Total No. of Questions : 8]

SEAT No. :

P1677

[Total No. of Pages : 2

[5229]-11

M.Sc. - I

BOTANY

BO-1.1 : Systematics of Non Vascular Plants

(2008 Pattern) (Semester-I)

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

Instructions to the candidates:

1) ***Attempt any FIVE questions, selecting at least TWO questions from each section.***
2) ***Answers to the TWO sections should be written in SEPARATE answer book.***
3) ***All questions carry equal marks.***
4) ***Neat diagrams must be drawn WHEREVER necessary.***

SECTION-I

Q1) Comment on range of thallus organization in charophyta and explain life cycle pattern in ulotrichales. **[16]**

Q2) Explain external morphology and internal structure of sporophyte of order sphagnales. **[16]**

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

a) Give position of algae in eight kingdom system.

b) Write algal classification as per Bold and Wyne.

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

a) Thallus organization in chlorophyta.

b) Life cycle pattern in charophyta.

c) Sporophyte of Anthoceros.

P.T.O.

SECTION-II

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

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

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

a) Comment on parasexual cycle in Fungi.

b) Explain zoo sporanqiale proliferation in saprolegniales.

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

a) ASCO carp.

b) Sphaerocarpales.

c) Vegetative reproduction in bryophytes.

Total No. of Questions :8]

SEAT No. :

P1678

[Total No. of Pages :2

[5229] - 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 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 Glyconeogenesis. Add a note on ATP Synthesis.

Q2) Explain defence mechanism during biotic stress in plants.

Q3) Explain:

a) Phloem loading & unloading.

b) Biosynthesis of ethylene.

Q4) Write Notes on Any Two:

a) TCA cycle.

b) Photorespiration.

c) Metabolic changes during fruit ripening.

P.T.O.

SECTION - II

Q5) Give an account of classification of amino acids and proteins with examples.

Q6) Comment on biosynthesis of terpenoids.

Q7) Explain:

a) Factors affecting enzyme activity.

b) Biosynthesis of Lipids.

Q8) Write notes on Any Two:

a) Breakdown of starch.

b) NOD factor.

c) Secondary Structure of Protein.

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Total No. of Questions :8]

SEAT No. :

P1679

[Total No. of Pages :2

[5229] - 13
M.Sc. -I
BOTANY
BO-1.3: Principles of Genetics and Plant Breeding
(2008 Pattern) (Semester - 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) Comment on qualitative and quantitative traits. Describe inheritance of quantitative traits in Zea mays and Nicotiana.

Q2) Explain gene mapping in Neurospora.

Q3) Give an account of:

a) Mendalian and post mendalian genetics.

b) Mitochondrial and chloroplast genome.

Q4) Write notes on any two of the following:

a) Cytoplasmic inheritance.

b) Epitatis.

c) Concept of Linkage.

P.T.O.

SECTION-II

Q5) What is polyploidy? Explain methods inducing auto and allopolyploidy.

Q6) What are chromosomal abberations? Discuss different types of chromosomal abberations.

Q7) Comment on:

a) Genetic basis breeding.

b) Applications of incompatibility and male sterility in plant breeding.

Q8) Write short notes on:

a) Male sterility.

b) In breeding depression.

c) Role of mutations in plant breeding.

EEE

Total No. of Questions : 8]

SEAT No. :

P1680

[Total No. of Pages : 2

[5229]-21

M.Sc. - I

BOTANY

BO-2.1 : Systematics of Vascular Plants

(2008 Pattern) (Semester-II)

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

Instructions to the candidates:

1) ***Answer any five questions, 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) Describe the alternation of generations in Pteridophytes.

Q2) a) Give comparative account of structure of sporophyte in Ginkgoales and Ephedrales.

b) Comment on taxonomic hierarchy.

Q3) Attempt Any Two of the following:

a) Write the structure of sporophyte of Lycopodiales.

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

c) Explain synthetic approach of genome analysis in Angiosperms.

