

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3212

[5032] - 11

M.Sc. - I

BOTANY

**Bo - 1.1 : Systematics of Non Vascular Plants
(2008 Pattern) (New Course) (Semester - I)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answer any Five questions, taking at least TWO questions from each sections.*
- 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) Discuss the status of algae in eight kingdom system and add a note on algal reserve food and thallus organisation. **[16]**

Q2) Give an account of the order Anthocerotales. **[16]**

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

- a) Give characters of chrysophyta.
- b) Comment on range of thallus in Chlorophyta.

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

- a) Heterocyst interrelationships.
- b) Characters of Phaeophyta.
- c) Principles of plant systematics.

P.T.O.

SECTION - II

- Q5)** Give account of Deuteromycotina with reference to thallus structure, spore producing structures and life cycle pattern in any one. **[16]**
- Q6)** Give an outline classification of fungi with reasons proposed by Alexopoulos, Mims and Blackwell and add a note on Symbiotrophs. **[16]**
- Q7)** Write short answers of the following: **[16]**
- a) Comment on parasexuality.
 - b) Describe structure of plasmodium and fruiting body in Myxomycota.
- Q8)** Write short notes on any two of the following. **[16]**
- a) Evolution of sex in fungi.
 - b) Outline classification of bryophytes as per smith.
 - c) Ecological significance of bryophytes.



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages :2

P3213

[5032]-12

M.Sc. - I

BOTANY

**Bo - 1.2 : Plant Physiology and Biochemistry
(2008 Pattern) (Semester - I) (New Course)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answer any five questions taking at least TWO questions from each sections.*
- 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) Explain the organisation of mitochondrial ETS. Add a note on significance of EMP, pathway, TCA cycle and PPP.

Q2) Give an outline of photorespiration and explain why it is higher in C₃ plants than C₄ plants?

Q3) Explain:

- a) Biosynthesis of ABA,
- b) Mechanism of abiotic stress to tolerance.

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

- a) Flowering initiation?
- b) Mechanism of phloem unloading?
- c) Signal transduction in guard cell.

P.T.O.

SECTION - II

Q5) Explain synthesis and breakdown of glucose.

Q6) What are isoenzymes? Explain various factors affecting enzyme activity.

Q7) a) Explain properties of amino acids.

b) Write a note on NOD factor.

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

a) Classification of lipids,

b) Binding and activation energy?

c) Pathway of terpenoid biosynthesis.



Total No. of Questions : 8]

SEAT No. :

P3214

[5032] - 13

[Total No. of Pages :2

M.Sc-I

BOTANY

**BO-1.3 : Genetics and Plant Breeding
(2008 Pattern) (Semester-I) (New)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answer any Five, questions, taking at least Two questions from each sections.*
- 2) *Answer to the Two sections should be written in Separate answer books.*
- 3) *All questions carry Equal marks.*
- 4) *Neat diagram must be drawn wherever necessary.*

SECTION-I

Q1) Define mutation Explain the physical and chemical mutagens with respect to their mechanism of action. **[16]**

Q2) With the help of suitable examples explain complementary, Epistatic and additive interaction of genes. **[16]**

Q3) Explain in detail of the following:

- a) Gene and genotype frequencies, **[8]**
- b) Crossing over in inversion hetero zygotes **[8]**

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

- a) Duplication,
- b) Multiple factors hypothesis,
- c) Genetic erosion.

P.T.O

SECTION-II

Q5) What is cytoplasmic inheritance ? With the help of suitable example explain the interaction between nuclear and cytoplasmic genes. **[16]**

Q6) What is male sterility? With the help of suitable examples explain types and mechanisms of male sterility. **[16]**

Q7) Explain:

a) Concept of inbreeding depression and its effects in breeding. **[8]**

b) Role of genetic diversity in crop improvement. **[8]**

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

a) Aneuploidy and its importance,

b) Karyotype analysis

c) Effect of selection on hardy weinberg equilibrium.

✓ ✓ ✓

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3215

[5032]-21

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 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 diagram must be drawn wherever necessary.*

SECTION-I

Q1) Describe structure of gametophyte and sporophyte of osmundales. [16]

Q2) Draw and describe external and internal morphology of sporophyte and gametophyte of Ginkgoales. [16]

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

- a) Comment on Angiosperms as highly evolved, dominant and successful group of plants.
- b) Describe merits and demerits of cronquist system.

