

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3031

[5536]-11

M.Sc. - I

BOTANY

**BO-1.1 : Systematics of Non Vascular Plants
(2008 Pattern) (Semester - I)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions, taking at least two questions from each section.*
- 2) Answer to the two sections should be written in separate answer books.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Write the position of algae in eight Kingdom system and give classification of algae as per G.M. Smith. **[16]**

Q2) a) Give asexual reproduction in cyanophyta. **[8]**

b) Write the differences between structural systematics and molecular systematics. **[8]**

Q3) Write short answers of the following : **[16]**

a) Comment on algal reserve food.

b) Write a note on algal pigments.

Q4) Write short notes on any two : **[16]**

a) Habit and habitat of Bryophytes.

b) Internal structure of Marchantia thallus.

c) Gametophyte of Funaria.

P.T.O.

SECTION - II

Q5) Give an account of Zygomycotina with reference to reproductive structures. [16]

Q6) a) Give an outline classification of fungi as per Alexopoulos et.al. [8]

b) Give an account of spore producing organs in Basidiomycotina. [8]

Q7) Write short answers of the following : [16]

a) Describe mycelium of fungi.

b) Contribution of Ainsworth in fungi.

Q8) Write short notes on any two : [16]

a) Economic significance of Bryophytes.

b) Gametophyte of Sphagnum.

c) Indian Bryology.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages : 2

P3032

[5536]-12

M.Sc. -I

BOTANY

**BO1.2 : Plant Physiology and Biochemistry
(2008 Pattern) (Semester-I)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions taking atleast two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagram must be drawn wherever necessary.*

SECTION-I

Q1) Give an account of cyanide resistance pathway. Add a note on TCA cycle.

Q2) Discuss.

- a) Metabolic changes during seed germination
- b) RUBISCO activity.

Q3) Explain.

- a) Phloem loading
- b) Signal transduction in guard cells.

Q4) Write notes on any two.

- a) CAM pathway.
- b) Biosynthesis of auxins
- c) Biotic stress

SECTION-II

Q5) Give an account of biosynthesis of phenolics.

Q6) Discuss.

- a) Secondary structure of protein.
- b) NOD factor and nif gene

P.T.O.

Q7) Explain:

- a) General classification of lipids.
- b) Breakdown of starch.

Q8) Write notes on any two.

- a) Enzyme inhibition
- b) Biosynthesis of carotenoids
- c) Michaelis-Menton equation.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3033

[5536]-13

M.Sc.- I

BOTANY

**BO.1.3 : Genetics And Plant Breeding
(2008 Pattern) (Semester -I) (Credit System)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions, taking atleast two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) What is cytoplasmic inheritance? Explain the mechanism of cytoplasmic inheritance in *Mirabilis jalapa*.

- Q2)** a) Discuss on complementary gene interaction with suitable example.
b) Give the concept and types of recombination.

Q3) Explain:

- a) Three point test cross.
- b) Inheritance of cob length in *zea mays*.

Q4) Write notes on (any two).

- a) C-value paradox.
- b) Continuous variation.
- c) Gene maps & physical maps.

P.T.O.

SECTION-II

Q5) Give the classification of ploidy. Write on methods of inducing autopolyploidy.

Q6) a) What is combination breeding? Give applications of combination breeding.

b) Write on objectives of plant breeding.

Q7) Explain:

a) Molecular basis of gene mutation

b) Asexual reproduction modes in crop plants.

Q8) Write notes on (any two)

a) Heterosis

b) Self Incompatability

c) Chromosome markers



Total No. of Questions :8]

SEAT No. :

P3034

[5536]-21

[Total No. of Pages : 2

M.Sc. - I

BOTANY

**BO-2.1 : Systematics of Vascular Plants
(2008 Pattern) (Semester -II)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions, taking at least two question from each section.*
- 2) Answer to the two sections should be written in SEPARATE answer book.*
- 3) All question carry equal marks.*
- 4) Neat diagrams must be drawn WHEREVER necessary*

SECTION-I

Q1) Discuss comparative account of morphology, anatomy of gametophyte and sporophyte of Psilotales.

Q2) a) Give an account of system of Gymnosperms classification as proposed by sporne.

b) Write on Angiosperms as highly evolved group of plants.

Q3) Write short answers of the following:

- a) Comment on apogamy
- b) Explain laboratory and field as tools of taxonomy.

Q4) Write short notes on any two of the following:

- a) Indian Pteridology
- b) Sporophyte of cycadales
- c) Phenetic in taxonomy

P.T.O.

SECTION-II

Q5) Discuss the merits and limitations of system of Angiosperm classification as proposed by Takhtajan.

- Q6)** a) Comment on Gymnosperm as prospective ancestor of Angiosperms.
b) Explain ecads and ecotypes.

