Total No. of Questions : 8]

SEAT No. :

P1701

[Total No. of Pages : 2

[5229]-101

M.Sc. (Part-I)

BOTANY

BO-1.1 : Cryptogamic Botany (Bryophytes and Pteridophytes)

(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 diagrams wherever necessary.***

Q1) a) Give classification of Bryophytes upto family level according to G.M.Smith **[4]**

b) Comment on vegetative reproduction in Bryophytes. **[4]**

c) Mention contribution of any one Indian Bryologist. **[2]**

Q2) a) Describe pteridophytean hypothesis of origin of Bryophyta. **[4]**

b) Explain Bryophytes as indicators of water and air pollution. **[4]**

c) Comment on Biological importance of Bryophytes. **[2]**

Q3) a) Explain morphology of Gametophyte in Takakiales. **[4]**

b) Describe Sporophyte in Sphaerocarpales. **[4]**

c) Give any four distinguishing characters of Junger manniales **[2]**

Q4) a) Write distinguishing characters and distribution of Anthocerotales. **[4]**

b) Describe morphology and anatomy of Sphagnales Sporophyte. **[4]**

c) Give any four distinguishing characters of Bryopsida. **[2]**

P.T.O.

Q5) a) Explain in brief algal and Bryophyte origin of pteridophytes. **[5]**

b) Describe Heterospory and seed habit in Pteridophytes. **[5]**

Q6) a) Discuss external morphology of Rhynia. **[5]**

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

Q7) a) Describe morphology of Sporophyte in Psilotum and Tmesipteris. **[5]**

b) Write distinguishing characters of Lycopodiales. **[5]**

Q8) a) Comment on life cycle pattern of Equisetales. **[5]**

b) Give distinguishing characters of Osmundales and Marattiales. **[5]**

Total No. of Questions :8]

SEAT No. :

P1702

[Total No. of Pages :2

[5229] - 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 diagrams whenever necessary.***

Q1) a) Explain non - cyclic electron transfer in photosynthesis. **[4]**

b) Discuss 'Glycogenesis'. **[4]**

c) What are the 'Aquaporins. **[2]**

Q2) a) Give an overview of 'Kreb's cycle'. **[4]**

b) Explain Ramchandran plot. **[4]**

c) Write on Activation energy. **[2]**

Q3) a) Explain the concept of photorespiration. **[4]**

b) Give an account the biosynthesis of Ascorbic acid. **[4]**

c) Enlist the different pigment involved in photosynthesis. **[2]**

Q4) a) Describe the mechanism of stomatal opening and closing. **[4]**

b) Discuss the oxidation of lipids. **[4]**

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

P.T.O.

Q5) a) Write the principle, working and applications of grain moisture meter. **[5]**

b) Describe the process of ATP synthesis. **[5]**

Q6) a) Describe the various factors affecting enzyme activity. **[5]**

b) Explain the mechanism of plants resistance of abiotic stress. **[5]**

Q7) a) Discuss regulation of calvine cycle. **[5]**

b) State the general classification of Alkaloids. **[5]**

Q8) a) What are the proteins? Explain various structures of proteins. **[5]**

b) Give an account of EMP pathway. **[5]**

☼ ☼ ☼

Total No. of Questions :8]

SEAT No. :

P1703

[Total No. of Pages :2

[5229] - 103
M.Sc.
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) ***Answer any five questions.***
2) ***All questions carry equal marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***

Q1) a) Explain petite inheritance in yeast. **[4]**

b) Comment on complementation test. **[4]**

c) Write the properties of chloroplast DNA. **[2]**

Q2) a) Give importance of Genetic diversity in crop improvement. **[4]**

b) Write mechanism of specialized transduction. **[4]**

c) Comment on B.A. translocation. **[2]**

Q3) a) Explain the inheritance of corolla length in Nicotiana. **[4]**

b) Comment on mapping of bacterial genome by interupted mating technique. **[4]**

c) Write role of hybridization in plant breeding. **[2]**

Q4) a) Explain pollination control mechanism in cross pollinated crops. **[4]**

b) Comment on intervarietal hybridization. **[4]**

c) Differentiate between linkage & crossing over. **[2]**

P.T.O.