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

- a) Ephedrales
- b) Alternation of generations in pteridophytes
- c) Genome analysis

SECTION-II

Q5) Describe the class magnoliopsida. [16]

- Q6)** a) Briefly write cladistics in Taxonomy.
b) Life cycle pattern in gymnosperms.

[16]

P.T.O.

Q7) a) Give salient features of coniferales.

b) State principles used in assessing relationships and delimitations of taxa and rank.

[16]

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

[16]

a) Fertilisation in Gymnosperms

b) Evolution in Angiosperms

c) Phytochemistry.



Total No. of Questions : 8]

SEAT No. :

P 3216

[5032] - 22

[Total No. of Pages :2

M. Sc. - I

BOTANY

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates :

- 1) *Attempt a total of five questions from the following, selecting at least two questions from each section.*
- 2) *Answers to the questions from each section should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Describe ultrastructure of mitochondria and add a note on its functions. [16]

Q2) a) Write structural organization of plant cell. [8]

b) Describe organization of nucleosome. [8]

Q3) a) Explain the technique of gel filtration chromatography. [8]

b) Give the concept of cell signaling in plants. [8]

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

a) Mitotic cell division.

b) Golgi apparatus.

c) Micrometry.

SECTION - II

Q5) What is electrophoresis? Explain the concept of isoelectric focussing. [16]

Q6) a) Describe ultrastructure and function of cell wall. [8]

b) Explain in brief ethylene activated two component signaling pathway. [8]

Q7) a) Describe molecular organization of telomers. [8]

b) Give an ultrastructure and functions of plasmodesmata. [8]

P.T.O.

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

[16]

- a) Lysosomes.
- b) Cell differentiation.
- c) Immunoprecipitation.



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages :2

P3217

[5032]-23

M.Sc. - I

BOTANY

**BO - 2.3 : Molecular Biology and Genetic Engineering
(2008 Pattern) (Semester - II)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answer any five questions, selecting at least two Questions from each section.*
- 2) *All questions carry equal marks.*
- 3) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Write mechanism of prokaryotic DNA replication.

Q2) a) Describe structure & role of promoters & terminators.

b) Explain chemical, thermal & spectroscopic properties of DNA.

Q3) a) Give structure & uses of any two cloning vectors.

b) Discuss steps in construction of Gene libraries & their applications.

Q4) Write short notes on Any Two of the following:

a) Cot curve & cot $\frac{1}{2}$ value.

b) Excision repair mechanism.

c) Transcription Apparatus.

P.T.O.

SECTION - II

Q5) Describe any one method of DNA sequencing.

Q6) a) Explain concept of Lac operon.

b) Give an account of post translational control of protein synthesis.

Q7) a) Write transgenic approaches for fungal disease resistance.

b) Discuss the procedure of southern blotting technique & enlist its applications.

Q8) Write short notes on Any Two of the following:

a) Restriction endonucleases.

b) Polymerase Chain Reaction.

c) Bacteriophage vectors.



Total No. of Questions : 8]

SEAT No. :

P 3218

[5032] - 31

[Total No. of Pages :2

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) *Attempt any five questions, taking at least 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) *Draw neat labelled diagrams wherever necessary.*

SECTION - I

Q1) Explain the morphological, histological and cytological changes at shoot apex during transition from vegetative to reproductive phase in flowering plants.

Q2) a) Write on Extrinsic factors of plant development.

b) Explain Indirect organogenesis.

Q3) a) What is male germ unit?

b) Explain in brief somatic embryogenesis.

Q4) Write short notes on Any Two of the following:

a) Gynogenesis.

b) Light Mediated control of development.

c) Synthetic seeds.

P.T.O.

SECTION - II

Q5) Describe the nutritional requirements of explants in PTC. Write roles of PGRs and comment on types of culture systems.

Q6) a) Discuss Molecular basis of leaf development.

b) Mention the types of cultures used for production of secondary metabolites in vitro. Explain any one.

Q7) a) What are the applications of Developmental Botany?

b) Explain embryo culture.