Q7) Write short answers of the following:

- a) Discuss the classes and subclasses of Magnoliopsida.
b) Write on principles used in assessing relationship.

Q8) Write short notes on any two of the following:

- a) Role of phytochemistry in taxonomy
b) Taxonomic hierarchy
c) Gametophyte of Lycopodiales.

☆☆☆

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3035

[5536]-22

M.Sc -I

BOTANY

**BO - 2.2 : Cell Biology & Instrumentation
(2008 Pattern) (Semester - II)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions, selecting atleast two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer books.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is cell signaling? Describe ethylene activated two component signaling pathway.

Q2) a) Explain biogenesis and ultrastructure of Golgi complex.

b) Give principle and working of vis sepectroscopy.

Q3) a) Ultrastructure and Functions of E.R.

b) Give an account of sub cellular organization of plant cell and add a note on cytoplasmic matrix.

Q4) Write notes on any two of the following.

a) Giant chromosomes

b) Cell wall

c) Biogenesis and Functions of ribosomes.

P.T.O.

SECTION - II

Q5) a) Principle and working of paper chromatography.

b) Describe structure and Functions of Nucleus.

Q6) a) G.M. counting

b) Structure and Functions of Lysosomes.

Q7) What is apoptosis? Explain in detail Mitotic cell division.

Q8) Write short notes on (Any two)

a) Plasmodesmata

b) Plant vacuole

c) Mitochondria



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3037

[5536]-31

M.Sc. - II

BOTANY

**BO-3.1 : Developmental Botany and Plant Tissue Culture
(2008 Pattern) (Semester - III)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions, taking at least two questions from each section.*
- 2) Answer to the two sections should be written in separate answer book.*
- 3) All questions carry equal marks.*
- 4) Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is plant development? Explain intrinsic and extrinsic factors affecting plant development. **[16]**

Q2) a) Discuss meristem as dynamic centers of cell regeneration. **[8]**

b) Write on gene expression during transition phase : Vegetative to reproductive. **[8]**

Q3) Write short answer of following :

a) Comment on oogamospory and apospory. **[8]**

b) Explain molecular genetics of cell incompactability. **[8]**

Q4) Write short notes on any two of following : **[16]**

a) SAM.

b) Parthenogenesis.

c) Apomixis.

P.T.O.

SECTION - II

Q5) What is plant tissue culture? Explain nutritional requirements of explant in PTC. [16]

Q6) a) Give on account of protoplast culture. [8]

b) Write on stages of micropropagation. [8]

Q7) Write short answers of following : [16]

a) Comment on production of secondary metabolites.

b) Explain embryo rescue technique.

Q8) Write short notes on any two of the following : [16]

a) Synthetic seeds.

b) Germplasm conservation.

c) Cryopreservation.



Total No. of Questions :8]

SEAT No. :

P3038

[5536]-32

[Total No. of Pages : 2

M.Sc. II

BOTANY

**BO-3.2 : Environmental Botany and Plant Diversity
(2008 Pattern) (semester-III)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions, taking at least two questions from each section.*
- 2) Answer to the two sections should be written in the separate answer book.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) What is population ecology? Give its characters and add a note on factors affecting natality and mortality.

- Q2)** a) Comment on ecological pyramids. Studied by you.
b) Give recent approaches in the study of environmental science and add a note on GIS.

Q3) Write short answers of the following.

- a) Describe in detail endemism.
- b) What is survivorship curve?

Q4) Write short notes on any two of the following.

- a) Structure of community
- b) Eutrophication
- c) Kyoto protocols.

P.T.O.

SECTION-II

Q5) What is EIA? Explain mining study with its scope, process and necessity.

- Q6)** a) What is species diversity? Comment on alpha and beta diversity.
b) Explain conservation and management. Add a note on CITIES.

Q7) Write short answers of the following.

- a) What is value and use of diversity? Comment on its socio-ecological approach.
b) Comment on marine ecosystem. Add a note on its biotic and abiotic components.

Q8) Write short notes on any two of the following.

- a) Carbon sink
b) Eutrophication
c) EMP.



Total No. of Questions :8]

SEAT No. :

P3039

[5536]-34

[Total No. of Pages :2

M.Sc.- II

BOTANY

**BO.3.32: Mycology & Plant Pathology-I
(2008 Pattern) (Semester -III) (Special Paper-I)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Attempt a total of five questions from the following select atleast two questions from each section.*
- 2) Answer to the question from each sections should be written in separate answer book.*
- 3) Figures to the right indicate full marks.*
- 4) Neat labelled diagrams must be drawn wherever necessary.*

SECTION-I

Q1) What are fungi? Give classification of fungi as per Bessey's system. [16]

Q2) Answer the followings.

