Total No. of Questions : 8]

SEAT No. :

P1282

[Total No. of Pages : 2

[5436]-101
M.Sc.-I
BOTANY
BO-1.1 : Cryptogamic Botany (Part-I)
(2013 Pattern) (Credit System) (Semester-I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) a) Write the affinities of Bryophytes with thallophytes **[4]**

b) Give the economic importance of Pteridophytes **[4]**

c) Write the differences between apogany and apospory. **[2]**

Q2) a) Discuss Telome theory **[4]**

b) Give classification of Bryophytes as per G.M. Smith **[4]**

c) Write a note on calobryales **[2]**

Q3) a) Explain vegetative reproduction in Bryophytes. **[4]**

b) Comment on Lepidostrobus and Lepidocarpon **[4]**

c) Give a brief account on gametophyte of Psilotum **[2]**

Q4) a) Comment on stelar evolution. **[4]**

b) Explain the evolution of sporophytes in Bryophytes. **[4]**

c) Give a brief account of fossil Bryophytes. **[2]**

Q5) a) Comment on the morphology of sporophyte and gametophyte of isoetales. **[5]**

b) Write a note on sporophyte of polytrichales **[5]**

P.T.O.

Q6) a) Give a detail account of Takakiales and Monocleales **[5]**

b) Describe the sporophyte of Salvinia **[5]**

Q7) a) Comment on the sporophyte of osmundales and Marattiales **[5]**

b) Mention the important characters of Lycopsida and add a note on Life cycle pattern in Selaginella **[5]**

Q8) a) Discuss the types of Sporophytes and gametophytes in Marchantiales **[5]**

b) Comment on the characters of calamites and Annularia **[5]**

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Total No. of Questions :8]

SEAT No. :

P1283

[Total No. of Pages :2

[5436] - 102

M.Sc. - I

BOTANY

BO - 1.2 : Plant Physiology and Biochemistry

(2013 Pattern) (Semester - I) (Credit System)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagram wherever necessary.***

Q1) a) Comment on phloem loading and unloading. **[4]**

b) Explain the mechanism of resistance to biotic stresses. **[4]**

c) Write on enzyme kinetics. **[2]**

Q2) a) Discuss biosynthesis of glycolipids. **[4]**

b) Explain biosynthesis of gibbereling. **[4]**

c) What is biological clock. **[2]**

Q3) a) Give secondary structure of proteins. **[4]**

b) Write on working application of leaf area meter. **[4]**

c) What are flavonoids. **[2]**

Q4) a) Describe CAM pathway. **[4]**

b) Write on enzyme inhibition. **[4]**

c) What are nucleic acid. **[2]**

P.T.O.

Q5) a) Explain ETS. **[5]**

b) Comment on biosynthesis of cytokinins. **[5]**

Q6) a) Write on cynide resistance pathway. **[5]**

b) Discuss synthesis of carbohydrate. **[5]**

Q7) a) State metabolic changes occurs during fruit ripening. **[5]**

b) Explain the mechanism of root nodulation of symbiotic nitrogen fixation. **[5]**

Q8) a) Comment on alkaloid biosynthesis pathway. **[5]**

b) Explain gluconeogenesis. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1284

[Total No. of Pages : 2

[5436]-103

M.Sc. - I

BOTANY

BO - 1.3 : Genetics and Plant Breeding

(2013 Pattern) (Credit System) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***

Q1) a) Explain "Mendel's Law' of Independent assortment with suitable example. **[4]**

b) What is recombination? Describe homologus and non homologus recombination. **[4]**

c) Write on point mutation. **[2]**

Q2) a) Explain lytic cycle in phages. **[4]**

b) State principles of combination breeding and give its applications. **[4]**

c) What is monosomic aneuploids. **[2]**

Q3) a) Explain chloroplast gene inheritance mechanism in Zea mays. **[4]**

b) Describe unordered tetrad analysis in yeast. **[4]**

c) What is multiple alleles? **[2]**

Q4) a) Comment on "BA translocation. **[4]**

b) What is chromosomal banding? Explain different types of banding. **[4]**

c) What are quantitative traits? **[2]**

P.T.O.

