Total No. of Questions : 8] **SEAT No. :**

P2392 **[Total No. of Pages : 2**

[4832] - 11

M.Sc. (Semester - I)

BOTANY

BO - 1.1 : Systematics of Non-Vascular Plants

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :-

1) ***Answer any FIVE questions, taking at least TWO questions from each section.***
2) ***Answer to the TWO sections should be written in SEPARATE answer book.***
3) ***All questions carry EQUAL marks.***
4) ***Neat diagram must be drawn WHEREVER necessary.***

SECTION - I

Q1) Describe asexual reproduction and life cycle pattern in chlorophyta. **[16]**

Q2) Draw and describe external and internal morphology of sporophyte of Bryopsida. **[16]**

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

a) Comment on important characters of charophyta.

b) Describe asexual reproduction in cyanophyta.

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

a) Chrysophyta

b) Algal habitats

c) Takakiales

P.T.O.

SECTION - II

Q5) Give an account of thallus structure, spore producing structure and life cycle pattern in Deuteromycotina. **[16]**

Q6) a) Comment on saprotrophs

b) Give an outline classification of fungi with reasons proposed by Alexopoulos, Mims & Blackwell.

[16]

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

a) Describe any one fruiting body in Ascomycotina.

b) Comment on asexual reproduction in Mastigomycotina.

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

a) Puff balls

b) Spherocarpales

c) Vegetative reproduction in Bryophytes.

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Total No. of Questions : 8] **SEAT No. :**

P2393 **[Total No. of Pages : 2**

[4832] - 12

M.Sc. (Semester - I)

BOTANY

BO - 1.2 : Plant Physiology and Biochemistry

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :-

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

SECTION - I

Q1) Give an outline of TCA cycle and explain its regulation.

Q2) Explain the mechanism of photorespiration. Add a note on photoinhibition, O_2 and H_2 evolution.

Q3) Explain :

a) Drought stress

b) Metabolic Changes during fruit ripening.

Q4) Write notes on any two :

a) Aquaporins

b) Biosynthesis of auxin

c) Diffusion

d) Light harvesting complexes

P.T.O.

SECTION - II

Q5) Define enzymes. Explain enzyme kinetics with help of Michaelis - Menton equation.

Q6) Explain synthesis and breakdown of starch and glucose.

Q7) Explain :

a) Dissociation and association constants.

b) Classification and properties of amino acids.

Q8) Write notes on <u>any two</u> :

a) Plant pigments

b) Root nodulation in leguminous plants.

c) Types of lipids.

d) Allosteric mechanism.

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Total No. of Questions : 8] **SEAT No. :**

P2394 **[Total No. of Pages : 2**

[4832] - 13

M.Sc. (Semester - 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, 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 diagram must be drawn wherever necessary.***

SECTION - I

Q1) Describe cytoplasmic inheritance involving mitochondria with suitable example. Write an account on mitochondrial genome.

Q2) Define gene maps and physical maps. Explain how ordered and unordered data is used for gene mapping in Neurospora.

Q3) Give an account on :

a) Inheritance of quantitative traits in Nicotiana.

b) Epistasis

Q4) Write notes on any two of the following :

a) C. value paradox

b) Genetic drift

c) Interaction between nuclear and cytoplasmic genes

d) Complementory factor

P.T.O.

SECTION - II

Q5) What is inversion? With the help of suitable diagrams explain cytological consequences of crossing over in pericentric and paracentric inversion.

Q6) Give a detail account of classification of polyploids. Add a note on role of polyploidy in crop improvement.

Q7) Give an account on :

a) Mechanism of incompatibility in plants.

b) Heterosis and its applications.

Q8) Write notes on any two of the following :

a) Role of mutations in plant breeding.

b) Genetic erosion.

c) Genetic basis of plant breeding.

d) Multiple translocation.

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Total No. of Questions : 8]

SEAT No. :

P2395

[Total No. of Pages : 2

[4832] - 21

M.Sc.-I (Semester - II)

BOTANY (Part - I)

BO - 2.1 : Systematics of Vascular Plants

(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 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 evolution of stele in pteridophytes. **[16]**

Q2) Give comparative account of structure of sporophyte and gametophyte of coniferales. **[16]**

Q3) Describe the following : **[16]**

a) Spore producing organs in pteridophytes.

b) Economic importance of gymnosperms.

