

Total No. of Questions :8]

SEAT No. :

P2224

[4932]-11

[Total No. of Pages :2

M.Sc. I (Under Faculty of Science)

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 Fritsch. **[16]**

Q2) Give an outline classification of bryophytes with reasons proposed by G.M. Smith. **[16]**

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

- a) Write the differences between structural systematics and biochemical systematics.
- b) Comment on the algal habitats.

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

- a) Cell organisation in cyanophyta.
- b) Sexual reproduction in Rhodophyta.
- c) Gametophytes of Jungermanniales.

P.T.O.

SECTION-II

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

Q6) Give an outline of classification of fungi as per Alexopoulos, Mims and Blackwell. **[16]**

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

- a) Briefly write on: Describe Necrotrophs and Symbiotrophs.
- b) Give present status of fungi.

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

- a) Fungal sex hormones.
- b) Habitats of Bryophytes.
- c) Takkakiales.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2225

[4932]-12

M.Sc. -I

BOTANY

**BO-1.2: Plant Physiology and Biochemistry
(2008 Pattern) (Semester - I)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answer any five questions, taking 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) Explain the mechanism of photo respiration. Add a note on photoinhibition, O₂ and H₂ evolution.

Q2) Give an outline of TCA cycle and explain its regulation.

Q3) Explain

- a) Mechanism of action of cytokinin
- b) SPAC

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

- a) Metabolic changes during fruit ripening.
- b) Abiotic stress and its types.
- c) Uniport, symport and antiport.

P.T.O.

SECTION-II

Q5) Explain biosynthesis of flavonoids.

Q6) What is enzyme inhibition? Explain different types of enzyme inhibitions.

Q7) Explain

- a) Synthesis of glycogen.
- b) Classification of amino acids.

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

- a) Principles of thermodynamics.
- b) Nitrogen uptake.
- c) Phospholipids.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2226

[4932]-13

M.Sc. -I

BOTANY

**BO-1.3: Principles of Genetics and Plant Breeding
(2008 Pattern)**

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 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 cytoplasmic inheritance involving chloroplast genome.

Q2) Explain the concept of linkage, its types with suitable examples. Add a note on its applications.

Q3) Explain in detail.

- a) Polymeric genes
- b) Inheritance of quantitative characters in Zea mays

Q4) Write notes on any two of the following:

- a) Gene and Genotype frequencies.
- b) Concept of C - value.
- c) B - chromosome.

P.T.O.

SECTION-II

Q5) Describe the concept of self incompatibility, its types and applications in plant breeding.

Q6) Describe methods for inducing autopolyploidy and allopolyploidy. Add a note on its role in crop improvement.

Q7) Write on:

- a) Aneuploidy and its importance.
- b) Principles of combination breeding and applications.

Q8) Write notes on any two of the following:

- a) Male sterility and its types.
- b) Hybrid breeding in self pollinated crops.
- c) Genetic diversity and its importance.

EEE

Total No. of Questions :8]

SEAT No. :

P2227

[4932]-21

[Total No. of Pages :2

M.Sc.

BOTANY

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Attempt any five questions from the following, selecting atleast 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 a comparative account of sporophytes and gametophytes of psilotales. [16]
- Q2)** Compare female gametophytes of coniferales and Gnetales. [16]
- Q3)** a) Mention major Indian contributions to pteridology. [8]
b) Explain why Ginkgo is called a living fossil. [8]
- Q4)** Write explanatory notes on any two of the following: [16]
- a) Sporophyte of Equisetum.
 - b) Reduction in megasporophylls of cycads.
 - c) Heterospory in pteridophytes.

P.T.O.

SECTION-II

- Q5)** Explain the merits and limitations of Dahlgren's system of classification of Angiosperms. **[16]**
- Q6)** a) Enlist the salient features of Liliopsida. Mention the key characters for subclasses. **[8]**
- b) Explain with suitable examples the role of plastid genome analysis in systematics of angiosperms. **[8]**
- Q7)** a) Enlist the events leading to species formation. **[8]**
- b) Explain in brief the concept of ecotype. **[8]**
- Q8)** Write explanatory notes on any two of the following: **[16]**
- a) Key features for evolutionary success of angiosperms.
- b) Delimitation of taxa.
- c) Application of modern field tools in taxonomy of angiosperms.