Q4) Write note on Any Two:

a) Life cycle pattern in Gymnosperms.

b) Gymnosperm as protective ancestor of Angiosperms.

c) Field and library tools of taxonomy.

P.T.O.

SECTION-II

Q5) Give detail account of Takhtajan system of classification of Angiosperms.

Q6) a) Comment on structure of sporophyte of Isoetales.

b) Describe sporophyte of Ginkgoales.

Q7) Attempt Any Two of the following:

a) Write comparative account of gametophytes of Filicales.

b) Comment on habitat and distribution of Gymnosperms.

c) Explain phenetic in taxonomy.

Q8) Write note on Any Two:

a) Magnoliopsida.

b) Genome analysis : Synthetic approach.

c) Sporophyte of Maratiales.

d) Gymnosperms as a prospective ancestor of Angiosperms.

Total No. of Questions : 8]

SEAT No. :

P1681

[Total No. of Pages : 2

[5229]-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) ***Answer 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 sheets.***
3) ***Figures to the right indicate full marks.***
4) ***Neat labelled diagrams must be drawn wherever necessary.***

SECTION-I

Q1) Explain biogenesis, ultra structure and function of cell wall. **[16]**

Q2) a) Describe structure of eukaryotic chromosome. **[8]**

b) Write the process of mitosis. **[8]**

Q3) a) Discuss the plant wound signalling pathway. **[8]**

b) Give the ultra structure and functions of nucleus. **[8]**

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

a) Golgi apparatus.

b) Totipotency and cell differentiation.

c) Cell-cell interaction.

d) Cell signalling.

P.T.O.

SECTION-II

Q5) Describe the principle and working of UV-V is spectrophoto meter. **[16]**

Q6) a) What is microscopy? Describe the construction and working of light microscope. **[8]**

b) Explain the technique of isoelectric focussing. **[8]**

Q7) a) Comment on the composition and functions of prokaryotic ribosomes. **[8]**

b) Give ultrastructure and functions of plasma membrane. **[8]**

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

a) Microtomy.

b) Ultracentrifugation.

c) Thin layer chromatography.

d) Autoradiography

Total No. of Questions : 8]

SEAT No. :

P1682

[Total No. of Pages : 2

[5229]-23

M.Sc. (Part-I)

BOTANY

BO-2.3 : Molecular Biology and Genetic Engineering

(2008 Pattern) (Semester-II)

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

Instructions to the candidates:

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

SECTION-I

Q1) Describe processing of RNA in eukaryotes. **[16]**

Q2) a) Give the structure of prokaryotic promoter. **[8]**

b) Explain in brief the θ model of prokaryotic DNA replication. **[8]**

Q3) a) Write the role of various eukaryotic transcription factors. **[8]**

b) Describe termination of transcription in prokaryotes. **[8]**

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

a) Mismatch repair of DNA damage.

b) Lac operon.

c) Protein folding and processing.

P.T.O.

SECTION-II

Q5) What are cot curves? Describe various classes of DNA based on DNA reassociation kinetics. **[16]**

Q6) a) describe applications of gene cloning. **[8]**

b) Explain various methods used to analyze recombinants. **[8]**

Q7) a) Discuss Southern blotting technique and add a note on its applications. **[8]**

b) Write the types of restriction endonucleases used in DNA cloning. **[8]**

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

a) Ti plasmid.

b) Polymerase Chain Reaction.

c) Proteomics.

Total No. of Questions : 8]

SEAT No. :

P1683

[Total No. of Pages : 2

[5229]-31

M.Sc. (Part-II)

BOTANY

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

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

Instructions to the candidates:

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

SECTION-I

Q1) Explain the stages of micropropagation and write its applications.

Q2) a) Describe the process of carpel development.

b) Mention any four applications of plant tissue culture in agriculture.

Q3) a) Explain the terms: Competence, Determination, Differentiation, Dedifferentiation.

b) Comment on cryopreservation.