Q5) a) Explain mechanism of tetrad analysis in Neurospora. **[5]**

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

Q6) a) Describe cytological and genetical method of allopolyploids. **[5]**

b) Briefly write on method of induction of mutation in crop plants. **[5]**

Q7) a) Discuss structure and organization of eukaryotic chromosome. **[5]**

b) Explain cytoplasmic male sterility in plants. **[5]**

Q8) a) What are trisomics? Describe meiotic behaviour of primary trisomics. **[5]**

b) Describe fine structure analysis or rII locus gene in Th phages. **[5]**

EEE

Total No. of Questions :8]

SEAT No. :

P1704

[Total No. of Pages : 2

[5229]-104
M.Sc.
BOTANY - I
BO - 1.4 : Botanical Techniques
(2013 Pattern) (Credit System) (Semester - I)

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

Instructions to the candidates:

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

Q1) a) Write on confocal microscopy. **[4]**

b) What is flow cytometry? **[4]**

c) Give difference between SEM and TEM. **[2]**

Q2) a) Comment on HPLC. **[4]**

b) Explain 2-D Gel Electrophoresis. **[4]**

c) What is camera lucida. **[2]**

Q3) a) Write on histological and cytochemical techniques. **[4]**

b) Give an account of isoelectric focussing. **[4]**

c) Mention properties of light. **[2]**

Q4) a) Write on NMR. **[4]**

b) Explain UV-visible spectroscopy. **[4]**

c) What is MS and IR microscopy? **[2]**

P.T.O.

Q5) a) Give working and applications of spectrophotometer. **[5]**

b) Write on X-ray crystallograph. **[5]**

Q6) a) Explain high speed centrifugation. **[5]**

b) Comment on oxygen electrode. **[5]**

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

b) Explain Radio-immuno assay method. **[5]**

Q8) a) Write on properties and safe handling of radioisotopes. **[5]**

b) Explain Sanguer's method of DNA sequencing. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1705

[Total No. of Pages : 2

[5229]-201

M.Sc. - I (Part-II)

BOTANY

BO-2.1 : Cryptogamic Botany

(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) Comment on the position of algae and fungi in five kingdom system. **[4]**

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

c) Describe any one type of thallus in algae. **[2]**

Q2) a) Write any four distinguishing characters of phaeophyta. **[4]**

b) Explain the life cycle pattern in Charophyta. **[4]**

c) Give an account on any one type of mycorrhiza. **[2]**

Q3) a) Classify the fungi based on Alexopolous, Mims and Blackwell 1999. **[4]**

b) Write any four distinguishing characters of fungi. **[4]**

c) Describe any one hyphal modification in fungi. **[2]**

Q4) a) Describe the types and structure of any two of basidia. **[4]**

b) Explain any two types of fructifications in ascomycetes. **[4]**

c) Mention any two sex hormones in fungi. **[2]**

P.T.O.

Q5) a) Comment on the morphogenesis in Acetabularia. **[5]**

b) Write an account on the recent studies in algae in India **[5]**

Q6) a) Describe the thallus structure and anatomical pecularities in Rhodophyta. **[5]**

b) Write about anatomical structure of Lichen thallus. **[5]**

Q7) a) Describe the types of reproductive bodies in Myxomycotina. **[5]**

b) Discuss the sexual reproduction in Mastigomycotina. **[5]**

Q8) a) Explain the life cycle pattern in Teliomycetes. **[5]**

b) Comment on the evolution of sexuality in ascomycetes. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1706

[Total No. of Pages : 2

[5229]-202

M.Sc. - I

BOTANY

BO-2.2 : Cell Biology and Evolution

(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 labelled diagram whenever necessary.***

Q1) a) Explain Ultra structure and function of cell wall. **[4]**

b) What is signal transduction? Give an account of types of receptors. **[4]**

c) Give function of Glyoxysomes and peroxysomes. **[2]**

Q2) a) Comment on RNA world theory. **[4]**

b) Explain different phases of cell cycle. **[4]**

c) What is sexual selection? **[2]**

Q3) a) Discuss fluid mosaic model of plasma membrane. **[4]**

b) Explain diversity in protein kinases. **[4]**

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

Q4) a) Write the mechanism transport of ions and solutes. **[4]**

b) Comment on Regulation of signaling pathways. **[4]**

c) Explain : Gene divergence. **[2]**

P.T.O.