EEE

Total No. of Questions :8]

SEAT No. :

P2228

[4932]-22

[Total No. of Pages :2

M.Sc.

BOTANY

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Attempt total of five questions from the following,selecting at least two questions from each section.*
- 2) *Answer 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) Describe ultrastructure and functions of plasma membrane. [16]

Q2) a) Describe biogenesis and ultrastructure of Golgi apparatus. [8]

b) Explain the ultrastructure of a nucleus. [8]

Q3) a) Explain in brief structure and organization of giant chromosomes. [8]

b) Describe molecular organization of centromere and telomere. [8]

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

a) Cell-cell interaction.

b) Packing of DNA in chromatin.

c) Plasmodesmata.

P.T.O.

SECTION-II

- Q5)** a) Explain the role of light responsive proteins in cell signalling. [8]
b) Describe plant wound signalling pathway. [8]
- Q6)** a) Mention the steps involved in irreversible cell differentiation. explain any one. [8]
b) Explain biogenesis of primary cell wall. [8]
- Q7)** a) Describe the principle and working of phase contrast microscope. [8]
b) Describe the construction and working of spectrofluorimeter. [8]
- Q8)** Write explanatory notes on any two of the following: [16]
a) High speed centrifuge.
b) Antigen - antibody interaction.
c) Ion exchange chromatography.

EEE

Total No. of Questions :8]

SEAT No. :

P2229

[4932]-23

[Total No. of Pages :2

M.Sc.

BOTANY

**BO-2.3: Molecular Biology and Genetic Engineering
(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 labeled diagrams must be drawn wherever necessary.*

SECTION-I

- Q1)** Give comparative account of different forms of DNA. Add a note on physical and chemical properties of B DNA. [8]
- Q2)** a) Explain organisation of prokaryotic gene. [8]
b) Mention the DNA repair mechanisms. Explain any one. [8]
- Q3)** a) Describe the role of different types of Sn RNPs in RNA splicing. [8]
b) Describe organisation of promoter and structure of RNA polymerase in prokaryotes. [8]
- Q4)** Write explanatory notes on any two of the following: [16]
a) Mismatch repair of DNA damage.
b) Operon concept.
c) Reverse transcription.

P.T.O.

SECTION-II

- Q5)** Describe the mechanism of targeting organelle proteins. Add a note on protein folding. [16]
- Q6)** a) Describe the salient features of any two cloning vectors. [8]
- b) Describe different strategies used for the selection of recombinants. [8]
- Q7)** a) Describe different methods of direct gene transfer in plants. [8]
- b) Describe the methodology of construction of cDNA libraries. [8]
- Q8)** Write explanatory notes on any two of the following: [16]
- a) Applications of bioinformatics.
- b) Ti and Ri plasmids.
- c) DNA finger printing.

EEE

Total No. of Questions :8]

SEAT No. :

P2230

[4932]-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) *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) Describe the structure of organization of seed embryo. **[16]**

Q2) Explain: **[16]**

- a) Morphological and histological changes in shoot apex during transition from vegetative to reproductive phase in plants.
- b) Stages involved in the development of male germ units.

Q3) Describe: **[16]**

- a) Interactions involved in double fertilization of triple fusion.
- b) Stages involved in development of globular embryo.

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

- a) Hormonal control during reproductive development.
- b) Cell fate mapping.
- c) Molecular genetics of gametophyte development.

P.T.O.

SECTION-II

Q5) Describe the methods of isolation and culture of protoplast. [16]

Q6) Give an account of application of plant tissue culture in agriculture. [16]

Q7) Explain: [16]

- a) Explain methods of germplasm conservation.
- b) Give protocol and significance of surface sterilization of an explant.

Q8) Write notes on any two: [16]

- a) Pleuripotency.
- b) Somaclonal variation.
- c) Organogenesis.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2231

[4932]-32

M.Sc. II

BOTANY

**BO-3.2: Environmental Botany & 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 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) What is water pollution? Enlist its types and sources. Explain its control measures.

