(MODEL PAPER)

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 *Pinus* is comparatively larger than female cone.	T	F
ii.	*Selaginella* is a heterosporous plant.	T	F
iii.	The archegonia of *Polytrichum* are oval shaped.	T	F
iv.	Asexual reproduction in yeasts takes place during favourable conditions.	T	F
v.	*Laminaria* is called a common kelp.	T	F
vi.	In *Vaucheria*, 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
   a) Lederberg and Zinder
   b) J. Lederberg and E. Tatum
   c) Fred Griffith
   d) McCarty

ii) Which one is called colonial alga
   a) Chara
   b) Volvox
   c) Vaucheria
   d) 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

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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

MODEL PAPER

B.Sc. Botany Paper – B
Plant Systematics, Anatomy and Development
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)**

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 flashy 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 *Leguminosae*.	T	F
iv	*Pyrus malus* is an example of family *Brassicaceae*.	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

(MODEL PAPER)

B.Sc. Botany Paper – B
Plant Systematics, Anatomy and Development
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 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)

(MODEL PAPER)

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

(MODEL PAPER)

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 C3 plants	(03)
	b)	Differentiate between 'Absorption' and 'Action' spectra	(02)
	c)	Write a note on 'Reclamation of soil'	(02)
Q 2.	a)	Explain the Quadrate 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)