Q5) a) Explain physical and chemical mutagens for induction of mutation. **[5]**

b) Write on structural alternations of chromosomes. **[5]**

Q6) a) Explain quantitative inheritance in Nicotiana corolla length. **[5]**

b) Give cytological and genetical methods of identification of allopolyploids. **[5]**

Q7) a) Discuss intereaction between nuclear and cytoplasmic inheritance. **[5]**

b) Describe selection method in cross pollinated crops. **[5]**

Q8) a) What is karyotype? Give the method of preparation of Karyotype. **[5]**

b) Comment on 'Morker assisted selection'. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1285

[Total No. of Pages : 2

[5436]-104
M.Sc. - I
BOTANY
BO - 1.4 : Botanical Techniques
(2013 Pattern) (Credit System) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat diagrams must be drawn wherever necessary.***

Q1) a) Explain different immunoelectrophoretic techniques. **[4]**

b) Give principle of NMR spectroscopy. Write its applications. **[4]**

c) What is ampholyte? Write its use in isoelectric focussing. **[2]**

Q2) a) Write on maceration, squash & peeling techniques. **[4]**

b) Discuss principle & working of oxygen electrode. **[4]**

c) State Beer-Lambert law. **[2]**

Q3) a) Explain gel filtration technique. **[4]**

b) Write principle & applications of fluorescence microscopy. **[4]**

c) Differentiate between "Antigen" & "Antibody". **[2]**

Q4) a) Describe any one electrophoretic technique. Mention its applications. **[4]**

b) Comment on principle & applications of spectroflurimetry. **[4]**

c) Write on two types of micrometers. Write their use. **[2]**

P.T.O.

Q5) a) What is microtomy? Describe the different types of microtome. **[5]**

b) Give an account of agarose & polyacrylamide media used in electrophoresis. **[5]**

Q6) a) Write a note on radioactivity & its uses in techniques. **[5]**

b) Discuss the method for sequencing of proteins. **[5]**

Q7) a) Illustrate the components of mass spectrometer. **[5]**

b) Write a note on Light microscopy w.r.t. principle, instrumentation & applications. **[5]**

Q8) a) Give comparative account of paper & thin layer chromatography. **[5]**

b) Explain the technique of PCR. Enlist its applications. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1286

[Total No. of Pages : 2

[5436]-201
M.Sc. - I
BOTANY
BO -2.1 : Cryptogamic Botany (Part - II)
(2013 Pattern) (Semester - II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and well labelled diagrams wherever necessary.***

Q1) a) Give the outline of classification of algae upto order level as proposed by Fritsch. **[4]**

b) Comment on pigment constitution in algae. **[4]**

c) What is biochemical systematics? **[2]**

Q2) a) Give distinguishing characters and thallus structure in chrococcales. **[4]**

b) Write on algal habitat. **[4]**

c) Explain anatomy of lichen thallus. **[2]**

Q3) a) Discuss sexual reproduction in chlorophyta. **[4]**

b) Describe structure of thallus and reproductive bodies in Myxomycotina. **[4]**

c) Write note on evolution of sexuality in Ascomycotina. **[2]**

Q4) a) Write on thallus structure and reproduction in charophyta. **[4]**

b) Comment on nutrition and cell structure of fungi. **[4]**

c) What are mycorrhizae? **[2]**

P.T.O.

Q5) a) Give distinguishing characters, thallus structure and reproduction in chrysophyta. **[5]**

b) Comment on recent studies of fungi in abroad and in India. **[5]**

Q6) a) Explain life cycle pattern in Rhodophyta. **[5]**

b) Give an account of Oomycetes fungi. **[5]**

Q7) a) Discuss the life cycle pattern in zygomycotina. **[5]**

b) Write on fruit bodies in Gasteromycetes. **[5]**

Q8) a) What are imperfect fungi? comment on fructifications in denteromycotina. **[5]**

b) Comment on mycotoxins. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1287

[Total No. of Pages : 2

[5436]-202
M. Sc. - I
BOTANY
BO - 2.2 : Cell Biology and Evolution
(2013 Pattern) (Credit System) (Theory) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) a) Give ultrastructure and functions of cell wall. **[4]**

b) Write a role of ER in synthesis and transport. **[4]**

c) What is Hardy-weinberg Law? **[2]**

Q2) a) Explain oparin & Halden concept. **[4]**

b) Give the ultrastructure and function of Lysosomes. **[4]**

c) Enlist different components of cytoskeleton. **[2]**

Q3) a) What is Apoptosis? Explain genetic control of apoptosis. **[4]**

b) Explain molecular events occurring during cell cycle. **[4]**

c) Define gene pool. **[2]**

Q4) a) Explain stomatal guard signaling. **[4]**

b) Describe the structure and role of plasmodesmata. **[4]**

c) What is allopatric speciation. **[2]**

Q5) a) Explain ultrastructure of Golgi complex. **[5]**

b) Give an account of methods to study cell cycle. **[5]**

P.T.O.