Q2) Define community ecology. Give its forms and structure and add a note on physiognomy.

Q3) a) Explain biotic and abiotic relationship in grassland ecosystem.

b) Comment on population density and dispersion.

Q4) Write notes on any two:

a) Impact of soil pollution.

b) Effect of green houses gases.

c) Environmental protection Act.

d) IUCN categories.

P.T.O.

SECTION-II

Q5) Describe nature and ecological effect of heavy metal pollution.

Q6) Define restoration ecology. Describe concept of remediation of waste water.

Q7) a) Describe loss of biodiversity and its consequences on the human life.

b) Comment on major ecosystems of the world.

Q8) Write notes on any two:

a) Acid rain.

b) Economical and socioecological approach of biodiversity.

c) Ramsar.

d) Indian Biodiversity Act.

EEE

Total No. of Questions :8]

SEAT No. :

P2232

[4932]-34

[Total No. of Pages :2

M.Sc. II

BOTANY

**BO-3.32: Mycology and Plant Pathology - I
(2008 Pattern) (Special Paper - I) (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) What are mastigomycotina? Comment on Oomycetes. **[16]**

Q2) Write short answers of the following: **[16]**

- a) Briefly write on conidiomata.
- b) Give Alexopoulos's classification of fungi.

Q3) "Loculoasomycetes is heterogenous group". Amplify and Justify with examples. **[16]**

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

- a) Cellular slime molds.
- b) Puff balls and stinkhorns.
- c) Contributions of E.J. Butler and B.B-Mundkur.
- d) Ustilaginales.

P.T.O.

SECTION-II

Q5) Give an account of different aspects colonization strategies in fungi. Add a note on phylloplane fungi. **[16]**

Q6) Write short answers of the following: **[16]**

- a) Write briefly on fungal association with insects.
- b) Give an account of heterothallism.

Q7) Explain genetical aspects of pathogenicity, host resistance and virulence. Mention ideal characters of fungi for genetical studies. **[16]**

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

- a) Fungal growth.
- b) Sex hormones in fungi.
- c) Soil fungi.
- d) Seed borne fungi.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2233

[4932]-35

M.Sc. (Part- II)

BOTANY

BO-3.33: Angiosperms -I

(2008 Pattern) (Special Paper - I) (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) Explain the role of modern trends in systematics of Loranthaceae and centrospermae.

Q2) Explain:

- a) Principles, rules and recommendations of ICBN.
- b) Floristic composition of India.

Q3) Give objectives and functions of Herbaria. Add a note on central National Herbarium.

Q4) Write notes on (Any two):

- a) Digital Herbarium,
- b) Role of botanical gardens in floristics and public education,
- c) Numerical taxonomy.

P.T.O.

SECTION-II

Q5) “Amentiferae is a group of heterogenous assemblage of plants”. Discuss.

Q6) Explain:

- a) Systematic position of Ranunculaceae.
- b) Hot spots of biodiversity in India.

Q7) What is biosystematics? Describe different categories giving comparison with taxonomic categories.

Q8) Write notes on (Any two):

- a) Aims and objectives of biosystematics,
- b) Author citation,
- c) Systematic position of Trapa.

EEE

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2234

[4932] - 36

M.Sc. - II

BOTANY

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

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) Discuss the effect of salt stress on plant metabolism.

Q2) What is drought resistance? Explain the mechanism of drought resistance.

Q3) a) Give role of proline and stress induced proteins in water stress.

b) Explain the reclamation of saline - alkaline soils.

Q4) Write notes on any two of the following:

a) Causes of water logging.

b) Role of transgenics in drought stress.

c) Abiotic stress.

P.T.O.

SECTION - II

Q5) What is ion toxicity? Explain the mechanism of ion toxicity.

Q6) What is ROS? Explain the effects of ROS on plants.

Q7) a) Explain the effect of UV - B radiation on plant metabolism.

b) Comment on Al and Zn toxicity on plants.