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

a) Megasporogenesis.

b) Endosperm culture.

c) Difference between somatic hybrid and cybrid.

P.T.O.

SECTION-II

Q5) Explain gene expression in flower development.

Q6) a) Explain anther culture system with respect to protocol and applications.

b) Describe Zygote development in dicot plants.

Q7) a) Explain the process of microgametogenesis.

b) Discuss different types of protoplast cultures.

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

a) Molecular basis of root development.

b) Apomixis.

c) Production of haploids.

Total No. of Questions :8]

SEAT No. :

P1684

[Total No. of Pages :2

[5229] - 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 <u>Five</u> questions, selecting atleast <u>Two</u> questions from each section.***
2) ***Answer to the <u>Two</u> 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 biotic & abiotic structure of ecosystem. Give the functions of ecosystem.

Q2) a) Explain Carbon Cycle.

b) Comment on GIS & give its applications.

Q3) a) Write on CBD.

b) Add a note on heavy metal pollution.

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

a) Indian Biodiversity Act.

b) Grassland ecosystem.

c) Phytogeographic regions of India.

P.T.O.

SECTION - II

Q5) Give the types of biodiversity. Discuss the nature and origin of genetic diversity.

Q6) a) Comment on value of biodiversity w.r.t. Food & Foodes.

b) Briefly write on phytoremediation.

Q7) a) Discuss water and air pollution act.

b) Comment on CITES.

Q8) Write short notes on Any Two:

a) Phytofiltration.

b) Methods of biodiversity measurement.

c) Ramsar Convention.

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Total No. of Questions : 8]

SEAT No. :

P1685

[Total No. of Pages :2

[5229] - 34

M.Sc. II

BOTANY

BO 3.32 - Mycology & Plant Pathology

(Special Paper - I) (Semester - III) (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 on separate answer books.***
3) ***All questions carry equal marks.***
4) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) Give distinguishing features of fungi. Write Alexopoulos, Mims and Blackwells system.

Q2) a) Write on Labyrinthulomycetes.

b) Describe fruit bodies of Ascomycotina.

Q3) a) What are Gasteromycetes?

b) Comment on sporangia - conidia evolution in mucorales.

Q4) Write notes on any two:

a) Fruit bodies in myxomycotina.

b) Biochemical support for evolutionary relationship in fungi.

c) Conidia and conidiogenesis.

P.T.O.

SECTION - II

Q5) What is systemic mycosis? Discuss candidiasis and mucormycosis.

Q6) a) Write on Tinea & its clinical aspects.

b) Give any two methods of classification of plant diseases.

Q7) a) Write briefly on defense mechanisms in plants.

b) Explain physiology of diseased plant.

Q8) Write explanatory notes on any two:

a) Enzymes and toxins in plant diseased.

b) Role of biotechnology in plant pathology.

c) Damping off and rots.

Total No. of Questions : 8]

SEAT No. :

P1686

[Total No. of Pages :2

[5229] - 35

M.Sc. (Part - II)

BOTANY

BO - 3.33 : Angiosperms - I

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

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

Instructions to the candidates:

1) ***Answers any five questions, at least TWO questions from each sections.***
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 objetives and functions of herbarium. Add a note on role of herbarium in public education.

Q2) a) Describe organisation, units and facilities of a botanical garden.

b) Write a note on aims and objectives of biosystematics investigation.

Q3) a) Explain Numerical Taxonomy.

b) Give procedure for describing new genus and species.

Q4) Write notes on any two:

a) ICBN.

b) Centrospermae.

c) Clausen's experiments.

P.T.O.

SECTION - II

Q5) Give concept, objectives and functions of a botanical garden. Add a note on any one botanical garden of the world.

Q6) a) Describe herbarium as a multipurpose resource institute.

b) Comment on effective and valid publications.

Q7) Add a note on systematics as a synthetic subject and its multidisciplinary approach to systematics major groups of angiosperms.