Q6) a) Explain the concept of molecular clock. **[5]**

b) Give an account of theory of natural selection. **[5]**

Q7) a) Write a note on molecular aspects of cell death. **[5]**

b) Give an account of evolution of unicellular eukaryotes. **[5]**

Q8) a) Explain the role of different factors affecting gene frequencies. **[5]**

b) Explain Nuclear-Organelle signaling during plastid development. **[5]**

Total No. of Questions :8]

SEAT No. :

P1288

[Total No. of Pages : 2

[5436]-203
M.Sc. -I
BOTANY
BO-2.3: Molecular Biology & Genetic Engineering
(2013 Pattern) (Semester-II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labeled diagram must be drawn wherever necessary.***

Q1) a) Explain the mechanism of eukaryotic DNA replication. **[4]**

b) Write dissociation & reassociation kinetics of DNA. **[4]**

c) Enlist types of DNA damage. **[2]**

Q2) a) Give mechanism of Transcription in eukaryotes. **[4]**

b) Comment on Lac operon. **[4]**

c) Write on introns. **[2]**

Q3) a) Explain the role of BACs & YACs in gene cloning. **[4]**

b) What is c-DNA library? Give the steps for preparation of c-DNA library. **[4]**

c) Write factors affecting transformations. **[2]**

Q4) a) Describe spectroscopic and thermal properties of nucleic acids. **[4]**

b) Enlist enzymes involved in DNA repair. **[4]**

c) What is chaperon. **[2]**

P.T.O.

Q5) a) Describe mechanism of protein synthesis in eukaryotes. **[5]**

b) Explain the mechanism of positive & negative regulation of prokaryotes. **[5]**

Q6) a) Give an account on the applications of genetic engineering for abiotic stress tolerance. **[5]**

b) Describe direct gene transfer methods in plants. **[5]**

Q7) a) Comment on forms of DNA. **[5]**

b) Explain recombination & mismatch repair systems. **[5]**

Q8) a) Comment on construction of recombinant molecule. **[5]**

b) Discuss RNA processing during transcription. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1289

[Total No. of Pages : 1

[5436] - 204
M.Sc. - I
BOTANY
BO - 2.4 : Plant Ecology and Phytogeography
(2013 Pattern) (Semester - II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labeled diagrams wherever necessary.***

Q1) a) State the impact of environmental pollution with respect to water. **[4]**
b) What are extinction events ? **[4]**
c) What is ecotone ? **[2]**

Q2) a) Comment on water holding capacity of soil. **[4]**
b) Explain fresh water ecosystem. **[4]**
c) What is ecosystem. **[2]**

Q3) a) What is acid rain ? Explain its impact on vegetation . **[4]**
b) Describe concept of metapopulation **[4]**
c) Comment on r and k selection. **[2]**

Q4) a) Describe Autogenic and allogenic plant succession. **[4]**
b) Give plant distribution with respect to climatic factors. **[4]**
c) What is Endemism ? **[2]**

Q5) a) Comment on life history strategies. **[5]**
b) Explain terrestrial ecology. **[5]**

Q6) a) Comment on major plant communities of world. **[5]**
b) Write a note on population size. **[5]**

Q7) a) Explain Xerosere. **[5]**
b) Give components of Biomes. **[5]**

Q8) a) Write a note on soil microbes. **[5]**
b) Write an account of “Energy flow”. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1290

[Total No. of Pages : 2

[5436]-301
M.Sc. -II
BOTANY
BO-3.1 : Spermatophytic Botany
(2013 Pattern) (Semester-III) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and well labelled diagrams wherever necessary.***

Q1) a) Give general characters of Cycadeoidales. **[4]**

b) Comment on morphology of Ginkgoales. **[4]**

c) Write on Cladistics in taxonomy. **[2]**

Q2) a) Write systematic position of Najadaceae **[4]**

b) Comment on classification of spermatophyta as per sporne. **[4]**

c) Give general characters of Ginkgoales. **[2]**

Q3) a) Write on Pre-Darwinian systems of classification of angiosperms. **[4]**

b) Give phylogeny of Lauraceae. **[4]**

c) Comment on Medullosa. **[2]**

Q4) a) Give general characters and affinities of Ephedrales. **[4]**

b) Give an outline of Dahlgren and thorne system of classification. **[4]**

c) What is invasions and introductions. **[2]**

Q5) a) Describe general characters of cordaitales. **[5]**

b) Explain rules and recommendations of ICBN. **[5]**

P.T.O.

