

Total No. of Questions : 8]

SEAT No :

P 1612

[5129]-11

[Total No. of Pages :2

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) *Attempt 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)** Explain cell organization and thallus type in cyanophyta, and comment on its asexual reproduction. **[16]**
- Q2)** Describe external morphology and internal structure of sporophyte of order marchantiales. **[16]**
- Q3)** Write short answers of the following: **[16]**
- a) Give distinguishing characters of pyrrophyta.
 - b) Write algal classification as per smith.
- Q4)** Write short notes on any two of the following: **[16]**
- a) Life cycle pattern in volvocales.
 - b) Chrysophyta.
 - c) Sporophyte of spagnum.

P.T.O.

SECTION-II

Q5) Give an account of thallus structure and life cycle pattern in ustilaginataes. **[16]**

Q6) Give an outline classification of Fungi as per smith . Add a note on saprotrophs. **[16]**

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

- a) Comment on evolution of sex in fungi.
- b) Give life cycle pattern in uredinales.

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

- a) Basidiocarp in gastromyctes.
- b) Calobryales.
- c) Conidiogenesis.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P1613

[5129] - 12

M.Sc. -I

BOTANY

BO-1.2: Plant Physiology & 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 labelled diagrams must be drawn wherever necessary.*

SECTION-I

Q1) Give an account of photorespiration. Add a note on CAM pathway.

Q2) Explain mechanism of cyanide resistance pathway.

Q3) Explain:

- a) Metabolic changes during seed germination.
- b) Biosynthesis of Gibberellins.

Q4) Write notes on Any Two:

- a) RUBISCO.
- b) Abiotic stress.
- c) Signal transduction in guard cells.

P.T.O.

SECTION-II

Q5) Discuss mechanism of synthesis of amino acids and give the properties of amino acids.

Q6) Write on biosynthesis of alkaloids.

Q7) Explain:

- a) Michaelis - Menton equation.
- b) Classification of lipids.

Q8) Write notes on Any Two:

- a) Biosynthesis of glucose.
- b) NOD Factor.
- c) Secondary structure of proteins.

EEE

Total No. of Questions : 8]

SEAT No. :

P1614

[5129]-13

[Total No. of Pages : 2

M.Sc. - I

BOTANY

**BO - 1.3 : Principles of Genetics & Plant Breeding
(2008 Pattern) (Semester - 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) *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 linkage? Describe types of linkage. Add a note on its application.

Q2) Comment on qualitative and quantitative traits. Add a note on inheritance of quantitative traits.

Q3) Give an account of -

- a) Lethal and additive interactions of gene.
- b) Cytoplasmic inheritance.

Q4) Write notes on any two of the following.

- a) Interactions between nuclear and cytoplasmic genes.
- b) Mendalian and post mendalian genetics.
- c) Types of recombination.

SECTION-II

Q5) What is mutation? Describe types of mutation. Add a note on molecular basis of gene mutation.

Q6) Discuss importance of genetic diversity in crop improvement and its erosion.

P.T.O.

Q7) Comment on:

- a) Male sterility and its applications in Plant breeding.
- b) Plant breeding in India.

Q8) Write short notes on -

- a) Heterosis
- b) Role of polyploidy in crop improvement.
- c) Inversion and translocation.



Total No. of Questions : 8]

SEAT No. :

P1615

[5129]-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, selecting at least TWO questions from each section.*
- 2) *Answers to the two sections should be written on 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 systems of classification of Pteridophytes with examples.

Q2) a) Describe structure of sporophytes in Cycadales.

b) Explain Phenetic in taxonomy.

Q3) Attempt Any Two of the following:

a) Write the structure of Sporophyte of Isoetales.

b) Discuss the merits and limitations of Takhtajan system of Angiosperms classification.

c) Comment on synthetic approach of phytochemistry in Angiosperms.

Q4) Write notes on Any Two :

a) Sporophyte of Welwitschiales.

b) Habitat and distribution of Gymnosperms.

c) Cladistics in taxonomy.

P.T.O.

SECTION-II

Q5) Discuss Cronquists system of classification of Angiosperms.

- Q6)** a) Comment on evolutionary significance of heterosporous Pteridophytes.
b) Describe life Cycle pattern in Gymnosperms.

Q7) Attempt Any Two of the following:

- a) Comment on alternation of generation in Pteridophytes.
b) Explain Sporophyte of Ginkgoales.
c) Write origin of Population and environment in Angiosperms.