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

a) Distribution of gymnosperms in India.

b) Sporocarp of Salvinia.

c) Glossopteris.

P.T.O.

SECTION - II

Q5) Describe Angiosperms as highly evolved, dominent and successful group of plants. **[16]**

Q6) Describe outline of cronquist system of plant classification. Add a note on merits and delimitations. **[16]**

Q7) Discuss the following : **[16]**

a) Role of palynology in angiosperm taxonomy.

b) Phenetic and cladistic in taxonomy.

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

a) Outline of Dahlgren's system of plant classification.

b) Concept of family and genus.

c) Delimitation of taxa and attribution of rank.

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Total No. of Questions : 8]

SEAT No. : ____

P2396

[Total No. of Pages : 2

[4832] - 22

M.Sc. - I (Semester - II)

BOTANY

BO - 2.2 : Cell Biology & Instrumentation

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :-

1) ***Answer any 5 questions, taking atleast 2 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 biogenesis & ultrastructure of nucleus and plastids.

Q2) a) What is mitosis? Give its significance.

b) Explain properties & organization of cytoplasmic matrix.

Q3) Explain :

a) Molecular organization of centromere & telomere.

b) Give an account on cell signalling in plants.

Q4) Write notes on any two :

a) Structure & packing of DNA.

b) Photoproteins.

c) Structure of mitochondria.

b) Endoplasmic reticulum.

P.T.O.

SECTION - II

Q5) What is chromatography? Give detailed account of column chromatography & HPLC.

Q6) Explain :

a) What is ELISA? Write its applications.

b) Explain Gel filtration & give its uses.

Q7) Write :

a) Biogenesis of Endoplasmic Reticulum (ER).

b) Ultrastructure of cell wall.

Q8) Write short notes on <u>any two</u> :

a) NMR

b) Autoradiography.

c) Cell differentiation Mechanism.

d) Micrometry.

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Total No. of Questions : 8]

SEAT No. :

P2397

[Total No. of Pages : 2

[4832] - 23

M.Sc. - I (Semester - II)

BOTANY

BO - 2.3 : Molecular Biology and Genetic Engineering

(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) ***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 cot curves? How they determine the complexity of the DNA?

Q2) Give an account of the organization of eukaryotic genes.

Q3) Give an account of :

a) RNA processing

b) Mismatch repair of the DNA.

Q4) Write notes on any two of the following :

a) cDNA synthesis

b) RNA polymerases

c) Transcription apparatus

P.T.O.

SECTION - II

Q5) Describe negative regulation of prokaryotic genes.

Q6) What is targeting of proteins? How are proteins targeted to the cell organelles?

Q7) Give an account of :

a) Restriction endonucleases.

b) Agrobacterium as natural genetic engineer.

Q8) Write on any two of the following :

a) Transgenic plants for abiotic stress tolerance.

b) Gene libraries.

c) Southern blotting.

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Total No. of Questions : 8] **SEAT No. :**

P2398 **[Total No. of Pages : 2**

[4832] - 31

M.Sc. (Semester - III)

BOTANY

BO - 3.1 : Developmental Botany and Tissue Culture

(2008 Pattern)

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

SECTION - I

Q1) Give an account of development of male gametophyte in plants. Add a note on male germ unit.

Q2) Explain :

a) Development of primordium to organ.

b) Hormonal control of vegetative and reproductive phase.

Q3) Comment on :

a) Cytochemical changes in vegetative phase leading to reproductive phase.

b) Developmental routes to parthenogenesis.

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

a) Molecular basis of shoot development.

b) Establishment of seedling organ.

c) Self incompatibility.

P.T.O.

SECTION - II

Q5) What is callus culture? Give types, factors affecting and applications of callus culture.

Q6) Give an account of plant tissue culture in germ plasm conservation.

Q7) a) Comment on factors affecting on zygotic organogenesis.

b) What is meant by pleuripotency? Explain factors affecting on it.

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

a) Somaclonal variation.

b) PTC and medicinal, aromatic plants.

c) Transgenic plants.

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Total No. of Questions : 8]

SEAT No. :

P2399

[Total No. of Pages : 2

[4832] - 32

M.Sc. (Semester - III)

BOTANY

BO - 3.2 : Environmental Botany and Plant Diversity

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates :-

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

SECTION - I

Q1) What is biogeochemical cycle? Give details of any two cycles with reference to process and nutrient budget.