Q5) a) Discuss the Lamarkism concept of Evolution. **[5]**

b) Give the difference between active and passive transport. **[5]**

Q6) a) What is apoptosis? Explain its mechanism. **[5]**

b) Comment on phospholipid signaling mechanism. **[5]**

Q7) a) Describe the nature and types of fossil. **[5]**

b) Discuss molecular tools in phylogeny. **[5]**

Q8) a) Explain calmodulin cascade signaling. **[5]**

b) Give an account of flow cytometry techniques. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1707

[Total No. of Pages :2

[5229] - 203

M.Sc. - I

BOTANY

BO - 2.3 : Molecular Biology and 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 labelled diagram must be drawn wherever necessary.***

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

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

c) Enlist Enzymes involved in DNA repair. **[2]**

Q2) a) Discuss the mechanism of protein synthesis in eukaryotes. **[4]**

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

c) Write on prokaryotic promotor. **[2]**

Q3) a) Give the role of phosphatase & ligases in plant genetic engineering. **[4]**

b) Explain the role of plasmid & phages & give their properties. **[4]**

c) What is RNA editing. **[2]**

P.T.O.

Q4) a) Comment on c-DNA library? Give steps for preparation of c-DNA library. **[4]**

b) Discuss on factors affecting during transformation. **[4]**

c) Write on Dot Blot method. **[2]**

Q5) a) Write on unique, Moderately repetative & highly repetative DNA forms. **[5]**

b) Explain excision & SOS repair mechanism. **[5]**

Q6) a) Give detail on Organization and structure of eukaryotic gene. **[5]**

b) Discuss on translational & post translational control mechanism. **[5]**

Q7) a) Explain methods for screening & selection of recombinants. **[5]**

b) Write on protein folding & processing. **[5]**

Q8) a) Give the applications of genetic engineering in abiotic stress tollerance in plants with examples. **[5]**

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

Total No. of Questions : 8]

SEAT No. :

P1708

[Total No. of Pages : 2

[5229]-204

M.Sc. - I

BOTANY

BO - 2.4 : Plant Ecology and Phytogeography

(2013 Pattern) (Semester - II) (Credit Systm)

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 diagram wherever necessary.***

Q1) a) Write the effect of radiations on the plants. **[4]**

b) What is ESR triangle? **[4]**

c) Which topographic factors affect The plant distribution? **[2]**

Q2) a) Explain fresh water ecosystem. **[4]**

b) Comment on habitat ecology with respect to estuarine ecosystem. **[4]**

c) What is r - selection? **[2]**

Q3) a) Discuss 'Green House Effect'. **[4]**

b) State the factors that affect the size of population. **[4]**

c) Comment on adaptive responses of plants to water availability. **[2]**

Q4) a) Explain EIA. **[4]**

b) Discuss phases of succession. **[4]**

c) Enlist major plant communities in the world. **[2]**

Q5) a) What are the causes and impact of soil pollution? **[5]**

b) Explain levels of diversity. **[5]**

P.T.O.

Q6) a) Comment on ecotone and edge effect. **[5]**

b) Give the concept of climax communities. **[5]**

Q7) a) What is carbon sequestration? **[5]**

b) State floristic regions of India. **[5]**

Q8) a) Explain habitat ecology with reference to marine water. **[5]**

b) Discuss the effect of temperature on plant distribution. **[5]**

✡ ✡ ✡

Total No. of Questions : 8]

SEAT No. :

P1709

[Total No. of Pages : 2

[5229]-301

M.Sc. - II

BOTANY

BO-3.1 : Spermatophytic Botany

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

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 general characters of cycadeoidales. **[4]**

b) Discuss post-Darwinian system of classification. **[4]**

c) Comment on phenetic verses phylogenetic system. **[2]**

Q2) a) Enlist general characters of Ephedrales. **[4]**

b) Explain Taxonomic structure. **[4]**

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

Q3) a) How taxonomy is synthetic discipline? **[4]**

b) Give merits and demerits of Cronquist's system of classification. **[4]**

c) Briefly write on William Sonia. **[2]**

Q4) a) Explain morphological variations in Magnoliaceae. **[4]**

b) Give affinities of Gymnosperms with pteridophytes. **[4]**

c) Mention economic importance of Piperaceae. **[2]**

P.T.O.