Q6) a) Comment on Sporophytes and gametophytes of welwitschiales **[5]**

b) Write inter-relationships and economic importance of magnoliaceae. **[5]**

Q7) a) Give characters and structure of Lyginopteris. **[5]**

b) Comment on pre-Darwinion system of classification of angiosperms **[5]**

Q8) a) Give general characters of Cycadales **[5]**

b) Describe hotspots and hottest spots. **[5]**

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Total No. of Questions :8]

SEAT No. :

P1291

[Total No. of Pages :2

[5436] - 302

M.Sc. - II

BOTANY

BO-3.2 : Developmental and Economic Botany

(2013 Pattern) (Semester - III) (Credit System)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagram must be drawn wherever necessary.***

Q1) a) Explain intrinsic factors affecting plant development. **[4]**

b) Give an account of fertilization. **[2]**

c) Explain the term specification. **[4]**

Q2) a) Discuss on light mediated development. **[4]**

b) Give source method of cultivation of sorghum. **[4]**

c) What is differentiation? **[2]**

Q3) a) Give an account of seed germination. **[4]**

b) Comment on development of mole gametophyte. **[2]**

c) Give difference between phototropism and geotropism. **[4]**

Q4) a) Explain positional information techniques. **[4]**

b) State source and economical importance of red sandalwood and clove oil. **[4]**

c) What is bioassay. **[2]**

P.T.O.

Q5) a) Discuss meristems osdynamic centers for cell regeneration. **[5]**

b) What is polyembryony? Give classification of polyembryony. **[5]**

Q6) a) What is organ culture? Explain its role in under standing plant development. **[5]**

b) Comment on sugar industry and its byproducts. **[5]**

Q7) a) Explain cell-cell intereactions during plant development. **[5]**

b) Discuss on gene expressions during transition to flowering. **[5]**

Q8) a) Give an account of abnormal embryos. **[5]**

b) Comment on tea and coffee industry. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1292

[Total No. of Pages : 2

[5436]-303

M.Sc.

BOTANY

BO - 3.3 : Industrial Botany - I

(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***

Q1) a) Comment on penicillin production method. **[4]**

b) Discuss Azadiractine as a biopesticide. **[4]**

c) Mention the alternatives for fossil fuel. **[2]**

Q2) a) Give the difference between management and administration. **[4]**

b) Describe the process of extraction of biodiesel from microalgae . **[4]**

c) Enlist the microbes used for Antibiotic production. **[2]**

Q3) a) Discuss mass multiplication process of Trichoderma. **[4]**

b) Explain citric acid production method. **[4]**

c) What is SIDCO? **[2]**

Q4) a) Describe the method of bioethanol production from starch. **[4]**

b) List the institutes which provide support to entrepreneurs. Comment on any one of them. **[4]**

c) Give the significance of herbal biopesticides. **[2]**

P.T.O.

Q5) a) Comment on concept & characteristics of business. **[5]**

b) Give the applications of seaweed biofertilizers. **[5]**

Q6) a) Comment on technology applications of bioethanol. **[5]**

b) Write on use of computer in fermenters. **[5]**

Q7) a) Give the need and objectives of accounting. **[5]**

b) Comment on distribution of economically important algae in India. **[5]**

Q8) a) Comment on ecomomy of Lipid biofuels. **[5]**

b) Give the different types of fermentation process. Add a note on continious fermentation. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1293

[Total No. of Pages : 2

[5436]-304
M.Sc. - II
BOTANY
BO - 3.41 : Advanced Mycology and Plant Pathology
(2013 Pattern) (Special) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Write Hawker's system of fungi classification. **[4]**

b) Comment on Protosteliomycetes. **[4]**

c) Mention contributions of Anton De Bary. **[2]**

Q2) a) Give an account of sexual spores in fungi with examples. **[4]**

b) Discuss molecular methods of fungal taxonomy. **[4]**

c) Briefly write on Labyrinthulomycota. **[2]**

Q3) a) Explain relations of fungi with plants and animals. **[4]**

b) Describe Loculoascomycetes. **[4]**

c) How fungi act as microbiological sensors. **[2]**

Q4) a) What are Oomycota? **[4]**

b) Comment on plasmodiophoranycota. **[4]**

c) Enlist any four beneficial aspects of fungi. **[2]**

P.T.O.