Q2) What is air pollution? Explain air pollution with reference to causes, hazards and remedial measures.

Q3) a) Comment on speciation and endemism.

b) Give a case study on thermal project with reference to EIA.

Q4) Write notes on any Two :

a) GIS.

b) Natality and mortality.

c) Physiognomy.

d) Habit and niche.

P.T.O.

SECTION - II

Q5) Describe phytogeographical regions of India with suitable map.

Q6) Define bio-diversity. Enlist its types. Explain in detail ecosystem diversity with respect to any one major ecosystem.

Q7) a) Explain factors affecting loss of biodiversity.

b) Explain role of myco fertilizers in restoration ecology.

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

a) CBD

b) Origin of species diversity.

c) Kyto protocol.

d) Forest acts.

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Total No. of Questions : 8]

SEAT No. :

P2400

[Total No. of Pages : 2

[4832] - 34

M.Sc. - II (Semester - III)

BOTANY

BO - 3.32 : Mycology and Plant Pathology - I

(2008 Pattern) (Special Paper - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates :-

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

SECTION - I

Q1) What are zygomycotina? Add a note on evolution of conidium from sporangium in mucorales. **[16]**

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

a) Comment on plasmodiophoromycetes.

b) Give classification of fungi as per webster (2007).

Q3) How Basidiomycotina are classified as per Ainsworth's system? Discuss Ustilaginales. **[16]**

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

a) Protomycetales

b) Acrasiomycetes

c) Conidiomata

d) Pevonosporales

P.T.O.

SECTION - II

Q5) What are genetical aspects of virulence, resistance and pathogenecity? Write on fungi as tools of genetical studies. **[16]**

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

a) Comment on biochemical support to understand evolutionary relationship in fungi.

b) Give brief account of fungal association with plants.

Q7) Explain different colonization strategies in fungi. Add a note on fungal habitats. **[16]**

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

a) Mycotoxins

b) Heterothallism in fungi

c) Algal and protozoan ancestry of fungi.

d) Seed borne fungi.

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Total No. of Questions : 8] **SEAT No. :**

P2401 **[Total No. of Pages : 2**

[4832] - 35

M.Sc. (Part - II) (Semester - III)

BOTANY

BO - 3.33 Angiosperms - I

(2008 Pattern) (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) Write an essay on 'Systematics as a synthetic subject'?

Q2) Discuss :

a) Botanical Gardens in India.

b) Systematics of santalaceae.

Q3) Explain the role of herbarium in systematics and Teaching.

Q4) Write notes on any two :

a) Objectives and functions of a botanical garden.

b) Angiosperms diversity of Western Ghats.

c) Numerical taxonomy.

d) Digital Herbarium.

P.T.O.

SECTION - II

Q5) Explain the principles, Rules and Recommendations of ICBN.

Q6) Describe the following :

a) Aims, objectives and procedures of Biosystematics investigation.

b) Effective and valid publications.

Q7) Discuss 'Botanical gardens as multipurpose resource institutes'.

Q8) Write notes on any two :

a) Major herbaria of India.

b) Systematics of cactaceae.

c) Biosystematics categories.

d) Citation of author(s).

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Total No. of Questions : 8] **SEAT No. :**

P2402 **[Total No. of Pages : 2**

[4832] - 36

M.Sc. (Semester - III)

BOTANY

BO - 3.34 : Plant Physiology

(2008 Pattern) (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 physiological implications of drought. Add a note on drought resistance mechanism in plants.

Q2) Explain the effects of salt stress on plant metabolism. Add a note on improvement of saline soils.

Q3) a) Give an account of recent research carried on abiotic stress at different centres in India and abroad.

b) Describe the causes of water logging and explain in brief water logging injury.

Q4) Write short notes on (Any two) :

a) Transgenics for drought stress tolerance,

b) Mechanism of flooding tolerance,

c) Mechanism of salt tolerance.

P.T.O.

SECTION - II

Q5) Explain the concept of Iontoxicity and describe its scope and importance.

Q6) Describe the effects of UV-A and UV-B radiation on plant metabolism. Comment on the mechanism of UV- tolerance.

Q7) Explain :

a) Free radical generation and its effects on Plant metabolism,

b) Effect of airpollutants on plant metabolism.

Q8) Write short notes on (Any two) :

a) Xenobiotic stress,

b) Photoinhibition,

c) Toxicity of Aluminium and iron.

