Total No. of Questions : 8]

SEAT No. :

P743

[Total No. of Pages : 2

[4134]-101
M.Sc. - I
BOTANY
BO-1.1 : Systematics of Non Vascular Plants
(2008 Pattern) (Sem. - 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) Give an outline classification of algae with reasons proposed by G.M. Smith. **[16]**

Q2) Give an account of the order Calobryales and Takakiales. **[16]**

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

a) Comment on asexual reproduction in Chlorophyta.

b) Give an account of sexual reproduction in Phaeophyta.

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

a) Cell organisation in Cyanophyta.

b) Characters of Pyrrophyta.

c) Plant Systematics.

SECTION - II

Q5) Give general characters of Gasteromycetes and comment on fruiting bodies found therein. **[16]**

Q6) Give classification of fungi with reasons proposed by Ainsworth and add a note on Saprotrophs. **[16]**

P.T.O.

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

a) Write an evolution of sex in Fungi.

b) Give present status of Fungi.

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

a) Asexual reproduction in Fungi.

b) Habitats of bryophyta.

c) Gametophytes of Jungermanniales.

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Total No. of Questions : 8]

SEAT No. :

P744

[Total No. of Pages : 2

[4134]-102
M.Sc. - I
BOTANY
BO-1.2 : Plant Physiology and Biochemistry
(2008 Pattern) (Sem. - I)

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

Instructions to the candidates:

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

SECTION - I

Q1) Explain the functioning of light harvesting complexes and mechanism of photolysis of water.

Q2) Give an outline of gluconeogenesis and explain why it is necessary in plants?

Q3) Explain :

a) Mechanism of action of auxin.

b) Metabolic changes during seed germination.

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

a) Mechanism of biotic stress tolerance.

b) Uniport, symport and antiport.

c) Recent concept in stomatal physiology.

SECTION - II

Q5) Explain synthesis and breakdown of starch.

Q6) What is enzyme Kinetics? State and explain Michaelis-Mention equation. Add a note on its significance.

P.T.O.

Q7) a) Describe the primary and secondary structure of protein. Add a note on classification of proteins.

b) Explain the formation of root nodules in legumes.

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

a) Biosynthesis of lipids.

b) Synthesis of alkaloids.

c) Principles of thermodynamics.

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Total No. of Questions : 8]

SEAT No. :

P745

[Total No. of Pages : 2

[4134]-103
M.Sc. - I
BOTANY
BO-1.3 : Genetics & Plant Breeding
(2008 Pattern) (Sem. - I)

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

Instructions to the candidates:

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

SECTION - I

Q1) Explain Hardy-Weinberg law & describe the factors affecting Hardy-Weinberg equilibrium. **[16]**

Q2) Explain the method of gene mapping in fungi using ordered and unordered tetrads of Neurospora & Yeast. **[16]**

Q3) Explain in detail the following : **[16]**

a) Cytoplasmic male sterility in plants.

b) Complementary gene interaction.

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

a) Concept & types of recombination.

b) Chloroplast genome.

c) Multiple factors hypothesis & heritability.

SECTION - II

Q5) Define Karyotype. Describe variation in Chromosome structure due to inversion and Translocation. **[16]**

Q6) Describe different steps in hybridization and add a note on wide crosses. **[16]**

P.T.O.

Q7) Explain in detail the following :

a) Aneuploidy & its importance. **[8]**

b) Importance of genetic variation in crop improvement. **[8]**

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

a) Heterosis & Inbreeding depression.

b) Classification of mutation & its Role in Plant Breeding.

c) Types of Male Sterility.

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Total No. of Questions : 8]

SEAT No. :

P746

[Total No. of Pages : 2

[4134]-201
M.Sc. (Part - I)
BOTANY
BO-2.1 : Systematics of Vascular Plants
(2008 Pattern) (Sem. - II)

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

Instructions to the candidates:

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

SECTION - I

Q1) Give an account of morphology and anatomy of sphenopsida. Add a note on its reproductive structures. **[16]**

Q2) Give salient features of coniferales and compare its vegetative and reproductive structures. **[16]**

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

a) Alternation of generations in pteridophytes.

b) Male and female cones in cycadales.

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

a) Apospory in pteridophytes.

b) Reproductive structures in Welwitschia.

c) Primitive features of Gnetales.

SECTION - II

Q5) Enlist orders of subclass Magnoliopsida. Give salient features of order magnoliidae. **[16]**

Q6) Describe the importance of field and library tools in taxonomy. **[16]**

P.T.O.