Q8) Write short notes on Any Two of the following :

a) Concept of totipotency.

b) Transgenic plants.

c) Callus culture.



Total No. of Questions : 8]

SEAT No. :

P3219

[5032]-32

[Total No. of Pages :2

M.Sc.

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 selecting at least Two question 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 Soil pollution? Discuss the sources & types of soil pollutants. Comment on its impact on soil quality.

- Q2)** a) Explain Nitrogen Cycle.
b) Write on phytogeographic regions of India.

- Q3)** a) Describe the mangroove ecosystem.
b) What is eutrophication? Give the control measures for eutrophication.

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

- a) Green house gases & their impact on global warming.
- b) GPS and its applications.
- c) Endemism.

P.T.O.

SECTION - II

Q5) Give the types of biodiversity. Explain the origin of species diversity.

Q6) a) Discuss factors affecting the biodiversity.

b) Comment on CBD.

Q7) a) What is EIA? Discuss any one case study.

b) Give the ecological effect of heavy metals.

Q8) Write note on any two of the following:

a) Phytoextraction.

b) Medicinal & Economical value of biodiversity.

c) Alpha and Beta diversity.



Total No. of Questions : 8]

SEAT No. :

P3220

[5032]-34

[Total No. of Pages : 2

M.Sc. - II

BOTANY

**BO - 3.32 : Mycology and Plant Pathology - I (Special Paper - I)
(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 books.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Give general characters of fungi. Write Ainsworth's system of fungal classification.

Q2) a) Comment on plasmodiophoromycetes.

b) Explain sporangia to conidia evolution in Mucorales.

Q3) a) Describe fruit bodies in ascospore producing fungi.

b) Write briefly on snout fungi.

Q4) Write notes on any two:

a) Lichens.

b) Algal and protozoan ancestry of fungi.

c) Flagellated fungi.

P.T.O.

SECTION - II

Q5) Explain with examples ruderal and stress tolerant strategies among fungi.

Q6) a) How fungi are associated with higher plants and algae?

b) Comment on seed borne fungi.

Q7) a) Discuss genetical aspects of plant pathogenicity host resistance and virulence.

b) Explain fungal habitats.

Q8) Write explanatory note on any two.

a) Carbon nutrition of fungi.

b) Fungal growth.

c) Air borne fungi.

x x x

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P3221

[5032]-35

M.Sc. (Part - 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, taking at least 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 diagrams must be drawn WHEREVER necessary.*

SECTION - I

Q1) Discuss the role of organisation units and facilities of a typical herbarium as an institute organisation.

- Q2)** a) Comment on 'garden versus natural vegetation'.
b) Write on biodiversity of angiosperms in world.

- Q3)** a) Describe analysis of biosystematics data.
b) Comment on systematic position of Ranunculaceae.

Q4) Write notes on any two:

- a) Review of code of botanical nomenclature.
- b) Systematics as a synthetic study.
- c) Aims and objectives of biosystematics.

P.T.O.

SECTION - II

Q5) Discuss the role of botanical gardens in systematics and floristics. Add a note on botanical gardens as multipurpose resource institutes.

Q6) a) Write a note on digitized herbaria - advantages and limitations.

b) Describe main divisions of ICBN.

Q7) Give systematic position and primitive features of Loranthaceae and Santalaceae.

Q8) Write notes on any two.

a) Numerical Taxonomy.

b) Major herbaria in world.

c) ICBN.

x x x

Total No. of Questions : 8]

SEAT No. :

P3222

[5032]-36

[Total No. of Pages : 2

M.Sc. - II

BOTANY

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt a total of five questions from the following, selecting at least two questions from each section.*
- 2) *Answers to the questions from each section should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What are saline, saline-alkaline and sodic soils? Give the causes of their formation and strategies for improvement. **[16]**

Q2) a) Discuss scope and importance of xenobiotic stress. **[8]**

b) Write role of proline, glycine betaine and polyols in plants exposed to water stress. **[8]**

Q3) a) Explain mechanism of ion stress tolerance. **[8]**

b) Write the mechanism of generation of free radicals and their effects on plants. **[8]**

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

a) Water logging.

b) Radiation stress.

c) Concept and scope of stress physiology.

P.T.O.