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Total No. of Questions : 8] **SEAT No. :**

P2403 **[Total No. of Pages : 2**

[4832] - 37

M.Sc. (Part - II) (Semester - III)

BOTANY

BO - 3.35 : Genetics, Molecular Biology and Plant Breeding - I

(2008 Pattern) (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) Explain the inheritance of quantitative characters in Nicotiana and zea mays.

Q2) a) Write an account of chromosome bonding pattern and its applications.

b) Describe the method of alien gene transfer in wheat.

Q3) a) Write an account of origin and production of haploids.

b) Describe the mechanism of chromosome segregation.

Q4) Write notes on any two of the following :

a) Karyotype evolution

b) Population genetics

c) YAC

P.T.O.

SECTION - II

Q5) Describe the method of screening of chlorophyll, morphological and biochemical mutants.

Q6) Explain population improvement through mass, progeny and recurrent selection.

Q7) a) Write an account of different types of co-relation and its importance.

b) Describe the procedure for production of hybrid seeds.

Q8) Write notes on any two of the following :

a) Importance of haploids

b) Chemical mutagens

c) Binomial expansion

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Total No. of Questions : 8]

SEAT No. :

P2404

[Total No. of Pages : 2

[4832] - 38

M.Sc. (Semester - III)

BOTANY

BO - 3.36 : Plant Biotechnology - I

(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) ***Answers to the Two sections should be written in separate answer book.***
3) ***All questions carry equal marks.***
4) ***Neat labelled diagrams must be drawn wherever necessary.***

SECTION - I

Q1) What is morphogenesis? Comment on various factors influencing morphogenesis.

Q2) a) What is somatic embryogenesis? Give its applications.

b) Write in detail the applications of cell suspension culture.

Q3) a) What is organogenesis? Explain direct and indirect organogenesis.

b) Write on design of PTC Laboratory.

Q4) Write short notes on any two :

a) Concept and history of plant biotechnology

b) Synthetic seeds.

c) Role of PGR in tissue culture

d) Axillary bud culture.

P.T.O.

SECTION - II

Q5) a) How transgenic plants are useful for production of secondary metabolites? Explain with suitable examples.

b) What is green house technology? State its applications in plant propagation.

Q6) a) Comment on improvement of quality of lipids with the help of recombinant DNA technology.

b) What are biofertilizers? Explain the role of BGA in agricultural biotechnology.

Q7) a) How haploids are obtained by invitro methods? Give its significance in plant breeding.

b) What is cryopreservation? Mention important steps in cryopreservation.

Q8) Write short notes on any two :

a) Single cell protein

b) Plant derived vaccines

c) Phytoremediation

d) Bt-Cotton

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Total No. of Questions : 8]

SEAT No. :

P2405

[Total No. of Pages : 2

[4832] - 39

M.Sc. (Semester - III)

BOTANY

BO - 3.37 : Plant Diversity

(2008 Pattern) (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 diagram must be drawn wherever necessary.***

SECTION - I

Q1) Give an account of scope of biodiversity and add a note on the levels of biodiversity.

Q2) Comment on :

a) The species concept

b) Techniques for monitoring of plant diversity.

Q3) Write a note on :

a) Biodiversity of India.

b) Describe methods based on DNA and chromosomes for measurement of genetic diversity.

Q4) Write short notes on any two :

a) Diversity hotspots

b) Earth's biodiversity based on fossil evidences.

c) Nature and origin of genetic variations.

P.T.O.

SECTION - II

Q5) Give an account of grassland and marine ecosystems.

Q6) Explain :

a) Origin of species diversity

b) Diversity in domesticated species

Q7) Comment on :

a) Gymnosperm diversity

b) Importance of urban biodiversity

Q8) Write notes on <u>any two</u> :

a) Bryophyte diversity

b) Species abundance and species richness

c) Agroecosystems

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Total No. of Questions : 8] **SEAT No. :**

P2406 **[Total No. of Pages : 2**

[4832] - 40

M.Sc. (Semester - III)

BOTANY

BO - 3.38 : Seed Technology

(2008 Pattern) (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 each section should be written in separate answer book.***
3) ***All questions carry equal marks.***
4) ***Neat labelled diagrams must be drawn wherever required.***

SECTION - I

Q1) Enlist the methods used for seed health testing and describe in detail any two of them.