Q7) a) Give an outline of Takhtajan's system of classification of Angiosperms. **[8]**

b) Explain Darwinian concept of evolution of species with respect to angiosperms. **[8]**

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

a) Floral pigments.

b) Ecads and ecotypes.

c) Properties of taxonomic hierarchy.

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Total No. of Questions : 8]

SEAT No. :

P747

[Total No. of Pages : 2

[4134]-202
M.Sc. (Sem. - II)
BOTANY
BO-2.2 : Cell Biology and Instrumentation
(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) What is cell differentiation? Add a note on totipotency in plant cell. **[16]**

Q2) a) Explain biogenesis and functions of mitochondria. **[8]**

b) Describe ultra structure and functions of chloroplast. **[8]**

Q3) a) Explain role of ribosomes in protein synthesis. **[8]**

b) Write in brief about functions of peroxisomes. **[8]**

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

a) Immune response.

b) Centromere and telomere.

c) Organization of prokaryotic cell.

SECTION - II

Q5) What is electrophorosis? Write a note on isoelectric focusing. **[16]**

Q6) a) Give an account of L.R. Spectroscopy. **[8]**

b) Autoradiography. **[8]**

P.T.O.

Q7) a) Explain the principles and working of NMR spectroscopy. **[8]**

b) Explain role of photoproteins in plant metabolism. **[8]**

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

a) GM counting.

b) TLC

c) Microtomy.

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Total No. of Questions : 8]

SEAT No. :

P748

[Total No. of Pages : 2

[4134]-203
M.Sc. (Sem. - II)
BOTANY
BO-2.3 : Molecular Biology & 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) ***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 dissociation and reassociation kinetics of eukaryotic DNA. Add a note on its significance. **[16]**

Q2) Write the mechanism of gene regulation in tryptophane operon. Add a note on importance of attinuation control in the mechanism. **[16]**

Q3) a) Describe the structure of RNA polymerases in prokaryotic cell and its role in the mechanism of transcription. **[8]**

b) Explain the process of protein folding and processing. **[8]**

Q4) Write notes on <u>any two</u> of the following : **[16]**

a) Organization and Structure of prokaryotic gene.

b) Excision repair mechanism of DNA damage.

c) Synthesis of lagging strand.

SECTION - II

Q5) Describe the method of production of transgenic plants for insect resistance and it's importance in Agriculture. **[16]**

Q6) What is gene libraries. Describe the procedure for preparation of Genomic and C-DNA libraries in details? **[16]**

P.T.O.

Q7) a) Describe the structure of P^{BR322} and its application in genetic engineering. **[8]**

b) Describe the procedure for Polymerase Chain Reaction. **[8]**

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

a) Restriction Endonucleases.

b) Applications of Genetic Engineering.

c) Maximum and Gilbert method for DNA sequencing.

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Total No. of Questions : 8]

SEAT No. :

P749

[Total No. of Pages : 2

[4134]-301
M.Sc. (Sem. - 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) ***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) Meristems as dynamic centre of cell generation. Explain.

Q2) Describe :

a) Programmed cell death.

b) Development of carpel.

Q3) Comment on :

a) Cell fate mapping.

b) Parthenocarpy.

Q4) Write short notes on (Any two) :

a) Self incompatibility.

b) Androgenesis.

c) Double fertilization

SECTION - II

Q5) Explain the different methods used for protoplast fusion and selection of somatic hybrids.

Q6) Describe in-vitro haploid production. Add a note on their applications.

P.T.O.

Q7) a) Explain the factors influencing the transfer of in vitro raised plantlets to field condition.

b) Why enhanced secondary metabolites production is possible using biotic elicitors?

Q8) Write notes on (Any two) :

a) Endosperm culture.

b) Applications of PTC in floriculture.

c) Causes of somaclonal variation.

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Total No. of Questions : 8]

SEAT No. :

P750

[Total No. of Pages : 2

[4134]-302
M.Sc. - II
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, 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) Define air pollution. Enlist its pollutants. Explain in detail its impact on ecosystem.

Q2) What is community ecology? Give forms and structure of communities. Add a note on physiognomy.

Q3) a) Explain the interdisciplinary nature of environmental science.

b) Describe various ecological effects of heavy metals.

Q4) Write notes on any two :

a) I UCN Categories.

b) Energy flow in ecosystem.

c) Indian biodiversity act.

