination 2016**

**Time allowed: 30 Minutes**

**Max. Marks: 14**

**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)**

**Please fill in the blanks with appropriate terms/words**

- i. Temporary stage of decreased metabolism and growth rate is called -----.
- ii. A condition during which layers of soil are permanently saturated is called -----.
- iii. -----and ----- of soil surface by any physical agency is known as erosion.
- iv. Breakdown of any ----- material is respiration.
- v. ----- cells are functionally associated with the sieve elements of phloem in angiosperms.
- vi. The enzymes are often referred to as biological -----.
- vii. Growth / flowering response of plants to low temperature treatment is called -----  
-----.
- viii. First stable product of photosynthesis in C3 plants is -----.
- ix. The plant cells shrink due to----- in hypertonic environment.
- x. Activities in plants are regulated by -----.

- xi. ----- are ultimate parent material for soil.
- xii. Total biomass in autotrophs is ----- productivity.
- xiii. Plant and animals constitute the ----- component of ecosystem.
- xiv. The part of species confined in certain area makes up its-----.
- xv. Murree hills are occupied by the plants predominantly belonging to -----.
- xvi. Enzymes do affect reaction rate, what they do not affect is -----.

**Q. 2. True or False statements (3 marks)**

**Please select true or false statement by encircling 'T' or 'F' as appropriate**

- vii. Growth movements involve gain or loss of water in pulvinus. T F
- viii. Mg and Fe both are used to synthesize the phytal tail in chlorophyll. T F
- ix. Loss of water from the surface of plant is transpiration. T F
- x. Wind as a factor, causes splash erosion. T F
- xi. Disintegration of rocks by plants is physical weathering. T F
- xii. Alkaline sodic soils predominantly contain potassium, aluminum and sodium. T F

**Q. 3. Multiple Choice Questions (3 marks)**

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

- vii) The study of a single population and its interaction with the environment is called
  - e) Ecology
  - f) Autecology
  - g) Synecology
  - h) lithology
- viii) In a food chain, the amount of energy, from the base to the top always
  - e) increases
  - f) decreases

- g) varies
- h) remains the same

ix) The species at the verge of extinction are

- e) Endangered
- f) Threatened
- g) Extinct
- h) Extant

x) The only living cells in xylem are

- e) Parenchyma
- f) Vessels
- g) Tracheids
- h) Fibers

xi) Inside the plant body water always moves via ----- pathway

- e) Apoplast
- f) Symplast
- g) Vacuolar
- h) a, b, and c are correct

xii) The pigment involved in photoperiodism is

- e) Cytochromes
- f) Carotenoids
- g) Phytochromes
- h) Chlorophylls

**B.Sc. Botany Paper-D**  
**Physiology and Ecology**  
**Part-II, Examination 2016**

**Time allowed: 2 hours 30 Minutes**

**Max. Marks: 21**

**Section – II Subjective Type**

**Note: Attempt any three questions. All questions carry equal marks. Draw neat and labelled diagrams along with captions where necessary. (3×7=21)**

- Q 1. a) Explain carbon fixation in C<sub>3</sub> plants (03)  
b) Differentiate between 'Absorption' and 'Action' spectra (02)  
c) Write a note on 'Reclamation of soil' (02)
- Q 2. a) Explain the Quadrant method to study vegetation (04)  
b) What is Vernalization? Explain its significance (03)
- Q 3. a) What is soil parent matter? (02)  
b) Write a note on biological nitrogen fixation (03)  
c) What are the several roles of Auxins in plant metabolism (02)
- Q 4. a) What is seed dormancy? Is it a useful phenomenon? Write in detail its causes and methods to break seed dormancy (04)  
b) Explain your view point about food web (03)
- Q 5. a) Define enzymes. How does an enzyme work? (03)  
b) Differentiate between the terms 'Population' and 'community' (02)  
c) How does light affect vegetation (02)