Q8) Write notes on any two of the following:

a) Concept of ion stress

b) Xenobiotic

c) Scavenging of free radicals.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2235

[4932] - 37

M.Sc. - II

BOTANY

**BO - 3.35 : Genetics, Molecular Biology and Plant Breeding - I
(Semester - III) (2008 Pattern) (Special Paper - 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 books.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What are artificial chromosomes. Explain any two types of artificial chromosomes with their applications.

Q2) a) Comment on the importance of gene mapping in somatic cell genetics.
b) Explain origin and production of autopolyploids.

Q3) a) Give the mechanism of site - specific recombination.
b) Write on chi - square method with more than one degree of freedom.
c) Explain characterization and utility of alien addition and substitution lines.

Q4) Write notes on any two of the following:

- a) Chi - square test
- b) Allopolyploids
- c) Gene disruption

P.T.O.

SECTION - II

Q5) What are inbreds? Discuss method of development and isolation of inbreds.

Q6) What is bulk method? Give an account of procedure, merits and demerits of bulk method of plant breeding.

Q7) a) Explain the importance of correlation in plant breeding.

b) Write an account of the structure of nucleosome and its importance.

Q8) Write notes on any two of the following:

a) Population genetics and its importance.

b) Germplasm and its types.

c) Procedure of mutagenic treatment method.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2236

[4932] - 38

M.Sc.

BOTANY

BO - 3.36 : Plant Biotechnology - I

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Attempt 5 questions of which at least 2 questions must be from each section.*
- 2) Answers to the two sections should be written in separate books.*
- 3) All questions carry equal marks.*

SECTION - I

Q1) Define invitro culture. Explain the precautions required for preparation and handling of tissue culture media. Mention various stock solutions prepared during preparation of media. **[16]**

Q2) a) Draw the design of a plant tissue culture laboratory and describe the importance of any two units of laboratory. **[8]**

b) Explain the role of different plant growth regulators in plant Biotechnology. **[8]**

Q3) a) What are somoclonal variations? Explain a method of selection of a somaclone with suitable examples. **[8]**

b) Explain the landmarks in the development of plant biotechnology. **[8]**

P.T.O.

Q4) Write short notes on Any Two: **[16]**

- a) Organogenesis.
- b) Applications of meristem culture.
- c) Advantages of cell suspension culture.

SECTION - II

Q5) What are transgenic plants? Discuss with suitable example the development of biotic stress tolerance in transgenic plant to increase productivity. **[16]**

Q6) a) Explain various methods of selection of somatic hybrids. **[8]**

b) Discuss the role of cryopreservation in conservation of plant - biodiversity. **[8]**

Q7) a) What are haploids? Discuss their role in plant breeding. **[8]**

b) Describe the method of improvement of quality of plants by transgenics. **[8]**

Q8) Write short notes on Any Two: **[16]**

- a) Maintenance and management of Green house.
- b) Phytoremediation for organic and metal polluted sites.
- c) Distinguish between SCP production by algae and fungi.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2237

[4932] - 39

M.Sc. - II

BOTANY

BO - 3.37 : Plant Diversity

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

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 diagram must be drawn WHEREVER necessary.*

SECTION - I

Q1) Comment on current magnitude of plant diversity and describe factors affecting species distribution.

Q2) Comment on:

- a) Major episodes in the evolution of life in the context of environmental change.
- b) Techniques for monitoring of plant and fish diversity.

Q3) Comment on:

- a) Urban and peri - urban diversity and its importance.
- b) Hot - spots in India.

P.T.O.

Q4) Write short notes on any two:

- a) Scope of biodiversity.
- b) DNA based marker techniques.
- c) Geography and Domestication of cultivated species.

SECTION - II

Q5) Describe species inventory and comment on diversity indices based on species.

Q6) Explain:

- a) Pteridophyte diversity with respect to habit and distribution.
- b) Nature and origin of genetic variations w.r.t. genetic variations.

Q7) Comment on:

- a) Mass extinctions and cambrian explosion.
- b) Spatial patterns of species diversity.

Q8) Write short notes on any two:

- a) Gymnosperm diversity.
- b) Classification of ecosystems.
- c) Dispersal and diversification.