SECTION - II

Q5) What is genetic diversity? Describe its any one measurement studied by you.

Q6) Give an account of natural factors responsible for loss of biodiversity.

P.T.O.

Q7) a) Explain biotic & abiotic relationship in lentic water ecosystem.

b) Comment on natality and mortality.

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

a) CITIES.

b) Phyto extraction.

c) Scope of EIA.

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Total No. of Questions : 8]

SEAT No. :

P751

[Total No. of Pages : 2

[4134]-303
M.Sc. - II
BOTANY
BO-3.31 : Phycology
(2008 Pattern) (Special Paper - I) (Semester - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) Give an outline of classification as per Fritsch. Add a note on algal phylogeny.

Q2) a) Explain the role of histochemistry in algal systematics.

b) Briefly write on endosymbiosis and origin of eukaryotic algae.

Q3) a) Comment on systematics of green algae in brief.

b) Give brief account of reproduction in blue green algae.

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

a) Heterocysts in BGA.

b) Chlorella.

c) Asexual reproduction in green algae.

SECTION - II

Q5) Give salient features of red algae and comment on systematics of red algae.

Q6) a) Comment on importance of red algae in industry.

b) Write briefly on thallus organization in brown algae.

P.T.O.

Q7) a) Comment on periodicity and succession of algae.

b) Give physical and chemical properties of water.

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

a) Ecological classification of algae.

b) Intertidal algae.

c) Phytoplankton algae.

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Total No. of Questions : 8]

SEAT No. :

P752

[Total No. of Pages : 2

[4134]-304
M.Sc. - II
BOTANY
BO-3.32 : Mycology and Plant Pathology - I
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) Give an account of system of classification stated by Ainsworth and add a note on its merits. **[16]**

Q2) What are Basidiomycota? Add a note on basidiocarps you have studied. **[16]**

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

a) Comment on thallus diversity of lichens.

b) Briefly write on thallus organisation in chytridiales.

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

a) Net Slime Molds.

b) Laboulbeniomycetes

c) Erysiphales.

d) Allomyces.

SECTION - II

Q5) How fungi are ideal organisms for genetical studies? Add a note on genetical aspects of pathogenecity and resistance. **[16]**

Q6) What is heterothallism? State different aspects of heterothallism in different fungi. **[16]**

P.T.O.

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

a) Comment on soil fungi.

b) Briefly write on seed borne fungi.

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

a) Phylloplane fungi.

b) Mycotoxins.

c) Mycorrhizae.

d) Fungal mineral nutrition.

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Total No. of Questions : 8]

SEAT No. :

P753

[Total No. of Pages : 2

[4134]-305
M.Sc. (Part - 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 at least TWO questions from each section.***
2) ***Answer to the TWO sections should be written in SEPARATE answer books.***
3) ***All questions carry EQUAL marks.***
4) ***Neat diagrams must be drawn WHEREVER necessary.***

SECTION - I

Q1) Explain the role of modern trends in systematics of centrospermae and Loranthaceae.

Q2) Write critically about the following :

a) Effective and valid publication.

b) Trapa and Paeonia.

Q3) Explain an organization, units, objectives and functions of a botanical garden.

Q4) Write short notes (Any two) :

a) Digital herbarium.

b) Numerical taxonomy.

c) Angiosperm diversity of Western Ghat.

SECTION - II

Q5) Discuss the role of herbarium in Teaching and Research.

Q6) Describe the following :

a) Rules and principles of ICBN.

b) Aims and objectives of Biosystematics.

P.T.O.

Q7) "Amentiferae is a group of heterogenous assemblage of plants". Discuss.

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

a) Procedures for describing new genus and species.

b) Anthocyanins and betacyanins are mutually exclusive.

c) Herbarium as a multipurpose resource institute.

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Total No. of Questions : 8]

SEAT No. :

P754

[Total No. of Pages : 2

[4134]-306
M.Sc. - II
BOTANY
BO-3.34 : Plant Physiology - I
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) What is water logging? Give the causes, consequences and importance of water logging.

Q2) Explain the terms - water deficit and drought. Add a note on drought resistance mechanism in plants.

Q3) a) Give an account of causes and improvement of saline and sodic soils.

b) Describe the effects of salt stress on plant metabolism.

Q4) Write short notes on (Any two) :

a) Transgenics for drought stress tolerance.

b) Mechanism of flooding tolerance.

c) Mechanism of salt stress tolerance.