Q8) Write notes on Any Two:

- a) Magnoliopsida.
b) Palynology: A synthetic approach.
c) Sporophyte of Ophioglossales.
d) Gymnosperms as a prospective ancestor of Angiosperms.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P1616

[5129] - 22

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 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) Explain biogenesis, ultrastructure and functions of endoplasmic reticulum. [16]

Q2) a) Describe molecular organization of centromere and telomere. [8]

b) What is mitosis? Explain the events in cell cycle. [8]

Q3) a) What is cell signalling? Give role of light responsive proteins in cell signalling. [8]

b) Give the ultrastructure and functions of mitochondria. [8]

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

a) Ribosomes.

b) Structural organization of plant cell.

c) Apoptosis.

d) Wound signalling pathway.

P.T.O.

SECTION-II

- Q5)** Describe the principle and instrumentation of infrared spectroscopy. Add a note on its applications. [16]
- Q6)** a) What is SEM? Give its applications. [8]
b) Explain the technique of gel electrophoresis under denaturing conditions. [8]
- Q7)** a) Comment on various types of plastids. [8]
b) Give the structure and functions of cell wall. [8]
- Q8)** Write explanatory notes on any two of the following: [16]
- a) Gel filtration chromatography.
b) Types of centrifuge rotors.
c) Microtomy.
d) ELISA.

EEE

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P1617

[5129]-23

M.Sc. - I

BOTANY

**BO - 2.3 : Molecular Biology & Genetic Engineering
(2008 Pattern) (Semester - II) (Part - 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) *All questions carry equal marks.*
- 3) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Explain mechanism of prokaryotic transcription.

Q2) a) Comment on protein folding & processing.

b) Describe initiation of prokaryotic DNA replication.

Q3) a) Write methods of direct gene transfer in plants.

b) Give steps in construction of cDNA libraries & its applications.

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

a) Types of repetitive DNA sequences.

b) Tryptophan operon.

c) Types of DNA damage.

P.T.O.

SECTION - II

Q5) Write the stages in PCR technique & applications of PCR.

Q6) a) Explain structure & organization of eukaryotic genes.

b) Comment on recombination repair mechanism.

Q7) a) Describe end modifications in RNA processing.

b) Write on “Targetting of organelle proteins”.

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

a) Terminal transferases.

b) BAC vector.

c) DNA fingerprinting.

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Total No. of Questions : 8]

SEAT No :

P 1618

[5129]-31

[Total No. of Pages :2

M.Sc.

BOTANY

**BO:3.1: Developmental Botany and Plant Tissue Culture
(2008 Pattern) (Part-II) (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 process of double fertilization in higher plants. Give its significance.

Q2) a) Distinguish between somatic hybrid and cybrid.

b) Discuss in brief concept of development and give its features.

Q3) a) Explain the terms: Commitment, Differentiation, Dedifferentiation and Redifferentiation.

b) Enlist the stages of micropropagation.

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

a) Androgenesis.

b) Intrinsic factors of plant development.

c) Indirect organogenesis.

P.T.O.

SECTION-II

Q5) Explain the steps in cryopreservation technique and write its applications.

Q6) a) Describe hormonal control of vegetative and reproductive development. (any one hormone).

b) What are the applications of PTC techniques for short term and long term storage of germplasm?

Q7) a) Briefly write on molecular development of seedling development.

b) Describe somaclonal variations with respect to causes, genetic basis and applications.

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

a) Megasporogenesis

b) Embryo rescue and synthetic seeds.

c) Role of PGRs in PTC.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P1619

[5129] - 32

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 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 different types of ecosystem. Explain aquatic ecosystem in details.

Q2) a) Explain scope and necessity of environmental science.

b) Comment on GPS and give its applications.

Q3) a) What is endemism? Give the IUCN categories.

b) Comment on ecological impact of acid rain on terrestrial ecosystem.

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

a) Characteristics of population ecology.

b) Phytogeographic regions of India.

c) Carbon cycle.

P.T.O.

SECTION-II

Q5) Give the classification of ecosystem and write on major ecosystems of world.

Q6) a) Comment on factors affecting biodiversity.

b) Give the ethical and asthetic value of biodiversity.

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

b) Write on grassland ecosystem.

Q8) Write short note on Any Two:

a) Phytoaccumulation.

b) Indian Biodiversity Act.

c) CBD.