Q5) a) Give an outline classification of Gymnosperms as per Raizada and Sahani (1960). **[5]**

b) Write differences and similarities between Gnetales and Welwitschiales. **[5]**

Q6) a) How the systematics is relevant to conservation? Discuss. **[5]**

b) Comment on morphological variations and systematic position of Najadaceae. **[5]**

Q7) a) Give an outline classification of Takhtajan system of classification. **[5]**

b) Comment on Invasion and Introduction. **[5]**

Q8) a) Explain Endemism and Hotspots of diversity. **[5]**

b) Write systematic position and economic importance of Lauraceae. **[5]**

Total No. of Questions :8]

SEAT No. :

P1710

[Total No. of Pages :2

[5229] - 302

M.Sc. - II

BOTANY

BO - 3.2 : Developmental and Economic Botany

(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 diagram wherever necessary.***

Q1) a) Explain structure and organization of seed embryo. **[4]**

b) Describe the structure of anther and write the process of microsporogenesis. **[4]**

c) What is competence and determination. **[2]**

Q2) a) What is the role of GA in controlling plant development? **[4]**

b) Write on source, method of cultivation and economic importance of soybean and sunflower. **[4]**

c) Comment on method of cultivation of mango. **[2]**

Q3) a) Explain plant development. Write its unique features. **[4]**

b) Write on female germ unit. **[4]**

c) What is cell fate mapping? **[2]**

P.T.O.

Q4) a) Discuss organ culture and its uses. **[4]**

b) Comment on uses of babul and deodar wood. **[4]**

c) What are abnormal embryos? **[2]**

Q5) a) Explain the difference between dedifferentiation and redifferentiation. **[5]**

b) Write on polyembryony. **[5]**

Q6) a) Discuss molecular development of axial - radial patterning in plants. **[5]**

b) Comment on rubber industry and it's products. **[5]**

Q7) a) What is double fertilization? Give its importance. **[5]**

b) Write on molecular basis of leaf development. **[5]**

Q8) a) Discuss method of cultivation of grapes. **[5]**

b) Explain the concept of polarity and symmetry. **[5]**

❄ ❄ ❄

Total No. of Questions :8]

SEAT No. :

P1711

[Total No. of Pages :2

[5229] - 303
M.Sc. -II
BOTANY - II
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 labelled diagrams wherever necessary.***

Q1) a) Elaborate the concept of business. Mention its characteristics, objectives & scope. **[4]**

b) Explain the process of bioethanol production from ligno-celluloses. **[4]**

c) Enlist the types of fermenters. **[2]**

Q2) a) Write about any two fungal biopesticides. **[4]**

b) Describe sources & methods of production of citric acid. **[4]**

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

Q3) a) Comment on fuel cells. **[4]**

b) Give advantages of mycoproteins as SCP. **[4]**

c) Name the viruses used as biopesticides. Write their applications. **[2]**

Q4) a) Distinguish between management & administration. **[4]**

b) Give an account of commercial utility of algae. **[4]**

c) How is biodiesel an alternative for fossil fuels? **[2]**

P.T.O.

Q5) a) Compare batch fermentation with continuous fermentation. **[5]**

b) Describe sugar crops & starch crops as sources for bioethanol. **[5]**

Q6) a) Discuss any one management process. **[5]**

b) Write a note on herbal biopesticides. **[5]**

Q7) a) Explain use of algae as a source of biodiesel. **[5]**

b) Discuss production of paddy straw mushroom. **[5]**

Q8) a) Write on any institute which provides finance to entrepreneurs. **[5]**

b) What is biofuel? Add a note on vegetable oil as an alternative for fossil fuel. **[5]**

EEE

Total No. of Questions :8]

SEAT No. :

P1712

[Total No. of Pages : 2

[5229]-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 labelled diagrams must be drawn wherever necessary.***

Q1) a) Give an account of Webster and Weber's system of classification of fungi. **[4]**

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

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

Q2) a) Comment on ecological groups of fungi. **[4]**

b) Write affinities of fungi with plants and animals. **[4]**

c) Briefly write on any four fungal spores. **[2]**

Q3) a) Discuss protosteliomycetes with examples. **[4]**

b) Write on sporangiophore morphology in Oomycetes. **[4]**

c) With examples write on any two plasmodial types in true slimemolds. **[2]**

Q4) a) Explain stress tolerant strategies in fungi. **[4]**

b) Write on fungal growth. **[4]**

c) Give contributions of B.B. Mundkur. **[2]**

P.T.O.