SECTION - II

Q5) Explain the process of ROS generation. Add a note on its effect on plants.

Q6) Give an account of effects of UV-B radiation on plant metabolism. Add a note on mechanism of UV-tolerance.

P.T.O.

Q7) a) Explain the effects of air pollutants on plant metabolism.

b) Give the scope and importance of Xenobiotic stress.

Q8) Write short notes on (Any two) :

a) Toxicity of iron and manganese.

b) Scavenging of free radicals.

c) Photoinhibition.

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Total No. of Questions : 8]

SEAT No. :

P755

[Total No. of Pages : 2

[4134]-307
M.Sc. - II
BOTANY
BO-3.35 : Genetics, Molecular Biology and Plant Breeding - I
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) Describe various morphological markers of chromosome and add a note on special chromosomes. **[16]**

Q2) a) Describe origin, production & meiotic behavior of autopolyploids. **[8]**

b) Describe production, characterization & utility of alien substitution lines. **[8]**

Q3) a) Explain S. Benzer's method of gene mapping with respect to r-11 locus in T_4 phage. **[8]**

b) Explain Quantitative inheritance with suitable example. **[8]**

Q4) Write brief account of <u>any two</u> of the following : **[16]**

a) Holiday Junction.

b) YAC.

c) Chromosomal Banding techniques & its application.

SECTION - II

Q5) Describe structure of bacterial & phage chromosomes & add a note on C-value paradox. **[16]**

Q6) a) Describe procedure, application & merit of bulk method. **[8]**

b) Explain genetic recombination in bacteria through transduction. **[8]**

P.T.O.

Q7) a) Explain simple, partial & multiple correlations & add a note on its application in crop improvement. **[8]**

b) Describe different field evaluation techniques. **[8]**

Q8) Write notes on <u>any two</u> of the following : **[16]**

a) Screening of Mutants.

b) Role of Monosomics in Chromosome mapping.

c) Test of significance.

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Total No. of Questions : 8]

SEAT No. :

P756

[Total No. of Pages : 2

[4134]-308
M.Sc. - II
BOTANY
BO-3.36 : Plant Biotechnology - I
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) Explain the various factors influencing morphogenesis.

Q2) a) Describe the establishment of cell culture and give its applications.

b) Explain the causes of variation among the plants regenerated from tissue cultures.

Q3) a) Describe the basic principles followed in design and development of plant tissue culture laboratory.

b) How are plant materials sterilized and aseptic explants are established?

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

a) Importance of synthetic seeds in micropropagation.

b) Handling and preparation of tissue culture media.

c) Role of tissue culture in crop improvement.

SECTION - II

Q5) Explain with suitable example the development of transgenic crop for insectresistance.

Q6) a) What is phytoremediation? Explain it with suitable example.

b) Explain the role of cryopreservation in conservation of plant biodiversity.

P.T.O.

Q7) a) Comment on improvement of quality of carbohydrates with the help of transgenic crops.

b) Describe the methods used in selection of somatic hybrids.

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

a) Mycorrhiza.

b) Role of greenhouse technology in floriculture.

c) <u>In Vitro</u> developed haploids in plant breeding.

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Total No. of Questions : 8]

SEAT No. :

P757

[Total No. of Pages : 2

[4134]-309
M.Sc.
BOTANY
BO-3.37 : Plant Diversity
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) What is urban and peri-urban Diversity? Comment on importance and nature of urban Biodiversity.

Q2) Comment on :

a) Global distribution of Biodiversity.

b) Fungal diversity with reference to habitat.

Q3) a) Explain the techniques of monitoring plants and mammals Biodiversity.

b) Comment on domesticated microbes and feral plants.

Q4) Write short notes on (any two) :

a) Origin of specie.

b) Concept of Biodiversity.

c) Determinants of genetic diversity.

SECTION - II

Q5) What is species inventory? Add a note on centres of diversity.

Q6) Explain :

a) Factors affecting species distribution.

b) Lichen diversity with reference to habit and habitat.

P.T.O.

Q7) Comment on :

a) Arid & Semiarid ecosystems.

b) Species concept.

Q8) Write short notes on (any two) :

a) Taxic diversity.

b) Ecosystem diversity.

c) Diversity indices.