EEE

Total No. of Questions : 8]

SEAT No. :

P1620

[5129]-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 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 are fungi? Give classification of fungi as per Bessey's system of fungal classification.

Q2) a) Write briefly on Acrasiomycetes.

b) Comment on thallus structure in mastigomycotina.

Q3) a) Describe conidiomata.

b) Explain life cycle pattern in rust fungi.

Q4) Write notes on any two:

a) Plasmodial types.

b) Heterothallism.

c) Fruit bodies in Ascomycotina.

P.T.O.

SECTION - II

Q5) Discuss different colonization strategies among different fungi.

Q6) a) What are fungal habitats?

b) Comment on soil fungi.

Q7) a) How fungi act as tools of genetical studies.

b) Write on phylloplane fungi.

Q8) Write explanatory notes on any two:

a) Mycotoxins.

b) Mineral nutrition of fungi.

c) Websters system of fungal classification.



Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P1621

[5129]-35

M.Sc.- II

BOTANY

BO - 3.33 : Angiosperms

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

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

SECTION - I

Q1) Explain herbarium as a multipurpose resource institute and comment on its role in teaching.

Q2) a) Explain 'systematic as a synthetic subject'.
b) Give procedure for describing new genus and species.

Q3) a) Describe organisation, units and facilities of a botanical garden.
b) Write a note on aims and objectives of biosystematics investigation.

Q4) Write notes on any two:

- a) ICBN.
- b) Centrospermae.
- c) Clausen's experiments.

P.T.O.

SECTION - II

Q5) Give features distinguishing botanical garden from other garden types and add a note on any one botanical garden in India.

- Q6)** a) Write a note on major herbaria in India.
b) Write a note on citation of author's.

Q7) "Amentiferae is a taxon of heterogenous assemblage" comment.

Q8) Write notes on any two:

- a) Botanical gardens of the world.
b) Role of herbaria in Research.
c) ICBN-type, concept and various types.



Total No. of Questions : 8]

SEAT No. :

P1622

[5129]-36

[Total No. of Pages : 2

M.Sc.- II

BOTANY

BO - 3.34 : Plant Physiology

(2008 Pattern) (Special Paper-I) (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 book.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

Q1) What is salt stress? Describe the effects of salt stress on plant metabolism. **[16]**

Q2) a) Explain the concept of xenobiotic stress. Write its scope and importance. **[8]**

b) Comment on Physiological implications of water stress in plants. **[8]**

Q3) a) Write on toxicity of Al and Fe on plant metabolism. **[8]**

b) Discuss the effects of free radicals on plants. **[8]**

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

a) Mechanism of uv tolerance.

b) Abiotic stress.

c) Mechanism of flooding tolerance.

P.T.O.

SECTION - II

Q5) Describe the effects of uv-A and uv-B radiations on plant metabolism. [16]

Q6) a) Write mechanism of salt tolerance in higher plants. [8]

b) Explain the mechanism of ion stress tolerance. [8]

Q7) a) Describe scavenging of free radicals in plants. [8]

b) Explain the concept of water deficit and drought. [8]

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

a) Effects of air pollutants on plant metabolism.

b) Water logging injury.

c) Scope and importance of stress physiology.



Total No. of Questions : 8]

SEAT No. :

P1623

[5129]-37

[Total No. of Pages : 2

M.Sc.- II

BOTANY

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

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

SECTION - I

Q1) Explain the structural complexity of eukaryotic chromosome.

Q2) a) Explain the mechanism of genetic recombination in eukaryotes.
b) Give an account of characterization & utility of alien additions.

Q3) a) What are allopolyploids? write a note on evolution of mustard.
b) Give an account of Polytene & Campbrush chromosomes.

Q4) Write notes on ANY TWO:

- a) Holiday Junction.
- b) Biochemical genetics.
- c) t-test & its significance.

P.T.O.

SECTION - II

Q5) Explain the breeding methods for vegetatively propagated plants.

- Q6)** a) Explain the procedure of mass selection. Give its merits & demerits.
b) Give an account on screening of mutants.

- Q7)** a) Describe in detail technique of hybridization.
b) Describe the mechanism of recurrent selection.

Q8) Write notes on any two of the following:

- a) Factorial Experimental Design.
b) Applications of partial correlation in crop improvement.
c) Centers of origin of crop plants.