SECTION - II

- Q5)** Describe effects of uv-A and uv - B radiation on plant metabolism. Add a note on mechanism of uv - tolerance. **[16]**
- Q6)** a) Comment on effects of salt stress on plant metabolism. **[8]**
b) Explain toxicity of Fe and Zn on plant metabolism. **[8]**
- Q7)** a) Explain in brief the concept of water stress. **[8]**
b) Write on scavenging of free radicals in plants. **[8]**
- Q8)** Write explanatory notes on any two of the following. **[16]**
- a) Abiotic stress.
- b) Mechanism of flooding tolerance.
- c) Xenobiotic stress.

x x x

Total No. of Questions : 8]

SEAT No. :

P3223

[5032]-37

[Total No. of Pages : 2

M.Sc. - II

BOTANY

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions, atleast Two questions from each section.*
- 2) *Answers to the 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 an account on morphology of eukaryotic chromosome.

Q2) a) Comment on fine structure of rII locus in T₄ phage.

b) Write an account of karyotype evolution.

Q3) a) What is extranuclear inheritance. Give its characteristics.

b) Give an account of applications of haploids in cytogenetics & plant breeding.

Q4) Write notes on any two:

a) Null Hypothesis.

b) Accessory chromosomes.

c) Autopolyploids.

P.T.O.

SECTION - II

Q5) Discuss the production of hybrid seed using cytoplasmic genetic male sterility.

Q6) a) Explain the procedure of pure line selection and its applications in plant breeding.

b) Discuss the mutation treatment methods.

Q7) a) Give an account on objectives of plant breeding.

b) Describe clonal selection method.

Q8) Write notes on any two of the following:

a) Latin square design.

b) Applications of multiple correlations in crop improvement.

c) Recurrent selection.

x x x

Total No. of Questions : 8]

SEAT No. :

P3224

[5032]-38

[Total No. of Pages : 2

M.Sc. - II

BOTANY

**BO - 3.36 : Plant Biotechnology - I (Special Paper - I)
(2008 Pattern) (Semester - III) (Part - II)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer any five questions, selecting at least two questions from each section.*
- 2) *All questions carry equal marks.*
- 3) *Neat labelled diagrams should be drawn wherever necessary.*

SECTION - I

Q1) Describe organization and design of PTC laboratory. Explain importance of different units.

Q2) a) Write different factors influencing morphogenesis in vitro.
b) Explain different pathways of organogenesis.

Q3) a) Write in detail genetic basis of somaclonal variations.
b) Comment on protocol and applications of callus culture.

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

- a) Transgenics for virus resistance.
- b) Cell suspension culture.
- c) Objectives & goals of PTC.

P.T.O.

SECTION - II

Q5) What are transgenic plants? How are they developed? Mention role of transgenic plants in abiotic stress tolerance with examples.

Q6) a) Discuss role of PGRs in PTC.

b) What is somatic embryogenesis? Write its applications.

Q7) a) Explain procedure of cryopreservation technique in detail.

b) Describe different methods of phytoremediation.

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

a) Single cell Proteins.

b) Green House Technology.

c) Somatic Hybridization.

x x x

Total No. of Questions : 8]

SEAT No. :

P3225

[5032]-39

[Total No. of Pages : 2

M.Sc. - II

BOTANY

**BO - 3.37 : Plant Diversity - I (Special Paper - I)
(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 sheets.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Describe the current magnitude of plant diversity and comment on factors affecting species distribution.

Q2) Comment on:

- a) Levels of biodiversity.
- b) Major episodes in the evolution of life.

Q3) a) Describe methods of assessing and measuring biodiversity

- b) Describe nature and origin of genetic variation.

Q4) Write short notes on any two:

- a) The origin of species and species concept.
- b) Techniques for monitoring plant diversity.
- c) Genetic diversity verses transgenic organisms.

P.T.O.

SECTION - II

Q5) Describe angiosperm diversity in detail.

Q6) Explain:

- a) Global distribution of species richness.
- b) Diversity in domesticated species.

Q7) Comment on:

- a) Tropical moist forest ecosystem.
- b) Diversity indices based on species.