Q8) Write notes on any two:

a) Botanical garden in India.

b) Digitized herbaria.

c) Angiosperms diversity of Western Gnats.

Total No. of Questions : 8]

SEAT No. :

P1687

[Total No. of Pages :2

[5229] - 36

M.Sc. - II

BOTANY

BO - 3.34 - Plant Physiology

(Special Paper - I) (Semester - III) (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 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 mechanism of salt tolerance in higher plants. **[16]**

Q2) a) Describe effects of air pollutants on plant metabolism. **[8]**

b) Explain drought resistance mechanism in plants. **[8]**

Q3) a) Comment on toxicity of Mn and Zn on plant metabolism. **[8]**

b) Write mechanisms of scaranging of free radicals in plants. **[8]**

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

a) Effects of radiation stress.

b) Water logging injury.

c) Scope and importance of stress physiology.

P.T.O.

SECTION - II

Q5) What is radiation stress? Explain Mechanism of UV tolerance in plants. **[16]**

Q6) a) Give causes and importance of saline and sodic soils. **[8]**

b) Explain the concept of ion toxicity and comment on its importance. **[8]**

Q7) a) Give effects of oxygen toxicity in plants. **[8]**

b) Describe role of proline and glycine betain in water stressed plants. **[8]**

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

a) Importance of xenobiotic stress.

b) Causes and importance of water logging.

c) Stress physiology.

Total No. of Questions : 8]

SEAT No. :

P1688

[Total No. of Pages :2

[5229] - 37

M.Sc. - II

BOTANY

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

(Special Paper - I) (Semester - III) (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) ***Answers to the two sections should be written in seperate answer books.***
3) ***All questions carry equal marks.***
4) ***Neat labelled diagrams must be drawn wherever necessary.***

SECTION - I

Q1) Discuss in detail mechanism of transduction in Bacteria.

Q2) a) Give an account of alien gene transfer in wheat through chromosome manipulation.

b) What is a karyotype? Explain the types of banding patterns.

Q3) a) Give an account of organisms, suitable for genetic experimentation.

b) Explain the role of rec A & rec ACD enzymes in genetic recombination.

Q4) Write note on any two

a) Gene targeting.

b) Level of significance.

c) Trisomics.

P.T.O.

SECTION - II

Q5) Explain population improvement through mass & progeny selection in cross pollinated crops.

Q6) a) What is germplasm? Add a note on germplasm collection centers.

b) Describe the method of handling of mutagen treated material and progeny in M_1 & M_2 generation.

Q7) a) Explain the procedure for bulk & backcross method of selection.

b) Give the merits and demerits of hybrid varieties.

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

a) Completely Randomized Block.

b) Applications of simple correlation in crop improvement.

c) Clonal selection.

Total No. of Questions : 8]

SEAT No. :

P1689

[Total No. of Pages :2

[5229] - 38

M.Sc. (Part - 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) Comment on various stages & applications of micropropagation.

Q2) a) What is plant tissue culture? Write its objectives.

b) Enlist different constituents of tissue culture media & their role.

Q3) a) Give applications of somaclonal variatious.

b) Write the protocol of meristem culture & explain its applications.

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

a) Haploids in plant breeding.

b) PTC for crop improvement.

c) Plantibodies.

P.T.O.

SECTION - II

Q5) What is cryopreservation? Explain it's procedure and applications.

Q6) a) Give an account of cell suspension culture.

b) What is somatic embryogenesis? Explain factors influencing somatic embryogenesis.

Q7) a) Explain the role of transgenics in quality improvement of crops.

b) Give an account of green house technology with respect to its operation & management.

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

a) Plant derived vaccines.

b) Biofertilizers.

c) Transgenics for insect resistance.