Q2) Explain :

a) Types of seed dormancy and methods to break.

b) Development of embryo in a seed.

Q3) Describe :

a) Physiological changes during seed germination.

b) Mechanism of seed transmission.

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

a) Characteristics of seed quality

b) Quarantine for seed

c) Methods and chemicals used to test seed vigour.

P.T.O.

SECTION - II

Q5) What is seed deterioration. Explain the causes for seed deterioration and add a note on preventive measures.

Q6) Comment on :

a) Store grain pest

b) Seed industries

Q7) Explain in detail the life cycle of a sugarcane pest.

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

a) Relation of insects and plants.

b) Crop loss due to seed borne pathogen.

c) Roles and goals of seed technology.

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Total No. of Questions : 8]

SEAT No. :

P2407

[Total No. of Pages : 2

[4832] - 41

M.Sc. (Semester - IV)

BOTANY

BO - 4.1 : Plant Resource and Evolution

(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) ***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 origin of cultivated plants. Add a note on vavilov's center's of origin. **[16]**

Q2) a) What is importance of ethnobotany in India. **[8]**

b) Comment on plants as source of edible oils and narcotics. **[8]**

Q3) Solve any two of the following : **[16]**

a) How spectroscopic technique is good method for phytochemical analysis.

b) Briefly write on timber and gum as plant products.

c) Comment on organoleptic method of evaluation of drugs.

Q4) Write short notes (Any two) : **[16]**

a) Energy plantations.

b) Botanical herbaria.

c) Chemotaxonomy in criminology.

d) Root drugs.

P.T.O.

SECTION - II

Q5) Comment on hardy weinberg's law of population genetics. **[16]**

Q6) a) Write on cycadeoidales. **[8]**

b) Explain concept of genetic drift. **[8]**

Q7) Solve any two of the following : **[16]**

a) Write on pentoxylates.

b) Comment on molecular divergence and molecular clocks.

c) Briefly write on calamitales.

Q8) Write short notes (Any two) : **[16]**

a) Lamarck's evolutionary concept.

b) Miller's experiment.

c) Convergent evolution.

d) Speciation.

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Total No. of Questions : 8] **SEAT No. :**

P2408 **[Total No. of Pages : 2**

[4832] - 42

M.Sc. (Part - II) (Semester - IV)

BOTANY

BO - 4.2 : Applied Botany

(2008 Pattern)

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 applications, necessity principles and methodology of sea weed farming technology.

Q2) a) Comment on mass production of Spirulina and its nutritive value.
b) Explain algal biomass and its nussance.

Q3) Solve any two of the following :
a) Explain organic acid fermentation.
b) Write on submerged and shallow fermentation.
c) Comment on brewing industries.

Q4) Write short notes on (any two) :
a) Fungi in coal solubilization and particulate absorption.
b) Myconematicides.
c) Fungal SCP.
d) Fungi in mineral biotechnology and biremediation.

P.T.O.

SECTION - II

Q5) Explain symptoms. Clinical measures of mucormycosis and mycetoma.

Q6) a) Write on measures of central tendency.

b) Comment on nature of biological data.

Q7) Solve any two of the following :

a) Write on nucleic acid and protein sequence data base.

b) Comment on chisquare test.

c) Give difference between parametric and non parametric statistics.

Q8) Write short notes on (any two) :

a) Antitumour and antiviral agents from fungi.

b) Tinea and its types.

c) Confidence interval.

d) Search engines and internet searches.

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Total No. of Questions : 8]

SEAT No. :

P2409

[Total No. of Pages : 2

[4832] - 44

M.Sc. (Semester - IV)

BOTANY

BO - 4.42 : Mycology and Plant Pathology - II

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates :-

1) ***Attempt any five questions, selecting minimum questions from each section.***
2) ***All questions carry equal marks.***
4) ***Draw figures whenever necessary.***

SECTION - I

Q1) Describe different methods of fermentation. Add a note on fungal production of alcohol and exzymes.

Q2) a) Comment on brewing and write about wine making industries.
b) Give applications of mycorrhiza in agriculture.

Q3) Write (any two) :
a) What are immunoregulators?
b) Write on antitumour and antiviral agents of fungi.
c) Explain myconematicides and mycofungicides.

Q4) Write short notes on (Any two) :
a) Organic acid fermentation
b) Antibiotic fermentation
c) Fungi in food industry
d) Fungal vitamins

P.T.O.