Q5) a) Comment on cellular slime moulds **[5]**

b) Describe cell structure in fungi. **[5]**

Q6) a) Explain fungal-algal association. **[5]**

b) Discuss ascocarp morphology in Ascomycotina. **[5]**

Q7) a) How fungi are ideal organisms for genetical studies. **[5]**

b) Comment on any two ecological services of fungi. **[5]**

Q8) a) Comment on smut fungi. **[5]**

b) Write on dermatomycosis. **[5]**

Total No. of Questions :8]

SEAT No. :

P1713

[Total No. of Pages : 2

[5229]-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) ***Draw neat labelled diagram whenever necessary.***

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

b) Comment on Numerical taxonomy. **[4]**

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

Q2) a) Discuss systematic position of Gentiaceae. **[4]**

b) Explain RAPD techniques in systematics. **[4]**

c) Write on chromosomol morphology. **[2]**

Q3) a) Explain NPC system. **[4]**

b) Comment on phytogeography and speciation in Angiosperms. **[4]**

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

Q4) a) Give applications of serological data in systematics **[4]**

b) Describe protein analysis techniques in systematics. **[4]**

c) What is cluster analysis? **[2]**

P.T.O.

Q5) a) Discuss systematic position of pandanaceae. **[5]**

b) Comment on Numerical taxonomy. **[5]**

Q6) a) Justify: cytological characters are taxonomically importants. **[5]**

b) Give phylogency and economic importance of salioceae. **[5]**

Q7) a) Explain the role of PCR analysis technique in plant systematics. **[5]**

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

Q8) a) Give scope and limitations of chemotaxomony? **[5]**

b) State different criteria for use of chemical in plant taxonomy. **[5]**

Total No. of Questions :8]

SEAT No. :

P1714

[Total No. of Pages : 2

[5229]-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 labelled diagrams must be drawn wherever necessary.***

Q1) a) Give the factors influencing water transport. **[4]**

b) Comment on photo periodism. **[4]**

c) What is Circadian rhythms? **[2]**

Q2) a) Discuss CAM pathway in desert plants. **[4]**

b) Give an account of alkaloid biosynthetic pathway. **[4]**

c) Write role of cytokinins in plants. **[2]**

Q3) a) Explain phosphate assimilation mechanism in plants. **[4]**

b) Give an account of post harvest physiological changes in fruits. **[4]**

c) Give significance of cyanide resistance pathway. **[2]**

Q4) a) Explain CO_2 concentrating Mechanism. **[4]**

b) Write on overall regulation of respiration in plants. **[4]**

c) Give diagramatic representation of ETS chain. **[2]**

P.T.O.

Q5) a) Give an account of Metabolism & allocation of resources during reproductive growth. **[5]**

b) Write on role of ATPase & PPase as transports **[5]**

Q6) a) Give an intermediate of C_4 cycles. **[5]**

b) Write an role of growth regulators in plant growth. **[5]**

Q7) a) Explain the mechanism of water & solute transport. **[5]**

b) Write briefly on light saturation curve. **[5]**

Q8) a) Give an account of diverce nature & mitochondrial ETS. **[5]**

b) Comment on physiological fruits usefull for crop improvement. **[5]**

Total No. of Questions :8]

SEAT No. :

P1715

[Total No. of Pages : 2

[5229]-307
M.Sc.- II
BOTANY
BO - 3.44 : Advanced Genetics & 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) ***Neat labelled diagrams must be drawn wherever necessary.***

Q1) a) Describe in detail structure of prokaryotic chromosome. **[4]**

b) Give general characteristics & Mechanism of transpositions. **[4]**

c) Write on satellite chromosome. **[2]**

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

b) State the structure of rII locus. **[4]**

c) Write on pilus production in plasmid. **[2]**

Q3) a) Give an account of wheat gluten proteins. **[4]**

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

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

Q4) a) Explain the mechanism of double site - specific recombination. **[4]**

b) Give an account of VNTRs. **[4]**

c) What is point mutations? **[2]**

P.T.O.