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Total No. of Questions : 8]

SEAT No. :

P758

[Total No. of Pages : 2

[4134]-310
M.Sc. (Part - II)
BOTANY
BO-3.38 : Seed Technology
(2008 Pattern) (Special Paper - I) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) Define Seed. Describe the steps involved in development of seed.

Q2) Explain :

a) Structure of Microsporangium.

b) Development of embryo.

Q3) Describe :

a) Significance of seed germination.

b) Seed crop management.

Q4) Write short notes on (ANY TWO) :

a) Factors affecting seed germination.

b) Seed borne diseases.

c) Opportunities of seed technology.

SECTION - II

Q5) Describe seed borne diseases and add a note on its control measures.

Q6) Comment on :

a) Mechanism of seed infection.

b) Grain pests during storage.

P.T.O.

Q7) Explain preventive measures of seed germination.

Q8) Write short notes on (ANY TWO) :

a) Seed viability.

b) Quarantine

c) Biochemical changes during seed germination.

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Total No. of Questions : 8]

SEAT No. :

P759

[Total No. of Pages : 2

[4134]-401

M.Sc. (Sem. - IV)

BOTANY

BO-4.1 : Plant Resources and Evolution

(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) Give an account of Cycadeoidales and Pento-xylales w.r.t. evolutionary history and characters. **[16]**

Q2) a) Explain the role of Chemotaxonomy in criminology. **[8]**

b) Comment on organoleptic evaluation of crude drugs. **[8]**

Q3) a) What is domistication of plants? Comment on origin of cultivated plants. **[8]**

b) Describe Botanical gardens and Herbaria. **[8]**

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

a) Hardy-weinberg law.

b) Concept of natural evolution.

c) Cordaitales.

P.T.O.

SECTION - II

Q5) Describe two cellulose and two gum yielding crops w.r.t. Botanical name, plant part used and its uses. **[16]**

Q6) a) Mention types of secondary metabolites. Add a note on pharmacological action of any one secondary metabolite. **[8]**

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

Q7) a) Discuss any one concept of origin and evolution of eukaryotes. **[8]**

b) Give botanical source, chemical constituents, and therapeutic. Uses of any one drug obtained from fruit and Seed. **[8]**

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

a) Mendelism.

b) Drugs obtained from rhizome.

c) Genetic drift.

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Total No. of Questions : 8]

SEAT No. :

P760

[Total No. of Pages : 2

[4134]-402
M.Sc. - II
BOTANY
BO-4.2 : Applied Botany
(2008 Pattern) (Sem. - IV)

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

Instructions to the candidates:

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

SECTION - I

Q1) What are Seaweeds? Discuss method and necessity of sea farming. **[16]**

Q2) a) Explain algal blooms. **[8]**

b) How algae act as indicators of water quality. **[8]**

Q3) a) Comment on submerged and substrate fermentation technology. **[8]**

b) Briefly write on production of alcohol. **[8]**

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

a) White rot fungi in bioremediation.

b) Mycofungicides.

c) Endomycorrhiza and its applications.

SECTION - II

Q5) Give symptoms, causal organism, prognosis, diagnosis and clinical aspects or mycetoma and candidiasis. **[16]**

Q6) a) Comment on Fungal allergy. **[8]**

b) Give measures of central tendency with suitable examples. **[8]**

P.T.O.

Q7) a) Comment on t-test of significance. **[8]**

b) Write briefly on confidence interval. **[8]**

Q8) Write explanatory notes on <u>any two</u> : **[16]**

a) Nucleic acid and protein sequence data bases.

b) Role of informatics in Biosciences.

c) Motif analysis and presentation.

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Total No. of Questions : 8]

SEAT No. :

P761

[Total No. of Pages : 2

[4134]-403
M.Sc. - II
BOTANY
BO-4.41 : Phycology
(Special paper - II) (2008 Pattern) (Sem. - IV)

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

Instructions to the candidates:

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

SECTION - I

Q1) Describe large scale cultivation of any one economically important alga and comment on its nutritional value. **[16]**

Q2) a) Comment on different types of media used in culturing of algae. **[8]**

b) Explain chemical composition and nutritional values of Chlorella. **[8]**

Q3) a) Comment on different types of algal cultures used in cultivation of algae. **[8]**

b) Describe the techniques used for culturing of BGA (blue-green algae). **[8]**

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

a) Cryopreservation.

b) Growth Kinetics.

c) Nutritional value of Laminaria.