Q5) a) Write ecological groups of fungi. **[5]**

b) Discuss Auriculariales and Dacrymycetales. **[5]**

Q6) a) Explain different aspects of mycorrhizae. **[5]**

b) Give an account of conidiomata. **[5]**

Q7) a) Describe combative and ruderal strategies in fungi with examples. **[5]**

b) What are uredinales? Add a note on life cycle of rusts. **[5]**

Q8) a) Mention characters of Zygomycetes and add a note on Entomophthorales. **[5]**

b) Comment on systemic mycotic infections in humans. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1294

[Total No. of Pages : 2

[5436]-305
M.Sc. - II
BOTANY
BO - 3.42 : Advanced Angiosperms
(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Justify Pollen characters are taxonomically important. **[4]**

b) Comment on Taxometrics. **[4]**

c) Write briefly on SEM and its significance in taxonomy. **[2]**

Q2) a) Explain use of aminoacids sequence in systematics. **[4]**

b) Comment on genetic variation in plant systematics. **[4]**

c) Write on OUTs. **[2]**

Q3) a) Discuss systematics position of Dilleniaceae. **[4]**

b) Comment on ecological variations in systematics. **[4]**

c) What is Polynogram? **[2]**

Q4) a) Describe different stages in chemotaxonomic investigations. **[4]**

b) Comment on RAPD relation to taxonomy. **[4]**

c) Give economic importance of Fracaceae. **[2]**

P.T.O.

Q5) a) Discuss the angiosperms with reference to Wood anatomy. **[5]**

b) Explain phenetic methods in taxonomy. **[5]**

Q6) a) Discuss systematic position of Family Pandanaceae. **[5]**

b) Give silent features of Family Bignoniaceau. Describe Floral variation in it. **[5]**

Q7) a) What is ploidy? Explain the role of an euploidy in systematics. **[5]**

b) Comment on meiotic analysis in plant systematics. **[5]**

Q8) a) Explain the role of RFLP technique in plant systematics. **[5]**

b) Give phylogeny and economic importance of Costaceae. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1295

[Total No. of Pages : 2

[5436]-306
M.Sc. - II
BOTANY
BO - 3.43 : Advanced Plant Physiology
(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Explain role of microbes in availability of nutrients. **[4]**

b) Write on physiology of seed maturation. **[4]**

c) What is role of ATPase as transporter? **[2]**

Q2) a) Discuss role of growth regulator in plant growth. **[4]**

b) Give significance of cyanide resistance pathway. **[4]**

c) Enlist different secondary metabolites in plants. **[2]**

Q3) a) Comment on vegetative growth in plants. **[4]**

b) What is photoperiodism? Add a note on SDP with its examples. **[4]**

c) Mention the role played by ethelene in fruit ripening. **[2]**

Q4) a) Give an account of strategies developed by plants for conservation of water. **[4]**

b) Explain the various factors breaking seed dormancy. **[4]**

c) Write the mechanism of active uptake of minerals. **[2]**

P.T.O.

Q5) a) Give an account of evolution of PE Pase. **[5]**

b) Comment on action of mechanism in plant for abiotic stress defence. **[5]**

Q6) a) Give the comparative account of photosynthetic ETS in pro and eukaryotic organisms. **[5]**

b) Describe CAM pathway in aquatic plants. **[5]**

Q7) a) Write the role of respiration in plant carbon balance. **[5]**

b) Explain post harvest physiology of fruits. **[5]**

Q8) a) Discuss relative growth rate and net assimilation rate. **[5]**

b) Comment on metabolism and allocation of resource during reproductive growth. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1296

[Total No. of Pages : 2

[5436]-307
M.Sc. - II
BOTANY
BO - 3.44 : Advanced Genetics and Molecular Biology
(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) a) Explain the structure of prokaryotic chromosome. **[4]**

b) Give general characteristic and mechanism of transposition. **[4]**

c) Comment of Lampbrush chromosome. **[2]**

Q2) a) Explain the mechanism of prokaryotic DNA replication. **[4]**

b) Describe genetic organisation of T_4 bacteriophase. **[4]**

c) Write on single burst experiment. **[2]**

Q3) a) Describe satellite chromosome. **[4]**

b) Explain the mutations observed in T_4 genome. **[4]**

c) Write a concept of restriction mapping. **[2]**

Q4) a) Comment on DNA typing and population structure. **[4]**

b) Describe the Hardy-Weinberg principle & applications. **[4]**

c) Write on enzyme polymorphism. **[2]**

Q5) a) Comment on premature lysis experiment. **[5]**

b) Explain gene expression and regulatory sequences. **[5]**

P.T.O.