Total No. of Questions : 8]

SEAT No. :

P1624

[5129]-38

[Total No. of Pages : 2

M.Sc.- II

BOTANY

**BO - 3.36 : Plant Biotechnology-I
(2008 Pattern) (Special Paper-I) (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) All questions carry equal marks.*
- 3) Neat labelled diagrams should be drawn wherever necessary.*

SECTION - I

Q1) Write different intrinsic and extrinsic factors influencing morphogenesis in Vitro.

Q2) a) Explain batch & continuous culture systems of cell suspension culture.
b) Give basic principles of plant tissue culture.

Q3) a) Enlist different types of somaclonal variants & explain methodologies to select them.
b) Write the protocol of axillary bud culture & explain its applications.

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

- a) Role of PGRs in PTC.
- b) Callus culture.
- c) Cryopreservation.

P.T.O.

SECTION - II

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

Q6) a) Give an account of tissue culture media.
b) Explain different pathways of somatic embryogenesis & factors influencing it.

Q7) a) Write the procedure of somatic hybridization & its applications.
b) Explain the technique of single cell protein with respect to substrates used, micro organisms and applications.

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

- a) Phytoremediation.
- b) Operation & management of green house.
- c) Biofertilizers.



Total No. of Questions : 8]

SEAT No. :

P1625

[5129]-39

[Total No. of Pages : 2

M.Sc. - II

BOTANY

BO - 3.37 : Plant Diversity-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 diagram must be drawn wherever necessary.*

SECTION - I

Q1) Describe the history of life on earth along with major episodes in the origin of life.

Q2) Comment on:

- a) Global distribution of biodiversity.
- b) Techniques for monitoring insect biodiversity.

Q3) a) Describe determinants of genetic diversity
b) Explain the concept and scope of biodiversity.

Q4) Write short notes on any two

- a) Nature and origin of genetic variation.
- b) Comparison of different sampling techniques.
- c) Identification of diversity hot spots.

SECTION-II

Q5) Describe species inventory along with problems in inventorying species and monitoring species diversity.

P.T.O.

Q6) Explain:

- a) Diversity in domesticated species
- b) Arid and semiarid ecosystems

Q7) Comment on:

- a) Algal diversity
- b) Act of domestication

Q8) Write short notes on any two

- a) Plant diversity hotspots in India.
- b) Pteridophyte diversity.
- c) Species richness and species abundance.



Total No. of Questions : 8]

SEAT No. :

P1626

[5129]-40

[Total No. of Pages : 2

M.Sc.

BOTANY

BO -3.38 : Seed Technology - I

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

SECTION - I

Q1) Give an account of development of monocot embryo. Add a note on seed structure.

Q2) Explain:

- a) Factors affecting seed germination.
- b) Concept of seed Technology.

Q3) Describe:

- a) structure of microsporangium.
- b) Methods of breaking seed dormancy.

Q4) Write notes on any two of the following:

- a) Seed industries in India.
- b) Integrated management of seed borne diseases.
- c) Impact of seed infection on seed and planting value.

SECTION-II

Q5) Give the life cycle pattern of fibre crop pest. Add a note on its control measures.

P.T.O.

Q6) Comment on:

- a) General principle of seed storage.
- b) Fumigation and dehumidification.

Q7) Explain:

- a) Insect as a vector in plant diseases.
- b) Mechanism of seed transmission.

Q8) Write notes on any TWO of the following:

- a) Seed vigour.
- b) Economic importance of seed borne diseases.
- c) Scope and problems of seed Technology.



Total No. of Questions : 8]

SEAT No. :

P1627

[5129]-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 sheets.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat labeled diagrams must be drawn wherever necessary.*

SECTION - I

- Q1)** Describe two spices yielding crops w.r.t. botanical name, part used, chemical constituents and therapeutic uses. **[16]**
- Q2)** a) Comment on quantitative and qualitative analysis of carbohydrates and proteins. **[8]**
b) Discuss the role of morphology and anatomy in forensic botany. **[8]**
- Q3)** a) Enlist and describe vavilov's center of origin. **[8]**
b) Describe migration and random genetic drift during evolution. **[8]**
- Q4)** Write explanatory notes on any two: **[16]**
a) Cordaitales .
b) Origin of eukaryotic cell.
c) Concept of natural selection.

P.T.O.

SECTION-II

Q5) Give monographic account of any one drug obtained from stem and rhizome. [16]

Q6) a) Give microscopic evaluation for standardization of crude drugs. [8]

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

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

b) Write pharmacological activities of natural products. [8]

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

a) Hardy-Weinberg law.

b) Pentoxylales.

c) Energy plantations.



Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :2

P1628

[5129] - 42

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 labeled diagrams must be drawn wherever necessary.*

SECTION-I

Q1) What are Sea Weeds? Explain methods fo production of sea weeds.

Q2) a) Give an account of mass production of Spirulina by various methods.

b) Write applications of algae in sewage treatment.

Q3) a) Discuss production of fungal enzymes.

b) Comment on types of fermentation methods.

Q4) Write notes on any two:

a) Myco Insecticides.

b) Mycorrhiza & its application in agriculture.

c) Brewing and wine industry.

P.T.O.

SECTION-II

Q5) Give detail account of dermatomycosis and mucormycosis.

Q6) a) Comment on fungal allergy. Add a note on antitumour and antiviral agents.

b) Write briefly on parametric and non-parametric statistics.

Q7) a) Explain measures of central tendency.

b) Comment on t-test.

Q8) Write explanatory notes on any two:

a) Motif analysis and presentation.

b) Chi-square test.

c) Fungal growth regulators and alkaloids.

EEE

Total No. of Questions : 8]

SEAT No. :

P1629

[5129]-44

[Total No. of Pages : 2

M.Sc. - II

BOTANY

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt 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) *Draw neat labelled diagrams drawn wherever necessary.*

SECTION - I

Q1) State difference between primary and secondary metabolites. Explain submerged and shallow fermentation.

- Q2)** a) Discuss in detail organic acid fermentation.
b) Write on antitumour and antiviral agents from fungi.

- Q3)** a) Comment on fermented food of fungal origin.
b) Explain types of mycorrhiza.

Q4) Write notes on Any two of the following:

- a) Fungi in biocontrol.
- b) Fungi in homeopathy and ayurvedic medicines.
- c) White rot fungi in bioremediation.

SECTION - II

Q5) Discuss with suitable example mycetoma. Write briefly on cryptococosis.

- Q6)** a) Briefly write on useful activities of fungi.
b) Comment on pathogenesis.

P.T.O.

- Q7)** a) Write role of biotechnology in plant pathology.
b) Comment on downy mildew and white rusts.

Q8) Write notes on Any Two of the following:

- a) Contribution of any four mycologists.
b) Physiology of diseased plant.
c) Smuts and bunts.

x x x

Total No. of Questions : 8]

SEAT No. :

P1630

[5129]-45

[Total No. of Pages : 2

M.Sc. - II

BOTANY

BO - 4.43 :Angiosperms - 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) *Answers to the questions from each 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) Describe anatomical features of arborescent monocotyledons.

Q2) a) Explain the structure of the elements of wood.
b) Comment on pollens in honey.

Q3) a) Give distribution of the elements of wood in T.S.
b) Write ultrastructure of endosperm.

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

- a) Somatic embryogenesis.
- b) Pollen sterility.
- c) Embryo rescue.

SECTION - II

Q5) Describe common Indian trees yielding commercially important woods.

Q6) a) Give scope and importance of arborescence per plantation.
b) Write on unifloral and multifloral honeys.

P.T.O.

- Q7)** a) Explain growth, development and maturation of pollens.
b) Write properties and uses of wood in relation to structure.

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

- a) Gynogenesis.
b) Polyembryony.
c) Floral fidelity.

x x x

Total No. of Questions : 8]

SEAT No. :

P1631

[5129]-46

[Total No. of Pages : 2

M.Sc.

BOTANY

BO - 4.44 : Plant Physiology - 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 sheets.*
- 3) All questions carry equal marks.*
- 4) Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Write on changing scenario of climate & crop physiology.

Q2) a) Give the effect of viral infection on plant metabolism .
b) Write on photoreceptors.

Q3) a) Discuss the effect of allelochemicals on crop yield.
b) Give the role of chlorophyll & carotenoids.

Q4) Write short notes on Any two of the following:
a) Systematic acquired resistance (SAR).
b) Cryptochromes.
c) Effect of green house gases on crop yield.

SECTION - II

Q5) Write on photoperiodism. Give its significance in flowering.

Q6) a) Comment on biosynthesis & carotenoids.
b) Discuss the effect of elevated level of CO₂ on photorespiration.

P.T.O.

- Q7)** a) Comment on scope & importance of crop physiology.
b) Write on pigment organisation in thylakoid membrane.