- a) Write briefly on Acrasiomycetes. [8]
- b) Comment on thallus structure in Mastigomycotina. [8]

Q3) a) Describe conidiomata types in deuteromycotina. [8]

b) Explain life cycle pattern in Rusts. [8]

Q4) Write short notes on (any two): [16]

- a) Plasmodial types
- b) Heterothallism
- c) Fruit bodies in Ascomycotina

P.T.O.

SECTION-II

Q5) Discuss various colonization strategies among fungi. [16]

Q6) Answer the following:

a) Write briefly on rhizosphere fungi. [8]

b) Comment on seed borne fungi. [8]

Q7) a) How fungi act as tools for genetical studies. [8]

b) Write on phylloplane fungi. [8]

Q8) Write short notes on (any two): [16]

a) Fungal growth

b) Fungal sex hormones

c) Carbon nutrition in fungi.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3040

[5536]-35

M.Sc.- II

BOTANY

BO.3.33: Angiosperms

(2008 Pattern) (Semester -III) (Special Paper - I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions selecting at least two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer books.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Give the detail account of any two botanical gardens of India. **[16]**

Q2) a) Explain the procedure for typification.

b) Explain centrospermae as heterogenous assemblage. **[16]**

Q3) a) Comment on Herbarium as multipurpose institute.

b) Give the role of Herbarium in systematics. **[16]**

Q4) Write short notes on (any two). **[16]**

a) Amentiferae

b) Digital Herbarium

c) Utility of embryological data in systematics.

P.T.O.

SECTION-II

Q5) Comment on angiosperm diversity of western Ghats. [16]

Q6) Describe the following. [16]

- a) Systematics as a synthetic subject.
- b) Comparative account of Biosystematics categories and systematic categories.

Q7) Give Objectives and functions of Botanical Garden. [16]

Q8) Write notes on (any two) [16]

- a) ICBN Principles
- b) Effective and valid publications
- c) Numerical taxonomy



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3041

[5536]-36

M.Sc.-II

BOTANY

**BO-3.34: Plant Physiology-I
(2008 Pattern) (Semester -III) (Special Paper-I)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions taking at least two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Give an account of drought resistance mechanism in plants. **[16]**

Q2) a) Discuss the effect of salt stress on plant metabolism. **[8]**

b) Comment on causes of water logging and injury in plants. **[8]**

Q3) a) Give an account of transgenics for drought stress tolerance. **[8]**

b) Comment on stress induced proteins. **[8]**

Q4) Write note on any two. **[16]**

a) Abiotic stress

b) Role of proline in water stress.

c) Saline-alkaline soils.

P.T.O.

SECTION-II

Q5) What is an ion toxicity? Explain mechanism of tolerance to ion toxicity in plants. [16]

Q6) a) Explain the mechanism of UV tolerance in plants. [8]

b) Give the scope and importance of xenobiotic stress study. [8]

Q7) a) Give the effects of Al toxicity on plant metabolism. [8]

b) Describe the effects of UV-B radiation on plant metabolism. [8]

Q8) Write note on any two. [16]

a) Scavenging of free radicals.

b) Radiation stress

c) Photoinhibition



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3042

[5536]-37

M.Sc.-II

BOTANY

**BO-3.35: Genetics, Molecular Biology & Plant Breeding - I
(2008 Pattern) (Semester -III) (Special Paper-I)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions, taking at least two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Give the types of polyploids. Describe role of Allopolyploids in evolution of crop plants. **[16]**

Q2) a) Enlist types of chromosome banding. Give its applications. **[8]**

b) Comment on chromosome morphology. **[8]**

Q3) Explain:

a) Extranuclear inheritance mechanism. **[8]**

b) Site specific recombination method. **[8]**

Q4) Write note on any two. **[16]**

a) YAC

b) Karyotype

c) Chromosome mapping

P.T.O.

SECTION-II

Q5) Explain methods of breeding in vegetatively propagated plants. [16]

Q6) a) Write on handling of mutagenic treated material in succeeding generations. [8]

b) Comment on pure line selection method for self pollinated crops. [8]

Q7) Explain:

a) Factorial experimental design. [8]

b) Technique of hybridization. [8]

Q8) Write note on any two. [16]

a) Level of significance

b) Centres of origin of crop plants

c) Chlorophyll mutants



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3043

[5536]-38

M.Sc. - II

BOTANY

BO-3.36 : PLANT BIOTECHNOLOGY - I
(2008 Pattern) (Semester -III) (Special Paper-I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt total of five questions. select at least two questions from each section.*
- 2) *Answer to the two sections should be written in separate answer book.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Write advantages of plant tissue culture. Explain callus culture method. [16]

Q2) Answer the following.