SECTION - II

Q5) Describe the techniques of tissue culture adopted for marine macroalgae. **[16]**

Q6) a) Comment on the various seaweed resources of world. **[8]**

b) Explain the role of algae in biotechnology. **[8]**

P.T.O.

Q7) a) What are biofertilizers? Comment on seaweed liquid fertilizers. **[8]**

b) Explain the role of algae in bioremediation. **[8]**

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

a) Role of algae in biofuel production.

b) SCP.

c) Secondary Metabolites.

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Total No. of Questions : 8]

SEAT No. :

P762

[Total No. of Pages : 2

[4134]-404

M.Sc. (Sem. - IV)

BOTANY

BO-4.42 : Mycology and Plant Pathology

(2008 Pattern) (Special Paper - II)

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

Instructions to the candidates:

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

SECTION - I

Q1) What are primary and secondary metabolites of fungi? Enlist and describe in detail production of organic acids from fungi. **[16]**

Q2) a) Explain the role of fungi in treatment of industrial effluents and biremediation. **[8]**

b) Discuss lignocellulosic conversions in paper industry with the help of fungi. **[8]**

Q3) a) What is endomycorrhizae? Add a note on its applications in agriculture. **[8]**

b) How fungi are used in Homeopathy and Ayurvedic medicines? **[8]**

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

a) Fungi in productions of flavors and food colorants.

b) Fungal SCP.

c) Myconematicides and mycoinsecticides.

P.T.O.

SECTION - II

Q5) What is superficial mycosis? Add a note on Tinea and its clinical types. **[16]**

Q6) a) What are defense mechanisms in plants? **[8]**

b) Give role of enzymes and toxins in development of fungal plant diseases. **[8]**

Q7) a) How plant diseases are classified on the basis of causal organisms? **[8]**

b) Give contributions of De Bary and B.B. Mundkur. **[8]**

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

a) Downy mildews.

b) Seed Pathology.

c) Role of environment in disease development.

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Total No. of Questions : 8]

SEAT No. :

P763

[Total No. of Pages : 2

[4134]-405
M.Sc. (Part - II)
BOTANY
BO-4.43 : Angiosperms
(2008 Pattern) (Special Paper - II) (Sem. - IV)

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 an arboratum? Describe its organization, units and functions. Add a note on its importance. **[16]**

Q2) a) What is micropropagation? Explain various steps involved in micropropagation. **[8]**

b) Describe gross structure and organization of dicot wood. **[8]**

Q3) Describe various properties of wood. Add a note on uses of wood in relation of structure. **[16]**

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

a) Arborescent monocotyledons.

b) Androgenesis.

c) Post Plantation care of trees.

SECTION - II

Q5) Discuss ultrastructure and histochemistry of endosperm. **[16]**

Q6) Explain foraging behaviour of bees in relation to nector. Add a note on floral fidelity. **[16]**

P.T.O.

Q7) Explain :

a) Polyembryony in angiosperms. **[8]**

b) Events leads to gynogenesis in vivo. **[8]**

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

a) Unifloral and multifloral honeys.

b) Pollen viability and sterility.

c) Embryo rescue.

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Total No. of Questions : 8]

SEAT No. :

P764

[Total No. of Pages : 2

[4134]-406
M.Sc. (Sem. - IV)
BOTANY
BO-4.44 : Plant Physiology - II
(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 books.***
3) ***All questions carry equal marks.***
4) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) Describe the pathway for chlorophyll synthesis. **[16]**

Q2) a) Explain the mechanism of electron transport in photochemical reaction. **[8]**

b) Recent research on climate change in India. **[8]**

Q3) a) Explain photo respiration. **[8]**

b) Crop yield is the net gain of photosynthesis. Explain. **[8]**

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

a) Effect of green house gases on NAR.

b) Effect of elevated level of CO_2 and O_2 on crop yield.

c) Degradation of chlorophyll.

SECTION - II

Q5) What is allelopathy? How it is determined? **[16]**

Q6) a) Explain the effect of viral infection on plant metabolism. **[8]**

b) Explain the plant-fungi relationship. **[8]**

P.T.O.

Q7) a) Describe the significance of R genes in the host plants. **[8]**

b) What are defence chemicals? Explain their role in host pathogen interaction. **[8]**

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

a) Bt Tomato.

b) Cryptochromes.

c) Photoperiodism.