Q8) Write short notes on any two:

- a) Origin and evolution of cultivated species diversity.
- b) Arctic and Alpine ecosystems.
- c) Fungal diversity.

x x x

Total No. of Questions : 8]

SEAT No. :

P3226

[5032]-40

[Total No. of Pages : 2

M.Sc.

BOTANY

**BO - 3.38 : Seed Technology (Special Paper - I)
(2008 Pattern) (Semester - III)**

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 book.*
- 3) *All questions carry equal marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Give an account of development and structure of male gametophyte.

Q2) Explain:

- a) Methods of breaking seed dormancy.
- b) Types of seed germination.

Q3) Describe:

- a) Structure of megasporangium.
- b) Entry point and mechanism of seed transmission.

Q4) Write notes on any two of the following:

- a) Opportunities of seed technology.
- b) Quarantine for seed.
- c) Seed quality characteristics.

P.T.O.

SECTION - II

Q5) Give the life cycle pattern of sugar cane pest. Add a note on it's control measure.

Q6) Comment on:

- a) Constructional Features for good seed warehouse.
- b) Sanitation and seed treatment.

Q7) Explain:

- a) Storage grain pest.
- b) Causes of seed deterioration.

Q8) Write notes on any two of the following:

- a) Seed industries in India.
- b) Chemical composition of seed.
- c) Relation of insects and plants.

x x x

Total No. of Questions : 8]

SEAT No. :

P3227

[5032]-41

[Total No. of Pages : 2

M.Sc.-II

BOTANY

**BO-4.1:Plant Resources and Evolution
(2008 Pattern)(Semester-IV)**

Time :3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt a total of five questions from the following,selecting at least two questions from each section.*
- 2) *Answers to the questions from each section should be written in separate answer Books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labeled diagrams must be drawn wherever necessary*

SECTION-I

Q1) Give microscopic and physical evaluation for standardization of crude drugs. **[16]**

Q2) a) Discuss the role of morphology and anatomy in Forensic botany **[8]**
b) Comment on therapeutic uses of fruit and seed. **[8]**

Q3) a) Comment on quantitative and qualitative analysis of carbohydrates and proteins. **[8]**
b) Describe migration and random genetic drift during evolution **[8]**

Q4) Write explanatory notes on any two: **[18]**
a) Concept of natural selection
b) Cordaitales
c) Concept of Opairn and Halden

SECTION-II

Q5) Describe two resins and two fibre yielding crops w.r.t. botanical name, part used chemical constituents and therapeutic uses. **[16]**

P.T.O.

Q6) a) Write major events in evolutionary time scale. [8]

b) What is chemotaxonomy? Give its role in criminology. [8]

Q7) a) Explain sexual selection in the mechanism of evaluation. [8]

b) Discuss molecular tools in phylogeny. [8]

Q8) Write explanatory notes on any two: [18]

a) Mendelism

b) Botanical gardens

c) Importance of ethnobotany.



Total No. of Questions : 8]

SEAT No. :

P 3228

[5032] - 42

[Total No. of Pages :2

M. Sc. - II

BOTANY

**BO - 4.2: Applied Botany
(2008 Pattern) (Semester -IV)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates :

- 1) *Answer any five questions selecting at least 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 diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What are algal blooms? Explain how algae act as indicators of Water quality.

- Q2)** a) Discuss methods and necessity of sea farming.
b) Comment on production technology and nutritive value of spirulina.

- Q3)** a) Explain production of fungal antibiotics.
b) Discuss methods of fermentation.

Q4) Write notes on Any Two :

- a) Mycoweedicides.
- b) Types of Mycorrhizae.
- c) Fungal organic acids.

SECTION - II

Q5) Describe in detail ringworm and aspergillosis.

- Q6)** a) Explain role of fungi in bioremediation and treatment of effluents.
b) Comment in nucleic acid and protein sequence data base.

P.T.O.

Q7) a) Write on Regression analysis. With example.

b) Briefly write on confidence interval and error level of significance.

Q8) Write explanatory notes on Any Two :

a) t - Test.

b) ANNOVA.

c) Alcohol production.