Total No. of Questions :8]

SEAT No. :

P2238

[Total No. of Pages :2

[4932] - 40

M.Sc. - II

BOTANY

BO - 3.38 : Seed Technology

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

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

SECTION - I

Q1) Define seed dormancy. Give it's types and explain various methods to break seed dormancy. [16]

Q2) What is seed germination? Give it's types and explain various Factors affecting seed germination. [16]

Q3) Describe Floral biology of any two crops from dicot studied by you. [16]

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

- a) Development of Female gametophyte.
- b) Physiological and biochemical changes during seed germination.
- c) Integrated management of seed borne diseases.

P.T.O.

SECTION - II

Q5) Describe life cycle of any one pest of pulses and add a note on damage caused by pest and its control measures. **[16]**

Q6) What is seed deterioration? Explain general principles of seed storage and add a note on measures for pest and disease control. **[16]**

Q7) Describe any four methods for seed health testing. **[16]**

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

- a) Embryo development in dicot plants.
- b) Role of seed industries.
- c) Seed vigour test.



Total No. of Questions :8]

SEAT No. :

P2239

[Total No. of Pages :2

[4932] - 41

M.Sc. - II

BOTANY

BO - 4.1 : Plant Resources and Evolution

(Semester - IV) (2008 Pattern)

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 questions 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 one Resin and one perfume crop with respect to Botanical name, common name plant part used and any uses.

- Q2)** a) Explain role of morphology and anatomy in criminology.
b) Explain methods of qualitative and quantitative analysis of lipids.

Q3) Explain origin of unicellular and multicellular organisms with reference to geological Time scale.

Q4) Write notes on any two:

- a) Mendelism.
- b) Concepts of Opairn and Halden.
- c) Characters of Cordaitales.

P.T.O.

SECTION - II

Q5) Give monographic account of a Rhizome or Bark drug.

Q6) a) Discuss with suitable examples origin of new genes and proteins.

b) Write characters of calamitales.

Q7) a) Explain concept of change in gene frequency through adaptive radiation and modification.

b) Explain isolation mechanism in speciation.

Q8) Write notes on any two of the following:

a) Physical evaluation of crude drugs.

b) Chromatography in phytochemical analysis.

c) Major Botanical gardens in India.



Total No. of Questions :8]

SEAT No. :

P2240

[Total No. of Pages :2

[4932] - 42

M.Sc. II

BOTANY

BO - 4.2 : Applied Botany

(Semester - IV) (2008 Pattern)

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 questions should be written in separate answer books.*
- 3) *All questions carry equal marks.*
- 4) *Neat labelled diagram must be drawn wherever necessary.*

SECTION - I

Q1) What is seaweed farming? Explain its necessity, principles and methodology.

- Q2)** a) Explain commercial production of BGA as Biofertilizer. Add a note on impact of BGA on crop yield.
- b) Define probability. Explain rules of combining probability.

- Q3)** a) Explain data mining methods for sequence analysis?
- b) Describe in brief web based tools for sequence searches.

Q4) Write Notes on any two:

- a) Algae as an indicators of water quality.
- b) Nutritive value of spirulina.
- c) Central Tendency.

P.T.O.

SECTION - II

Q5) What is fungal biotechnology? Discuss the role of Fungi in fungal biotechnology.

Q6) a) Discuss the role of fungi in brewing and wine making.

b) Give an account of Dermatomycoses.

Q7) a) What is Candidiasis? Give its symptoms and control measures.

b) Give the role of fungi in Fermented food.

Q8) Write Notes on any two:

a) Fungal growth regulators.

b) Fungal SCP.

c) Error level of significance.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P2241

[4932] - 44

M.Sc. - II

BOTANY

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answer any five questions, selecting atleast 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) What is fungal biotechnology? Discuss the role of fungi treatment of industrial effluents and in mineral biotechnology.

- Q2)** a) How fungi are involved in production of industrial alcohol.
b) Give the role of fungi in brewing and wine making.

Q3) Comment on:

- a) Primary metabolites.
- b) Fungi as biocontrol agents.