Total No. of Questions : 8]

SEAT No. :

P1690

[Total No. of Pages :2

[5229] - 39

M.Sc. - II

BOTANY

BO - 3.37 : Plant Diversity - 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) ***Answer to the two sections should be written in separate answer book.***
3) ***All questions carry equal marks.***
4) ***Neat labelled diagrams must be drawn wherever necessary.***

SECTION - I

Q1) What is meant by diversity indices? Add a note on the sampling techniques of plant and bird biodiversity. **[16]**

Q2) Comment on: **[16]**

a) Give an account of determinants of genetic diversity.

b) Write a note on factors affecting species distributions.

Q3) Explain: **[16]**

a) Endemism and Biodiversity.

b) Landscape diversity.

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

a) Micro and macroevolution.

b) DNA based marker technique for measuring genetic diversity.

c) Origin of species.

P.T.O.

SECTION - II

Q5) Define agro-biodiversity. Explain its role in origin and evolution of cultivated species. **[16]**

Q6) Explain : **[16]**

a) Hotspots in India.

b) Wet land ecosystem.

Q7) Comment on : **[16]**

a) Bryophyte diversity of western ghats of maharashtra.

b) Arid and semi Arid Ecosystems.

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

a) Gymnosperm diversity.

b) Diversity in domesticated species.

c) Global distribution of biodiversity.

Total No. of Questions : 8]

SEAT No. :

P1691

[Total No. of Pages :2

[5229] - 40

M.Sc.

BOTANY

BO - 3.38 : Seed Technology - I

(Special Paper - I) (Semester - III) (2013 Pattern)

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

Instructions to the candidates:

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

SECTION - I

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

Q2) Explain:

a) Physiological and biochemical changes during seed germination.

b) Scope and problems of seed pathology.

Q3) Describe:

a) Relevance of dormancy to seed production.

b) Seed health testing methods.

Q4) Write notes on any two of the following:

a) Concept of seed pathology.

b) Seed ligour.

c) Chemical composition of seed.

P.T.O.

SECTION - II

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

Q6) Comment on:

a) Prevention measures of seed deterioration.

b) Scope and problem of seed pathology.

Q7) Explain:

a) Causes of seed dormancy.

b) Factors affecting seed longevity during storage.

Q8) Write notes on any two of the following:

a) Environmental factors and plant seed transmission.

b) Quarantine for seed.

c) Purpose and stages of seed stores.

Total No. of Questions : 8]

SEAT No. :

P1692

[Total No. of Pages : 2

[5229]-41
M.Sc. - II
BOTANY
BO - 4.1 : Plant Resources and Evolution
(2008 Pattern) (Semester - IV)

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

Instructions to the candidates:

1) ***Attempt a total of five questions from the following, selecting at least two questions from each section.***
2) ***Answers to the questions from each section should be written in separate answer books.***
3) ***Figures to the right indicates 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) Enlist and describe vovilov's center of origin. **[8]**

b) Comment on quantitative and qualitative analysis of carbohydrates and proteins. **[8]**

Q3) a) Discuss the role of morphology and chemotaxonomy in criminology w.r.t. Forensic botany. **[8]**

b) Comment on therapeutic uses of bark and leaf. **[8]**

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

a) Concept of adaptation.

b) Origin of eukaryotic cell.

c) Spontanety of mutations.

P.T.O.

SECTION - II

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

Q6) a) Describe fitness and natural selection w.r.t. Evolution. **[8]**

b) Comment on origin of new genes and proteins. **[8]**

Q7) a) Explain the concepts and rate of change in gene frequency through natural selection. **[8]**

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

Q8) Write explanatory notes on any two. **[16]**

a) Energy plantations.

b) Pentoxylates.

c) Hardy-Weinberg Law.

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Total No. of Questions : 8]

SEAT No. :

P1693

[Total No. of Pages : 2

[5229]-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) ***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 are blue green algae? Discuss methods of mass production and commercial applications of Spirulina.

Q2) a) Enlist sea weeds. Write methods of production of sea weeds.

b) Comment on algal blooms and lagal nuissance.

Q3) a) Write briefly on production of fungal organic acids.

b) Explain submerged and shallow methods of fermentation.