SECTION - II

Q5) What is systematic mycosis? Explain clinical aspects of aspergillosis and candidiasis.

Q6) a) Write any four beneficial and four harmful aspects of fungi.

b) Comment on Tinea and its clinical aspects.

Q7) Solve any two of the following :

a) Give any one system of classification of plant diseases.

b) What are symptoms of plant diseases? Describe any four symptoms with examples.

c) Write on any four defense mechanisms in plants.

Q8) Write short notes on (any two) :

a) Effect of plant disease on plant metabolism.

b) White rust

c) Enzymes in plant diseases.

d) Biotechnology and plant pathology.

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Total No. of Questions : 8]

SEAT No. :

P2410

[Total No. of Pages : 2

[4832] - 45

M.Sc. (Semester - IV)

BOTANY

BO - 4.43 : Angiosperm

(2008 Pattern) (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 on separate answer book.***
3) ***All questions carry equal marks.***
4) ***Neat labelled diagram must be drawn wherever necessary.***

SECTION - I

Q1) Explain concept of arborescence as a growth type. Add a note on scope of arboriculture. **[16]**

Q2) Answer the following : **[16]**

a) Explain basic features of an arborescent form.

b) Describe gross structure and organization of wood.

Q3) Solve any two : **[16]**

a) Comment on properties and uses of wood in relation to structure.

b) Explain anatomical features of arborescent monocotyledons. .

c) Give brief account on distribution of wood elements in L.S.

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

a) Somatic embyogenesis

b) Arboretum versus natural forest

c) Micropropogation and arboriculture

P.T.O.

SECTION - II

Q5) What is pollen biology? Comment on Ultrastructure of pollen. **[16]**

Q6) Answer the following : **[16]**

a) Explain pollen viability and pollen sterility.

b) Describe mellitopalynology with reference to floral organization.

Q7) Solve any two : **[16]**

a) Comment on embryo rescue.

b) Explain in vitro fertilization.

c) Give brief account of Endosperm Ultrastructure.

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

a) Polyembryony.

b) Embryogenesis

c) Apomixes.

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Total No. of Questions : 8]

SEAT No. :

P2411

[Total No. of Pages : 2

[4832] - 46

M.Sc. (Part - II) (Semester - IV)

BOTANY

BO - 4.44 : Plant Physiology

(2008 Pattern) (Special Paper - II)

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) Write in detail about carotenoid metabolism. Add a note on its role. **[16]**

Q2) a) Discuss about the effect of ozone layer depletion on crop yield.
b) Give an account on Recent research at international level in crop physiology.

[16]

Q3) Solve any two of the following : **[16]**
a) Explain pigment organization in thylakoid membrane.
b) How O_2 elevation affects plant metabolism.
c) Write the role of chlorophylls. Add a note on their degradation.
d) Give an account on concept & scope of crop physiology.

Q4) Write short notes on any two of the following : **[16]**
a) Photorespiration.
b) NAR & global warming.
c) Allelobiogenesis.
d) Soil health & crop productivity.

P.T.O.

SECTION - II

Q5) Write in detail about flowering physiology. **[16]**

Q6) a) What is photoperiodism? Write its significance.

b) Discuss Biochemical & photochemical properties of cryptochromes.

[16]

Q7) Solve any two of the following : **[16]**

a) Write examples of allelochemicals & give their effect.

b) What is the effect of viral infection on host plant.

c) Write briefly about defence mechanism with respect to R-genes.

d) How monoculturing affects the plant metabolism.

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

a) Bt rice

b) HR

c) Transgenics for disease resistance.

d) Photoreceptors.

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Total No. of Questions : 8]

SEAT No. :

P2412

[Total No. of Pages : 2

[4832] - 47

M.Sc. (Semester - IV)

BOTANY

BO - 4.45 : Genetics, Molecular Biology and plant Breeding

(2008 Pattern) (Special Paper - 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 book.***
3) ***All questions carry equal marks.***
4) ***Neat diagram must be drawn wherever necessary.***

SECTION - I

Q1) Describe process of flouroscent in - sita hybridization.

Q2) a) Give methodology for map based cloning.
b) Differentiate RFLP and RAPD.

Q3) Write any two of the following :
a) Genome size
b) Analysis of RNA yield.
c) Molecular markers for diseases resistance genes.