Q4) Write Short Notes on any two:

- a) Antibiotics.
- b) Fungi in ayurvedic medicine.
- c) SCP.

P.T.O.

SECTION - II

Q5) Define systemic mycosis. Discuss in detail any three systemic mycotic infections in human and animals.

Q6) a) How biotechnology is involved in plant pathology?

b) Give any four harmful activities of fungi.

Q7) Comment on:

a) Contributions of Robert Koch & K.R.Kirtikar.

b) Causal organism, symptoms & control measures of Anthracnose and wart diseases.

Q8) Write Short Notes on any two:

a) Symptoms.

b) Seed pathology.

c) Mycetoma.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

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M.Sc. - II

BOTANY

**BO - 4.43 : Angiosperms (Special Paper - II)
(Semester - IV) (2008 Pattern) (New Course)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

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

SECTION - I

Q1) What is arboriculture? Describe various methods involved in pre and post care maintenance in tree plantation.

Q2) a) Describe various morphological characters used in identification of trees.
b) Describe properties and uses of wood in relation of structure.

Q3) Give an account of distribution of elements of wood as seen in T.S. and L.S.

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

- a) Micropropagation.
- b) Selection of trees for avenue plantation.
- c) Phloem elements in wood.

P.T.O.

SECTION - II

Q5) What is mellitopalynology? Explain the foraging behaviour of bees. Add a note on unifloral honey.

Q6) Comment on:

- a) Path of pollen tube during pollen germination.
- b) In vitro culture of embryo.

Q7) What is polyembryology? Describe its different types. Add a note on its causes and importance.

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

- a) Pollen ultrastructure.
- b) Ultrastructure of endosperm.
- c) Pollen storage.



Total No. of Questions :8]

SEAT No. :

P2243

[Total No. of Pages :2

[4932] - 46

M.Sc.II

BOTANY

BO - 4.44 : Plant Physiology

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

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answers any 5 questions, selecting at least two questions from each section.*
- 2) Answers to the 2 sections, should be written in separate answer book.*
- 3) All questions carry equal marks.*
- 4) Neat labelled diagram must be drawn wherever necessary.*

SECTION - I

Q1) Explain the effect of global warming on plant metabolism. **[16]**

Q2) a) Describe chlorophyll biosynthesis & their role. **[16]**

b) Explain the effect of green house gases on NAR & crop yield.

Q3) Attempt Any Two of the following: **[16]**

a) Discuss about current scenario of climate & research in crop Physiology abroad.

b) Explain what is NAR? Elaborate effect of green house gases on it.

c) Correlate between O₂ concentration & photorespiration.

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

a) Mechanism of electron transport in chloroplast.

b) Effect of elevated CO₂ on plant metabolism.

c) What are carotenoids? How they are helpful for plants?

P.T.O.

SECTION - II

Q5) Write in detail about R- genes & SAR. **[16]**

Q6) a) Elaborate with suitable examples - viral infection & plant metabolism. **[16]**

b) Give an account on photoperiodism & Its significance with respect to flowering.

Q7) Attempt Any Two of the following: **[16]**

a) Write effects of allelochemicals on NAR with suitable examples.

b) Describe the effect of fungal infection on plant metabolism.

c) Elaborate on transgenics for insect resistance.

Q8) Write note on Any Two: **[16]**

a) Soil health & allelobiogenesis.

b) Circadian clock.

c) photoreceptors.

d) Mycoplasma infection & plant metabolism.



Total No. of Questions :8]

SEAT No. :

P2244

[4932]-47

[Total No. of Pages :2

M.Sc.

BOTANY

**BO -4.45: Genetics, Molecular Biology and plant Breeding
(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 books.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is molecular mapping of genome? Describe genetic and physical mapping of genome.

- Q2)** a) Write breeding approaches and methods for resistance to abiotic stresses.
- b) Describe limitations of breeding for improvement of nutritional qualities.

- Q3)** a) How plasmid DNA is amplified in vivo.
- b) Describe any one method used to characterise clone.

Q4) Write notes on any two of the following:

- a) Genome sequencing.
- b) Taq polymerase.
- c) Plant breeding for quality protein.

P.T.O.