Q4) Write notes on any two.

a) Fungal SCP.

b) Endomycorrhizae & its applications.

c) Fungal antibiotics.

P.T.O.

SECTION-II

Q5) Discuss in detail ringworm and candidiasis.

Q6) a) Explain role of fungi in ayurvedic and homeopathic medicines.

b) Write overview of bioinformatics.

Q7) a) With suitable examples explain ANNOVA.

b) Comment on chi-square test.

Q8) Write explanatory notes on any two.

a) Data mining methods for sequence analysis.

b) Search engines.

c) Myconematicides.

Total No. of Questions : 8]

SEAT No. :

P1694

[Total No. of Pages : 2

[5229]-44

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) ***Answers to the two sections must be written in separate answer book.***
3) ***All questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***

SECTION-I

Q1) Explain different methods of fermentation. Add a note on citric acid fermentation.

Q2) a) Write on production of fungal antibiotics.

b) Comment on fungal SCP.

Q3) a) Discuss role of fungi in treatment of effluents and bioremediation.

b) Give an account of role of endomycorrhiza in agriculture.

Q4) Write notes on Any Two of the following:

a) Myconematicides and mycoinsecticides.

b) Lignocellulose conversions in the paper industry.

c) Fungal immunoregulators.

P.T.O.

SECTION-II

Q5) What is systemic mycosis? Discuss candidiasis and mucor-mycosis.

Q6) a) Write on Tinea.

b) Give any two methods of classification of plant diseases.

Q7) a) Write briefly on defense mechanisms in plants.

b) Explain physiology of diseased plant.

Q8) Write notes on Any Two of the following:

a) Enzymes and toxins in plant diseases.

b) Role of biotechnology in Plant Pathology.

c) Damping off and rots.

Total No. of Questions : 8]

SEAT No. :

P1695

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

SECTION-I

Q1) Describe organisation, units, facilities and importance of Arboretum.

Q2) a) Explain basic features of an arborescent form.

b) Write properties and uses of wood in relation to structure.

Q3) a) Comment on identification of trees on gross morphological characters.

b) Explain growth, development and maturation of pollens.

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

a) Somatic embryo genesis.

b) Pollen viability.

c) Androgenesis.

P.T.O.

SECTION-II

Q5) Describe the practices in arboriculture.

Q6) a) Explain concept of per plantation arborescence.

b) Discuss gross structure and organisation of wood.

Q7) a) Write on floral calender and floral fidelity.

b) Comment on embryogenesis.

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

a) Artificial pollination.

b) Pollen sterility.

c) In vitro fertilization.

Total No. of Questions : 8]

SEAT No. :

P1696

[Total No. of Pages : 2

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M.Sc. - II

BOTANY

BO-4.44 : Plant Physiology

(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) Write on photoperiodism and give its significance in flowering.

Q2) a) Explain the effect of fungal infection on plant metabolism.

b) Comment on degradation of Carotenoids.

Q3) a) Write on effect of global warming on plant metabolism.

b) Describe the pigment organization in thylakoid membrane.

Q4) Write short notes on Any TWO of following:

a) Defense chemicals.

b) Recent research in crop physiology in India.

c) Bt-Tomato.

P.T.O.

SECTION-II

Q5) Write on biosynthesis of Chlorophyll and Carotenoids.

Q6) a) Comment of effect of elevated level of CO_2 on crop yields.

b) Explain the electron transport mechanism.

Q7) a) Comment on effect of global warming on crop yield.

b) Describe the effect of allelochemicals on soil health.

Q8) Write short notes on Any Two:

a) Resistance (R) - genes.

b) Photoreceptors.

c) Phytochromes.