Q4) Write short notes on any two :
a) PCR - coupled DNA sequencing
b) Expression screening
c) Plaque hybridization
d) Labeling of nucleic acid

P.T.O.

SECTION - II

Q5) Explain chemical method for DNA sequencing.

Q6) a) Explain drought resistance mechanisms existed in plants.

b) Discuss breeding methods for drought resistance.

Q7) Write any two of the following :

a) Quality traits of the crops

b) Legume protein improvement

Q8) Write short notes on any two :

a) Genetic control of mutational traits.

b) Oligogenic inheritance

c) Antinutritional factors

d) Oil quality

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Total No. of Questions : 8] **SEAT No. :**

P2413 **[Total No. of Pages : 2**

[4832] - 48

M.Sc. (Semester - IV)

BOTANY

BO - 4.46 : Plant Biotechnology

(2008 Pattern) (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) What is proteomics? Explain various strategies in proteomics.

Q2) a) Explain the principle and method of western blotting.

b) Discuss applications of proteomics in identification and characterization of novel proteins.

Q3) a) Explain the importance of DNA libraries.

b) Disucss any two methods DNA sequencing and add a note on its limitations.

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

a) Structural and functional proteomics.

b) Chromosome walking and jumping.

c) Ethical aspects of Biotechnology.

P.T.O.

SECTION - II

Q5) What are vectors? Discuss importance of vectors in gene cloning

Q6) a) Describe applications of proteomics in screening of diagnostic markers.

b) Explain genome annotation with suitable example.

Q7) a) Discuss principle and method of RFLP. Comment on its applications.

b) Explain chromosome walking and jumping.

Q8) Write notes on Any Two :

a) Bioethical principles of agriculture biotechnology.

b) Use of microbes in Industry and agriculture.

c) Microbes in leaching of metals.

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Total No. of Questions : 8]

SEAT No. : ____

P2414

[Total No. of Pages : 2

[4832] - 49

M.Sc. (Semester - IV)

BOTANY

BO. 4.47 : Plant Biodiversity

(2008 Pattern) (Special Paper - 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) ***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) Enumerate reasons for loss in diversity of arid and semiarid lands and temperate forest systems.

Q2) a) Explain role of national parks and pollen banks in conservation.
b) Describe loss of Agro-biodiversity.

Q3) Solve any two :
a) Comment on role of media, University and Educational Institutes in Biodiversity Awareness programmes.
b) Role of UNEP and IUCN in biodiversity Management.

Q4) Write short notes on any two :
a) Common features of threatened species.
b) Organisations involved in financing Biodiversity management.
c) Trade related Intellectual Property Rights.
d) Chipko Movement.

P.T.O.

SECTION - II

Q5) Explain the role of meta databases, virtual libraries, special interest networks and CD Roms in distribution of biodiversity information.

Q6) a) Explain prospects in participatory management of Biodiversity.

b) Describe Biodiversity Act.

Q7) Solve any two :

a) Comment on Adverse impacts of biotechnology on biodiversity.

b) Describe the uses of plants as a source of Timber and fodder.

c) Give a brief account on Role of biotechnology in assessment of bioresources.

Q8) Write short notes on any two :

a) Impact of biological invasions on human health.

b) Emerging International policies for conservation of Biodiversity.

c) Aesthetic values of biodiversity.

d) Carbon sequestration.

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Total No. of Questions : 8]

SEAT No. :

P2415

[Total No. of Pages : 2

[4832] - 50

M.Sc. (Part - II) (Semester - IV)

BOTANY

BO - 4.48 : Seed Technology

(Old Course) (2008 Pattern) (Special Paper - II)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates :

1) ***Answer any five questions taking at least Two 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 Seed Production of cotton and chilly.

Q2) Explain :

a) Stages of Seed Production.

b) Concepts and objectives of Seed Production

Q3) Comment on :

a) Grading and separation of Seed.

b) Seed treating equipments.

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

a) Packing and handling of Seeds.

b) True potato Seed production.

c) Colour separators.

P.T.O.

SECTION - II

Q5) Explain the concept and procedure for artificial Seed Production.

Q6) Comment on :

a) Specific Seed certification standards.

b) Central Seed committee and their functions.

Q7) Explain :

a) Grow out test.

b) Sampling methods

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

a) RAPD and RFLP.

b) Seed drying.

c) Layout of Seed processing plant.

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