SECTION - II

- Q5)** What is drought? Explain its effects on plant growth and development? Add a note on drought resistance varieties of crops.
- Q6)** a) Explain the mechanism of reverse transcription.
b) Describe the technique of in situ hybridization.
- Q7)** a) Explain the strategies involved in chromosome walking.
b) Explain with suitable example breeding to estimate toxic substances.
- Q8)** Write notes on any two of the following.
- a) Oil seed crops.
b) Genome libraries.
c) Expression screening.

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Total No. of Questions :8]

SEAT No. :

P2245

[4932]-48

[Total No. of Pages :2

M.Sc.

BOTANY

BO -4.46: Plant Biotechnology

(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 diagram must be drawn wherever necessary.*

SECTION - I

Q1) Briefly explain the method of chromosome walking. Add a note on its applications in genome mapping.

- Q2)** a) Describe the method of Northern blotting with its applications.
b) Give any four applications of functional genomics.

- Q3)** a) Describe the role of restriction enzymes in DNA recombinant technique.
b) Write the applications of proteomics in drug development.

Q4) Write notes on any two of the following:

- a) Molecular markers.
- b) Proteomics methodologies.
- c) DNA libraries.

P.T.O.

SECTION - II

- Q5)** What is genome sequencing? Briefly explain the method of Maxam and Gilbert's and add a note on its limitations.
- Q6)** a) Write an account on YAC vector. Add a note on its importance.
b) Describe the concept of pharmacogenomics.
- Q7)** a) Describe the use of plant tissue culture techniques in ex - situ conservation of plant genetic resources.
b) Briefly explain bioethical principles of agricultural biotechnology.
- Q8)** Write notes on any two of the following.
- a) Legal issues of biotechnology.
b) Use and importance of microbes in agriculture.
c) Use of biotechnology in pollution control.

x x x

Total No. of Questions :8]

SEAT No. :

P2246

[4932]-49

[Total No. of Pages :2

M.Sc. - II

BOTANY

BO -4.47: Plant Bio-diversity

(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 diagram must be drawn wherever necessary.*

SECTION - I

Q1) Give concise account on bio-diversity legislation and conventions.

Q2) Discuss in detail Ethical and Aesthetic values of bio-diversity. Add a note on precautionary principles of bio-diversity.

Q3) Explain:

- a) Threatened species.
- b) Rules and regulations of bio-diversity.

Q4) Write notes on any two:

- a) Bio-prospecting.
- b) Eco-tourism.
- c) Forest Act.

P.T.O.

SECTION - II

Q5) Give concise account on Ecosystem diversity.

Q6) Explain in detail social approach to conservation and indigenous knowledge system.

Q7) Explain:

- a) Adverse impacts of biotechnology on biodiversity.
- b) Ecological and Human health impacts on biological invasions.

Q8) Write notes on any two:

- a) Mangroove Ecosystem.
- b) Ecosystem restoration.
- c) Boreal Forest.

x x x

Total No. of Questions :8]

SEAT No. :

P2247

[4932]-50

[Total No. of Pages :2

M.Sc. - II

BOTANY

**BO -4.48: Seed Technology (Spl. Paper)
(2008 Pattern) (Old Course Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Attempt any FIVE questions selecting minimum two from each section.*
- 2) *All questions carry equal marks.*
- 3) *Draw Figures wherever necessary.*

SECTION - I

Q1) Give an account of seed production in tomato and cotton.

Q2) Explain:

- a) Seed village concept.
- b) Grading and separation of seeds.

Q3) Comment on:

- a) Electrical conductivity separations.
- b) Gravity separator.

Q4) Write short notes on (any two).

- a) Seed pelleting.
- b) Packing and handling of seeds.
- c) Colour separators.

P.T.O.

SECTION - II

Q5) Give an account of artificial seed production.

Q6) Comment on:

- a) Seed certification board.
- b) DNA finger printing in varietal identification.

Q7) Explain:

- a) Grow Out Test.
- b) General procedure for seed certification.

Q8) Write short notes on (any two):

- a) TZ test.
- b) Seed certification board.
- c) ELISA test.

x x x