Total No. of Questions :8]

SEAT No. :

P3229

[5032]-44

[Total No. of Pages :2

M.Sc. - II

BOTANY

**BO- 4.42: Mycology and Plant Pathology - II
(2008 Pattern) (Special Paper - II) (Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Attempt any five questions, taking at least 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) Draw neat labelled diagrams wherever necessary.*

SECTION -I

Q1) What are primary and secondary metabolites of fungal origin? Add a note on solid state and submerged fermentation.

Q2) a) Comment on role of fungi in wine and brewing industry.

b) Write on immunoregulators.

Q3) a) Explain role of fungi in mineral biotechnology and Fungal textiles.

b) Discuss applications of mycorrhiza in agriculture.

Q4) Write notes on Any Two of the following:

a) Mycofungicides and mycoweedicides.

b) Ergot alkaloids.

c) Antitumor and antiviral agents of fungal origin.

P.T.O.

SECTION -II

Q5) Discuss Tinea and its clinical types. Add a note on aspergillosis.

Q6) a) Write on harmful activities of fungi.

b) Comment on any four fungal symptoms and diseases.

Q7) a) Describe role of environment in plant diseases.

b) Give an account of seed borne pathogens.

Q8) Write explanatory notes on Any Two of the following:

a) Pathogenesis.

b) Defense mechanisms in plant.

c) Rust and powdery mildews.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3230

[5032]-45

M.Sc. - II

BOTANY

**BO-443: Angiosperms (Special Paper - II)
(2008 Pattern) (Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answer any five questions, selecting at least two questions from each section.*
- 2) Answers to the questions from each section 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) Describe ultrastructure and biochemistry of pollens.

Q2) a) Comment on embryogenesis.

b) Give selection of tree species for public garden.

Q3) a) Discuss distribution of the elements of wood in L.S.

b) Explain floral calender and floral fidelity.

Q4) Write short notes on Any Two of the following:

a) VAM application.

b) Pollen storage.

c) Elements of wood.

P.T.O.

SECTION -II

Q5) Describe ultrastructure and biochemistry of any one wood element.

Q6) a) Write on practices in arboriculture.

b) Give ultrastructure of endosperm.

Q7) a) Explain growth, development and maturation of pollens.

b) Comment on Agroforestry.

Q8) Write short notes on Any Two of the following:

a) Pollen based industries.

b) Apomixis.

c) Pollen culture.

EEE

Total No. of Questions : 8]

SEAT No. :

P3231

[5032]-46

[Total No. of Pages :2

M.Sc.

BOTANY

**Bo - 4.44 : Plant Physiology (Special Paper - II)
(2008 Pattern) (Semester - IV)**

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) Write on defense chemicals and add a note on structural defense mechanism in plants.

- Q2)** a) Comment on effect of bacterial infection on plant metabolism.
b) Explain the mechanism of electron transport.

- Q3)** a) Discuss the effects of allelochemicals on plant metabolism.
b) Write on biosynthesis of chlorophyll.

Q4) Write short notes on Any Two of the following:

- a) Bt-Brinjal.
- b) Circadian clock.
- c) Photoperiodism.

P.T.O.

SECTION - II

Q5) Discuss the recent research in crop physiology in India and abroad.

- Q6)** a) Comment on effect of global warming on plant metabolism.
b) Give the scope and importance of crop physiology.

- Q7)** a) Discuss the effect of green house gases on crop yield.
b) Write on pigment organization in thylakoid membrane.

Q8) Write short notes on Any Two of following:

- a) Phytochromes.
b) Carotenoid degradation.
c) Systematic acquired resistance (SAR).



Total No. of Questions : 8]

SEAT No. :

P3232

[5032]-47

[Total No. of Pages :2

M.Sc. - II

BOTANY

**Bo - 4.45 : Genetics, Molecular Biology and Plant Breeding - II
(2008 Pattern) (Special Paper - II) (Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

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

SECTION - I

Q1) Explain the procedure of southern hybridization. Add a note on its applications. [16]

Q2) a) Give an account of nucleic acid purification and analysis. [8]

b) Describe the procedure of DNA amplification by PCR. [8]

Q3) a) Describe the procedure of colony and plaque hybridization. [8]

b) Write on construction and screening of genomic libraries. [8]

Q4) Write in brief on Any Two of the following: [16]

a) DNA sequencing.

b) Nucleic acid labeling.

c) Genome size.

P.T.O.