Q6) a) Write on conjugal and functions in plasmid. **[5]**

b) Discuss automated DNA sequencing methods. **[5]**

Q7) a) Write on microsattelites. **[5]**

b) Comment on allel frequencies in genotype and their calculations. **[5]**

Q8) a) Describe various experimental method used to study phase infection. **[5]**

b) Give an account of Wheat gluten protein. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1297

[Total No. of Pages : 2

[5436]-308
M.Sc. - II
BOTANY
BO - 3.45 : Advanced Plant Biotechnology
(2013 Pattern) (Credit System) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) State characteristics of ideal vectors? Explain the importance of lamda (λ) phage vector in gene cloning. **[4]**

b) Explain DNA microarray technique. **[4]**

c) What are natural secondary metabolites produced from plant? **[2]**

Q2) a) Give an account of virus resistance induced in plant by using coat protein mediated nucleocopsid gene. **[4]**

b) Explain different types of culture system used for production of Secondary metabolites. **[4]**

c) What are DNA probe? **[2]**

Q3) a) Describe the working of PCR. **[4]**

b) Write note on TILLING. **[4]**

c) What is cosmid vectors? **[2]**

Q4) a) Explain biotechnological strategies to prevent post-harvest losses of flowers with suitable examples. **[4]**

b) Enlist and explain role of elicitors used in Secondary metabolite production. **[4]**

c) State applications of PCR. **[2]**

P.T.O.

Q5) a) Describe sanger and Gilbert method of DNA sequencing. **[5]**

b) Comment on "Differential display of mRNA technique". **[5]**

Q6) a) Justify "Post-harvest losses are prevented by transgenic plants in fruits". **[5]**

b) Describe method of screening and selection of high Secondary metabolite producing cell lines. **[5]**

Q7) a) Describe Northen hybridization techniques and enlist its applications. **[5]**

b) Comment on SAGE technique. **[5]**

Q8) a) State strategies to develop abiotic stress tolerance plant. **[5]**

b) Justify "Immobilization of cells for improving secondary metabolite production. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1298

[Total No. of Pages : 2

[5436]-309
M.Sc.
BOTANY
BO - 3.46 : Advanced Medicinal Botany
(2013 Pattern) (Credit System) (New) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagrams must be drawn wherever necessary.***

Q1) a) Discuss cultivation and utilization of Aromatic plants in India. **[4]**

b) Give detailed account of Eucalyptus and Isabgol w.r.t. source, cultivation and collection of drug. **[4]**

c) What is immunomodulatory medicinal plant? **[2]**

Q2) a) Comment on biosynthesis of glycosides. **[4]**

b) Write a note on Biogenesis of phytopharmaceuticals. **[4]**

c) Enlist the traditional and alternative system of medicine. **[2]**

Q3) a) Discuss Ayurvedic profile of Bhringraj. **[4]**

b) Comment on Biological and Chemical method of evaluation. **[4]**

c) Write application of Amla. **[2]**

Q4) a) Give detailed account of liquorice and Shatavari w.r.t source, cultivation and collection. **[4]**

b) Comment on pharmacological classification of crude drug. **[4]**

c) What is crude drug? **[2]**

P.T.O.

Q5) a) Enumerate applications of Ashwagandha and Vasaka. **[5]**

b) Write on Ayurvedic profile of Gulvel and Hirda. **[5]**

Q6) a) Explain the phenomenon of quality control of herbal drugs. **[5]**

b) Explain pharmacognostic studies w.r.t. source, cultivation, collection, macroscopic characters and applications of Sandal Wood. **[5]**

Q7) a) Discuss method of cultivation and factors affecting cultivation of medicinal plants. **[5]**

b) Write on Analytical pharmacognosy w.r.t. drug adulteration. **[5]**

Q8) a) Discuss history, definition and scope of pharmacognosy. **[5]**

b) Comment on industrial aspects of pharmacognosy w.r.t. Neutraceuticals and Cosmeceuticals. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1299

[Total No. of Pages : 2

[5436]- 311
M.Sc.
BOTANY
BO - 3.48 : Advanced Seed Technology (Special)
(2013 Pattern) (Semester - III) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagrams must be drawn wherever necessary.***

Q1) a) Give characteristics of quality seeds. **[4]**

b) Describe structure of male gametophyte. **[4]**

c) What is genetic purity ? **[2]**

Q2) a) Explain methods of breaking of seed dormancy. **[4]**

b) Discuss causes of seed deterioration. **[4]**

c) What is seed dormancy ? **[2]**

Q3) a) Comment on seed village concept. **[4]**

b) Write note on quarantine for seed. **[4]**

c) What is T_2 test. **[2]**

Q4) a) Describe role of self incompatibility and gametocides in hybrid seed production. **[4]**

b) Give general layout of seed processing plant. **[4]**

c) What is allogamy ? **[2]**

Q5) a) Write note on DNA finger printing. **[5]**

b) Explain general principals of seed storage. **[5]**

P.T.O.