Total No. of Questions : 8]

SEAT No. :

P1697

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M.Sc. - II

BOTANY

BO-4.45 : Genetics, Molecular Biology & Plant Breeding - II

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

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

Instructions to the candidates:

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

SECTION-I

Q1) Explain the process of RFLP. Add note on its applications. **[16]**

Q2) a) Give an account of analysis of genome sequence. **[8]**

b) Describe the procedure of amplification of plasmid DNA in vivo. **[8]**

Q3) a) Comment on Method of chromosome walking. **[8]**

b) Write the procedure of Northern blotting & its applications. **[8]**

Q4) Write in brief on any two of the followings: **[16]**

a) Genome project.

b) QTL.

c) Expression Screening.

P.T.O.

SECTION-II

Q5) What are quality traits? Explain mechanism of breeding for nutrition qualities in plants. **[16]**

Q6) a) Give an account of sources of quality traits. **[8]**

b) Write an account of sources of drought resistance varieties. **[8]**

Q7) a) Discuss the process for biosynthesis of fatty acids. **[8]**

b) Give the role of genetic engineering in protein quality improvemnet. **[8]**

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

a) Oil seed crops.

b) Micropropagation.

c) Difficulties in breeding for drought resistance.

Total No. of Questions : 8]

SEAT No. :

P1698

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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 role of various enzymes used in recombinant DNA technology.

Q2) a) Comment on DNA sequencing.

b) Describe vectors in gene cloning.

Q3) a) Describe techniques in restriction mapping.

b) Comment on functional Genomics.

Q4) Write note on Any Two of the following:

a) PCR.

b) Genome annotation.

c) Comparative Genomics.

P.T.O.

SECTION-II

Q5) Explain the role of Biotechnology in Agriculture.

Q6) a) Comment on uses of microbes in Agriculture.

b) Comment on Economics and legal issues of Biotechnology.

Q7) a) Describe applications of Proteomics in drug development.

b) Explain ethical aspects and public acceptance of Biotechnology

Q8) Write note on Any Two of the following:

a) Screening of diagnostic marker.

b) Bioethical principles of Agricultural Biotechnology.

c) Pharmacogenomics.

Total No. of Questions : 8]

SEAT No. :

P1699

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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) ***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) Explain in detail the factors causing loss of genetic diversity. **[16]**

Q2) Briefly discuss the organizations responsible for framing the policies and developing methodologies for management of biodiversity. **[16]**

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

a) Causes and consequences of loss of agrobiodiversity.

b) Biodiversity legislation and conventions.

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

a) Factors affecting ecosystem degradation.

b) Ecological and evolutionary impacts of biological invansions.

c) In-situ conservation.

P.T.O.

SECTION-II

Q5) Write uses of plants with respect to food, fodder, medicinal plants and timber. Add a note on indigenous knowledge systems. **[16]**

Q6) Explain the methodologies for valuation of Biodiversity. Add a note on biodiversity prospecting. **[16]**

Q7) Comment on: **[16]**

a) Biopiracy.

b) CDM.

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

a) Biodiversity Database.

b) Plant biodiversity as a source of carbon sinks.

c) Ramsar convention.

Total No. of Questions : 8]

SEAT No. :

P1700

[Total No. of Pages : 2

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M.Sc.

BOTANY

BO-4.48 : Seed technology - II

(2008 Pattern) (Semester-IV) (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) ***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 cotton and brinjol.

Q2) Explain:

a) Concept and objectives of seed processing.

b) Production and maintenance of breeders and foundation seed in cross pollinated crops.

Q3) Comment on:

a) History of vegetable seed industry.

b) Importance of seed treatment.

Q4) Write notes on any two of the following:

a) Bucket elevator and belt conveyor.

b) Colour separators.

c) Slurry treater and seed pelletizer.

P.T.O.

SECTION-II

Q5) Describe different methods used to check genetic purity and quality of seed.

Q6) Comment on:

a) Seed certification board.

b) Specific seed certification standards.

Q7) Explain:

a) Sampling methods in seed testing.

b) DNA Finger printing and ELISA test.

Q8) Write note on any two of the following:

a) Artificial seeds.

b) RAPD and RFLP.

c) Central seed committee.