SECTION - II

Q5) What is abiotic stress? Explain the mechanism of drought resistance in plants. [16]

Q6) a) Explain the mechanism of genetic control of Nutritional traits. [8]

b) Comment on the effects of drought on plant growth and development. [8]

Q7) a) Discuss the important considerations in breeding for improved quality. [8]

b) Write biotechnological approaches used in breeding for quality oil. [8]

Q8) Write in brief on any two of the followings: [16]

a) Organoleptic traits.

b) Antinutritional factors.

c) Dehydration tolerance.



Total No. of Questions : 8]

SEAT No. :

P3233

[5032]-48

[Total No. of Pages :2

M.Sc. - II

BOTANY

**Bo - 4.46 : Plant Biotechnology - II
(2008 Pattern) (Semester - IV) (Special Paper - II)**

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 labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Give an account of gene cloning vectors and their selections. **[16]**

Q2) a) Comment on sequencing strategies for whole genome sequencing. **[8]**

b) Explain chromosome walking and jumping. **[8]**

Q3) a) Describe Northern blotting technique and its applications. **[8]**

b) Write on structural and functional genomics. **[8]**

Q4) Write note on Any Two of the following: **[16]**

- a) Genome annotation.
- b) Gene synthesis machine.
- c) DNA polymorphism.

P.T.O.

SECTION - II

Q5) Describe mechanism of biological Nitrogen fixation. **[16]**

Q6) a) Comment on structural and functional proteomics. **[8]**

b) Write on Biotechnology in Agriculture. **[8]**

Q7) a) Describe Economics and legal issues of Biotechnology. **[8]**

b) Describe bioethical principles of Agricultural Biotechnology. **[8]**

Q8) Write notes on Any Two of the following: **[16]**

a) Nod genes.

b) Waste water treatment.

c) Ethical aspect of Agricultural Biotechnology.



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages :2

P3234

[5032]-49

M.Sc. - II

BOTANY

**BO - 4.47 : Plant Biodiversity (Special Paper - II)
(2008 Pattern) (Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answer any five questions, selecting at least 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 diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Explain the causes of loss of species diversity and the processes responsible for species extinction. **[16]**

Q2) What is exsitu conservation. Add a note on the types of exsitu conservation. **[16]**

Q3) Comment on **[16]**

- a) CITES
- b) Sacred Groves.

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

- a) Common features of threatened species.
- b) Role of UNESCO and ISBI in plant biodiversity management.
- c) Factors affecting ecosystem degradation and loss.

P.T.O.

SECTION - II

- Q5)** Explain the methodologies for valuation of biodiversity. Add a note on bioprospecting. **[16]**
- Q6)** Discuss the role of biotechnology in utilization of biodiversity. Add a note on impact of biological invasions on human health. **[16]**
- Q7)** Comment on **[16]**
- a) Organisations involved in Financing Biodiversity Management.
 - b) Clean Development Mechanism.
- Q8)** Write notes on any two of the following: **[16]**
- a) Meta databases and Virtual libraries.
 - b) Biopiracy.
 - c) Inbreeding depression.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P3235

[5032]-50

M.Sc.

BOTANY

BO- 448: Seed Technology

(2008 Pattern) (Special Paper - II) (Semester - IV)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answer any five questions, selecting at least two questions from each section.*
- 2) Answers 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 brief account of seed production in soyabean and tomato.

Q2) Explain:

- a) Characterisitics and importance of quality seed.
- b) Production and maintenance of nucleus and breeders seeds in self polluted crops.

Q3) Comment on:

- a) Preparation of seed for processing.
- b) Seed grader and air screen cleaner.

Q4) Write notes on any Two of the following:

- a) Electrostatic seed separators.
- b) Specific gravity separator and destoner.
- c) Layout of seed processing plants.

P.T.O.

SECTION -II

Q5) Give an account of artificial seed production. Add note on it's concept.

Q6) Comment on:

- a) Seed inspector powers and duties.
- b) Field inspection with reference to stages of crop.

Q7) Explain:

- a) Types of seed sampling.
- b) General procedure for seed certification.

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

- a) Growout test and quick viability test.
- b) DNA finger printing and ELISA test.
- c) History and development of seed testing.

EEE