Q6) a) Comment on pests of pulses **[5]**

b) Give significance of seed transmission. **[5]**

Q7) a) Discuss central seed committee and its function. **[5]**

b) Write note on air screen cleaner. **[5]**

Q8) a) Describe grow dat test. **[5]**

b) Give construction and working of seed dryes. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1300

[Total No. of Pages : 2

[5436]- 312
M.Sc. - II
BOTANY
BO - 3.50 : Advanced Biodiversity
(2013 Pattern) (Semester - III) (Credit System) (Special)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagrams must be drawn wherever necessary.***

Q1) a) Describe algal and pteridophyte diversity w. r. t. species, habit, habitat and distribution at taxonomic level. **[4]**

b) Explain RAPD . **[4]**

c) Comment on nature and origin of genetic variations. **[2]**

Q2) a) Describe the angiosperm diversity at taxonomic level w.r.t species, habit, habitat and distribution. **[4]**

b) Write on alpha and beta diversity. **[4]**

c) Give an account of fresh water ecosystem. **[2]**

Q3) a) Explain endemism and biodiversity with examples. **[4]**

b) Comment on diversity indices based on species richness. **[4]**

c) Write about inbreeding depression. **[2]**

Q4) a) Discuss the role of farm and home garden conservation. **[4]**

b) Explain role of educational institutes in biodiversity conservation **[4]**

c) Comment on Species richness. **[2]**

Q5) a) Explain population as a critical factor in species extinction. **[5]**

b) Discuss factors affecting genetic diversity. **[5]**

P.T.O.

Q6) a) Give an overview of variety of life forms. **[5]**

b) Comment on Biodiversity of India **[5]**

Q7) a) Discuss IUCN threatened categories. **[5]**

b) Write a note on metapopulation concept **[5]**

Q8) a) Explain role of biotechnology in conservation and utilization of biodiversity. **[5]**

b) Comment on aesthetic values of biodiversity and its use as fodder. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1301

[Total No. of Pages : 2

[5436]-401
M.Sc. - II
BOTANY
BO - 4.1 : COMPUTATIONAL BOTANY
(2013 Pattern) (Semester - IV) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat labelled diagram whenever necessary.***

Q1) a) Calculate mean median and mean deviation from following data 30, 45 ,70, 20, 60, 50, 10,..... **[4]**

b) From following data draw scatterred diagram and write your conclusion. **[4]**

Dose of fertilizer	10	14	18	22	26	30	34	38	42	46	50
Yield	1.78	1.66	1.62	1.59	1.55	1.60	1.58	1.54	1.50	1.48	0.43

c) What is variance? **[2]**

Q2) a) Comment on BLAST and FASTA. **[4]**

b) What are database? state few example of database. **[4]**

c) What is phylogenetic relationship? **[2]**

Q3) a) How many milliliter of 519 H_2So_4 are required to make 1500ml of a 0.00219 H_2So_4 sol$^{n.}$? **[4]**

b) Explain the concept of "Equillibrium constant". **[4]**

c) What is standard error? **[2]**

Q4) a) Give fishers basic principles for good experiment design. **[4]**

b) Explain Tukey's test for pairwise comparision of treatment. **[4]**

c) What is specific activity of radioisotopes. **[2]**

P.T.O.

Q5) a) Calculate value of chi-square from the following data. **[5]**

	x_1	x_2	x_3
y_1	7	8	5
y_2	8	9	6
y_3	9	7	8

b) Calculate pearson's coefficient correlation cultivation cost and profit of cotton. **[5]**

Cultivation Cost per acre	390	650	620	900	820	750	250	980	360	780
Profit (Rs.) Thousonds	47	53	58	86	62	68	60	91	51	84

Q6) a) Explain mann whitney U test Give its significance. **[5]**

b) Discuss the submission tool in gene bank. **[5]**

Q7) a) Describe the procedure of making radio isotope Sol^n. **[5]**

b) Explain the determination of phylogenetic relationship using DNA and protein sequence. **[5]**

Q8) a) Explain osmolarity and osmotic pressure. **[5]**

b) State the properties of mean, median and mode. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1302

[Total No. of Pages : 2

[5436]-402
M. Sc. - II
BOTANY
BO - 4.2 : Plant Organism Interaction
(2013 Pattern) (Credit System) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagram must be drawn wherever necessary.***