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

- a) Bt - Rice.
b) Circadian clock.
c) Recent research in crop physiology in India.

x x x

Total No. of Questions : 8]

SEAT No. :

P1632

[5129]-47

[Total No. of Pages : 2

M.Sc. - II

BOTANY

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt 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 process of fluorescence In - situ hybridization and its applications. [16]

Q2) a) Give an account of analysis of yield of DNA and RNA. [8]
b) Comment on method of reverse transcription followed by PCR. [8]

Q3) a) Discuss on restriction mapping. [8]
b) Write the method of whole genome sequencing. [8]

Q4) Write in brief on any two of the followings. [16]
a) RAPD.
b) Partial digestion.
c) Genetic variability.

SECTION - II

Q5) Give detailed account of breeding approaches for quality oil in crops. [16]

Q6) a) Write an account of various quality traits. [8]
b) Comment on types of drought environment and its effects on plant growth. [8]

P.T.O.

- Q7)** a) Explain breeding mechanism for elimination of toxic substances for quality proteins. [8]
- b) Briefly write on account of oleic-linoleic crops and their significance.[8]

Q8) Write in brief on Any Two of the following: [16]

- a) Dehydration avoidance.
- b) Somatic hybridization.
- c) A germplasm line.

x x x

Total No. of Questions : 8]

SEAT No. :

P1633

[5129]-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 book.*
- 3) *All questions carry equal marks.*
- 4) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION - I

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

Q2) a) Comment on comparative genomics. **[8]**

b) Comment on PCR and its applications. **[8]**

Q3) a) Describe western blotting. **[8]**

b) Describe sequence data analysis. **[8]**

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

a) DNA libraries.

b) Structural genomics.

c) Gene amplification.

SECTION - II

Q5) Explain role of Biotechnology in environmental protection. **[16]**

Q6) a) Comment on identification and characterisation of novel proteins. **[8]**

b) Explain strategies used in Proteomics. **[8]**

P.T.O.

Q7) a) Describe proteomics of methodologies. [8]

b) Explain role of microbes in industry and agriculture. [8]

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

a) nif gene.

b) Microbes in leaching of metals.

c) Pharamacogenomics.

x x x

Total No. of Questions : 8]

SEAT No. :

[Total No. of Pages : 2

P1634

[5129]-49

M.Sc. - II

BOTANY

BO - 4.47 :Plant Biodiversity

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

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Attempt 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) Explain factors affecting ecosystem degradation and loss. Add a note on reasons for loss of biodiversity for mangrove ecosystem. **[16]**

Q2) Give an account of the role of universities and other educational institutions in biodiversity conservation. **[16]**

Q3) Comment on: **[16]**

- a) ITTA and ITTO.
- b) Chico River Dam and Tribal campaign.

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

- a) Ecosystem restoration.
- b) Population size as a critical factor in species extinction.
- c) Loss of Agrobiodiversity.

P.T.O.

SECTION - II

- Q5)** Give the role of biotechnology in utilization of biodiversity. Add a note on impact of biological invasions on human health. **[16]**
- Q6)** Explain ethical and aesthetic values of biodiversity. Add a note on prospects in participatory management of Biodiversity. **[16]**
- Q7)** Comment on: **[16]**
- a) Metadatabases and virtual libraries.
 - b) Plant biodiversity as a source of carbon sequestration.
- Q8)** Write notes on Any Two of the following: **[16]**
- a) Role of biotechnology in assessment of Biodiversity and Bioresources.
 - b) IPRS and ownership of Traditional knowledge.
 - c) Biodiversity Act.

x x x

Total No. of Questions : 8]

SEAT No. :

P1635

[5129]-50

[Total No. of Pages : 2

M.Sc.

BOTANY

BO - 4.48 :Seed Technology

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

SECTION - I

Q1) Give brief account of seed production of wheat and chilly.

Q2) Explain:

- a) Seed village concept.
- b) Stages of seed production.

Q3) Comment on:

- a) True potato seed production.
- b) Packing and handling of seeds.

Q4) Write notes on Any two of the following:

- a) Air screen cleaner.
- b) Spiral separator and inclined belt separator.
- c) Electrostatic seed separators.

P.T.O.

SECTION - II

Q5) Explain various aids used for varietal certification.

Q6) Comment on:

- a) Central seed committee and their functions.
- b) Organization involved in seed testing.

Q7) Explain:

- a) Sampling methods in seed testing.
- b) Procedure and observations during field inspection.

Q8) Write notes on Any Two of the following:

- a) Seed certification board.
- b) Artificial seeds.
- c) Specific seed certification standards.

x x x