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Total No. of Questions : 8]

SEAT No.:

P765

[Total No. of Pages : 2

[4134]-407
M.Sc.
BOTANY
BO - 4.45 : Genetics, Molecular Biology and Plant Breeding
(Sem. - IV) (Special Paper - II) (2008 Pattern)

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

Instructions to the candidates:

1) ***All questions carry equal marks.***
2) ***Attempt five questions with at least two questions from each section.***
3) ***Draw neat labelled diagrams wherever necessary.***

SECTION - I

Q1) Explain technique of southern hybridization. **[16]**

Q2) a) Explain QTL mapping. **[8]**

b) What is genetic variability? How is it determined? **[8]**

Q3) a) How are nucleic acids purified? Explain. **[8]**

b) Write in brief about RAPD. **[8]**

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

a) Amplification of DNA in vitro by PCR.

b) PCR-coupled DNA sequencing.

c) Restriction mapping.

SECTION - II

Q5) Describe the methods of breeding for drought resistance. **[16]**

Q6) a) What are the sources of drought resistance? **[8]**

b) What are land races? How are they useful for breeding? **[8]**

Q7) a) What is lathyrism? How can it be overcome? **[8]**

b) How are proteins improved in fegumes? **[8]**

P.T.O.

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

a) Applications of somaclonal variations in breeding.

b) Micropropagation.

c) Applications of genetic engineering.

Total No. of Questions : 8]

SEAT No.:

P766

[Total No. of Pages : 2

[4134]-408
M.Sc.
BOTANY
BO - 4.46 : Plant Biotechnology - II
(Sem. - IV) (2008 Pattern) (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) ***Answers to the questions from each section should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***
4) ***Neat labeled diagrams must be drawn wherever necessary.***

SECTION - I

Q1) Explain any two blotting techniques used in analysis of nucleic acids. **[16]**

Q2) a) What is DNA sequencing? Explain any one method. **[8]**

b) Differentiate between structural and functional genomics. **[8]**

Q3) a) What is micro-array? Explain the procedure in detail. **[8]**

b) Define proteomics. Enlist its various applications. **[8]**

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

a) DNA polymorphism.

b) DNA libraries.

c) Pharmacogenomics.

SECTION - II

Q5) What are polymerases? Explain the mode of action of different polymerases used in Recombinant DNA technology. **[16]**

Q6) a) Explain any one method of proteomics. **[8]**

b) Describe any two strategies for characterization of novel proteins. **[8]**

P.T.O.

Q7) What is biological nitrogen fixation? Explain the mechanism involved. **[16]**

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

a) Genome annotation.

b) Nif genes.

c) Bioethical principles of agricultural biotechnology.

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Total No. of Questions : 8]

SEAT No.:

P767

[Total No. of Pages : 2

[4134]-409
M.Sc. (Sem. - IV)
BOTANY
BO - 4.47 : Plant Biodiversity
(2008 Pattern) (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 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 factors causing loss of genetic diversity add a note on the demographic bottlenecks. **[16]**

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

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

a) Role of IUCN and CAB international.

b) Environment Protection Act 1986.

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

a) Chico River Dam and Tribal Campaign.

b) Ecosystem Restoration.

c) Features of threatened species.

SECTION - II

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

Q6) Give examples of biological invasions. Add a note on human health and evolutionary impacts. **[16]**

P.T.O.

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

a) Organizations involved in financing biodiversity management.

b) Biopiracy.

Q8) Write notes on <u>any two</u> of the following : **[16]**

a) Role of biotechnology in utilization of biodiversity.

b) Plant biodiversity as a source of carbon sequestration.

c) Clean Development Mechanism.

Total No. of Questions : 8]

SEAT No.:

P768

[Total No. of Pages : 2

[4134]-410
M.Sc. - II
BOTANY
BO - 4.48 : Seed Technology
(Special Paper - II) (Sem. - IV) (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) Give an brief account of seed production of pearl millet and groundnut. **[16]**

Q2) Describe with suitable example the processes of seed production in self and cross pollinated vegetable crops. **[16]**

Q3) Explain principle and working of different types of separators used in seed processing. **[16]**

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

a) Seed production techniques in hybrids.

b) Multiplication and storage of clones in potato.

c) Concept and objectives of seed processing.

SECTION - II

Q5) Describe the methods of packaging and handling of seeds. **[16]**

Q6) Explain in brief about the aids used for varietal identification. **[16]**

Q7) Describe the procedure of seed certification. **[16]**

P.T.O.

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

a) Artificial seed production.

b) Methods of seed sampling.

c) Genetic purity and quality testing.