Q1) a) Explain concept of allelopathy. **[4]**

b) Write on algal-fungal association. **[4]**

c) What is mycorrhizae? **[2]**

Q2) a) Describe competitive mechanisms in plants. **[4]**

b) Comment on fungal-insect interactions. **[4]**

c) Enlist any four epiphytic plants. **[2]**

Q3) a) Comment on fruit dispersal mechanism. **[4]**

b) Write on any two carnivorous plants. **[4]**

c) What is thermogenesis? **[2]**

Q4) a) How beetles and bees act as pollinators? **[4]**

b) Write on any mechanisms of mimicry. **[4]**

c) How birds act as pollinators? **[2]**

P.T.O.

Q5) a) Comment on endophytes. **[5]**

b) Explain algal-coral relationship. **[5]**

Q6) a) Write on nodulating bacteria. **[5]**

b) Discuss parasitic plant association. **[5]**

Q7) a) How flowers have modified for cross pollination? **[5]**

b) Give brief account of herbivore-insect plant interactions. **[5]**

Q8) a) Write on plant signalling and defense against herbivores. **[5]**

b) Explain co evolution of fig-figwast interactions. **[5]**

Total No. of Questions :8]

SEAT No. :

P1303

[Total No. of Pages : 2

[5436]-403
M.Sc. - II
BOTANY
BO- 4.3: Industrial Botany-II
(2013 Pattern) (Semester-IV) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat & labelled diagrams wherever necessary.***

Q1) a) Give an account of international trade in tropical & subtropical fruits. **[4]**

b) Explain an aromatic plants as source of essence. **[4]**

c) What is landscape gardening? **[2]**

Q2) a) Write on design, maintenance & sterilization practices in PTC laboratory. **[4]**

b) Comment on natural dyes used in cotton & silk industries. **[4]**

c) Give the contributions of fruits to GDP in India. **[2]**

Q3) a) Give biotechnology approaches for improvement of quality & post harvest life of fruits. **[4]**

b) Describe the method of cultivation of Orchids. **[4]**

c) What is surface sterilization? **[2]**

Q4) a) Prepare a bankable techno commercial report of micropropagation of Banana. **[4]**

b) Give the scope & role of floriculture in developing countries. **[4]**

c) What is phyto-technology? **[2]**

P.T.O.

Q5) a) Discuss the value addition to biodiversity through chemoprospection. **[5]**

b) Prepare a landscape design for factories. **[5]**

Q6) a) Give market potential & tissue culture raised plantlets of Banana & Sugarcane. **[5]**

b) Give an account of styles of gardening. **[5]**

Q7) a) Write the protocol for preparation & surface sterilization of explant. **[5]**

b) Explain process of manufacturing of jam & jellies. **[5]**

Q8) a) Comment on environmental factors affecting fruit deterioration. **[5]**

b) Discuss medicinal mushroom for healthy life. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1304

[Total No. of Pages : 2

[5436] - 404
M.Sc. - II
BOTANY
BO - 4.4 : Plant Pathology
(2013 Pattern) (Semester - IV) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Neat labelled diagrams must be drawn wherever neccessary.***

Q1) a) Give an account of penetration of microorganisms in host through stomata. **[4]**

b) What is the effect of soil pH and texture on the disease development ? **[4]**

c) Write the names of any two viral diseases and their causal organisms. **[2]**

Q2) a) Explain the use of breeding methods for improving the resistance of the plants. **[4]**

b) Comment on forecasting of plant disease epidemics. **[4]**

c) What are biotrophs ? Give two examples. **[2]**

Q3) a) Explain the concept of vertical resistance in plants. **[4]**

b) What are the diagnostic methods for detecting pathogens ? **[4]**

c) State antigen hypothesis. **[2]**

Q4) a) What is the effect of pathogen on translocation of water in host ? **[4]**

b) What are the different causes of plant diseases ? **[4]**

c) What are chemical activators of resistance ? Give two examples. **[2]**

Q5) a) Give an account of bacterial diseases of plants . **[5]**

b) Describe Non - host specific toxins with two examples. **[5]**

P.T.O.

Q6) a) Write on the symptoms developed in plant diseases. **[5]**

b) Comment on the post harvest diseases of fruits with examples. **[5]**

Q7) a) Explain the process of pectin degradation of host by pathogen. **[5]**

b) How is plant disease assessment done ? **[5]**

Q8) a) Comment on induced biochemical defense in plants. **[5]**

b) What is the role of biotechnology in plant pathology ? **[5]**

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