- a) Write on cell suspension culture. [8]
- b) Comment on basic principles of plant tissue culture. [8]

Q3) a) Explain role of plant growth regulators in PTC. [8]

- b) Describe somatic embryogenesis. [8]

Q4) Write short notes on any two. [16]

- a) Objectives of PTC.
- b) Factors influencing morphogenesis
- c) Stock solutions.

P.T.O.

SECTION-II

Q5) Discuss different aspects of Green House Technology. [16]

Q6) Answer the following.

a) Write importance of cryopreservation. [8]

b) Single cell proteins are novel foods. Justify. [8]

Q7) a) Explain phytoremediation. [8]

b) Discuss different types of mycorrhizae. [8]

Q8) Write short notes on (any two). [16]

a) Methods of cryopreservation

b) BGA

c) Plant derived Vaccines



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3044

[5536]-39

M.Sc. II

BOTANY

BO-3.37 Plant Biodiversity-I

(2008 Pattern) (Semester -III) (Special Paper-I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions taking at least two questions from each section.*
- 2) Answer to the two sections should be written in separate answer books.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION-I

Q1) What is meant by identification of diversity Hotspots. Add a note on endemism and biodiversity. **[16]**

Q2) Comment on:

- a) Methods of assessing and measuring biodiversity. **[16]**
- b) The origin of species and species concept

Q3) Explain: **[16]**

- a) Allozyme method.
- b) Techniques for monitoring plant biodiversity.

Q4) Write short notes on any two of the following. **[16]**

- a) Tropical moist forest ecosystems.
- b) Landscape level of biodiversity
- c) Current magnitude in plant diversity

P.T.O.

SECTION-II

Q5) Describe Bryophyte and Gymnosperm diversity w.r.t.habit habitat and distribution. [16]

Q6) Explain- [16]

- a) Agroecosystems, urban and periurban diversity.
- b) Origin and evolution of cultivated species diversity.

Q7) Comment on: [16]

- a) Fungal diversity w.r.t. no. of species and habit habitat distribution and evolutionary success.
- b) Arid and semi arid ecosystems.

Q8) Write notes on any two of the following. [16]

- a) Distribution of higher plant species diversity
- b) Major ecosystems of the world.
- c) Act of domestication.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3045

[5536]-40

M.Sc. II

BOTANY

BO.3.38 : Seed Technology

(2008 Pattern) (Semester -III) (Special Paper-I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions taking at least two questions from each section.*
- 2) Answer to the two sections should be written in separate answer book.*
- 3) All questions carry equal marks.*
- 4) Neat labelled diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Give an account of development and structure of female gametophyte. [16]

Q2) a) Discuss physiological and biochemical changes during seed germination. [8]

b) Define seed dormancy and describe types of it. [8]

Q3) a) Comment on entry points and mechanism of seed transmission, [8]

b) Explain factors affecting seed germination. [8]

Q4) Write notes on any two of the following. [16]

- a) Seed industries in India.
- b) Seed vigour
- c) Concept of seed technology.

P.T.O.

SECTION-II

Q5) Give an account of life cycle pattern of pulses pest. Add a note on its control measure. [16]

Q6) a) Discuss constructional features for good seed warehouse. [8]

b) Explain causes of seed deterioration. [8]

Q7) a) Comment on storage grain pest. [8]

b) Discuss impact of seed infection on seed and planting value. [8]

Q8) Write notes on any two of the following. [16]

a) Mechanism of seed transmission

b) Seed storage

c) Scope of seed pathology



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3047

[5536]-42

M.Sc. - II

BOTANY

BO - 4.2 : Applied Botany

(2008 Pattern) (Old Course) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) Answer any five questions, taking atleast two questions from each section.*
- 2) Answers to the two sections should be written in separate answer books.*
- 3) All questions carry equal marks.*
- 4) Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is BGA? Describe in detail the mass production technology of Spirulina.
Add a note on its nutritive value.

Q2) a) Explain the role of fungi in Alcohol, brewing and wine industry.
b) What are measures of central tendency? Explain Median with suitable example.

Q3) a) Explain how fungi are used in particulate absorption and biosorption.
b) Explain the production of Ergot alkaloid. Add a note on its applications.

Q4) Write explanatory notes on ANY TWO of the following.

- a) Fungi as Mycofungicides
- b) Sea weeds and its applications
- c) Role of white rot fungi in bioremediation

P.T.O.

SECTION - II

- Q5)** a) Give an account of submerged and shallow fermentation technology.
b) Fungi as antitumor and antiviral agents.

Q6) What is χ^2 - test? Explain the procedure with suitable example and add a note on its applications.

- Q7)** a) Web based tools for sequence searches.
a) Role of fungi as human pathogens.

Q8) Write notes on ANY TWO.

- a) Correlation
b) Fungi in allergy
c) Fungal Fermented food