Q5) a) Comment on polytene & lampbrush chromosome. **[5]**

b) Give structure of prokaryotic transposable elements. **[5]**

Q6) a) Describe various experimental methods used to study phage infection. **[5]**

b) Write on interactions between plasmid & host. **[5]**

Q7) a) Give the methods of isolation, characterization & expression of gluten protein genes. **[5]**

b) Explain systems of mating & random mating of H-W principle. **[5]**

Q8) a) Discuss automated DNA sequencing method. **[5]**

b) Describe in detail single nucleotide polymorphism. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1716

[Total No. of Pages :2

[5229] - 308

M.Sc. - II

BOTANY

BO - 3.45 : Advanced Plant Biotechnology

(2013 Pattern) (Special Paper) (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) ***Draw neat labelled diagram wherever necessary.***

Q1) a) Explain the use of Bt & non Bt genes in obtaining insect resistant plants. **[4]**

b) How can post-harvest losses of fruits be reduced with trausgenic technology? **[4]**

c) Enlist applications of molecular markers. **[2]**

Q2) a) Write the concept of compartmentalization of secondary metabolites. **[4]**

b) Describe any one technique of gene silencing. **[4]**

c) What is site directed mutagenesis? **[2]**

Q3) a) Differentiate between southern & northern blotting techniques. **[4]**

b) Comment on selection of recombinant plasmid vectors. **[4]**

c) Describe any two methods of immobilization technique. **[2]**

P.T.O.

Q4) a) What is differential display of mRNA? Write its use to study gene expression. **[4]**

b) Describe different culture systems used for secondary metabolite production. **[4]**

c) Write on coat protein mediated virus disease resistance. **[2]**

Q5) a) How is growth & product analysis done in secondary metabolite production. **[5]**

b) Write uses of any five enzymes in recombinant DNA technology. **[5]**

Q6) a) Comment on "DNA microarray technique". **[5]**

b) Describe the different strategies to obtain fungal disease resistant transgenic plants. **[5]**

Q7) a) Explain Sanger's dideoxy method of DNA sequencing. **[5]**

b) What is SAGE? Write the technique in detail. **[5]**

Q8) a) Give an account of "Trausgenics for salt tolerance. **[5]**

b) Discuss the concept of elicitation for improvement of seconday metabolite production. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1717

[Total No. of Pages : 2

[5229] - 309
M.Sc. - II
BOTANY
BO : 3.46 - Advanced Medicinal Botany
(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) Write on traditional system of medicine. **[4]**

b) Give procedure for quality control of herbal drugs. **[4]**

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

Q2) a) Comment on marine drugs. **[4]**

b) Give applications of clove. **[4]**

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

Q3) a) Discuss method of cultivation of turmeric. **[4]**

b) Explain ayurvedic profile of guggul. **[4]**

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

Q4) a) "Plant tissue culture is ideal method for pharmaceuticals". Justify. **[4]**

b) Comment on microscopical method for drug evaluation. **[4]**

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

Q5) a) Mention source, cultivation method and application of Aloes. **[5]**

b) Write principle and method of formulation of Bhringraj. **[5]**

P.T.O.

Q6) a) Describe scheme for pharmacognostic study of crude drug. **[5]**

b) Explain biogenesis of phytopharmaceuticals. **[5]**

Q7) a) Discuss principles and formulations of shatavari. **[5]**

b) Give applications of Vasaka and Vinca. **[5]**

Q8) a) Comment on cultivation and utilization of medicinal plants in India. **[5]**

b) Explain source, method of cultivation and applications of Aswagandha. **[5]**

Total No. of Questions :8]

SEAT No. :

P1718

[Total No. of Pages : 2

[5229]-311
M.Sc.- II
BOTANY
BO - 3.48 : Advanced Seed Technology
(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 eqaul marks.***
3) ***Draw neat labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) a) Comment on seed quality characteristics. **[4]**

b) Describe structure of microsporangium. **[4]**

c) What are Foundation seeds? **[2]**

Q2) a) Discuss on maintenance of breeders seed in self pollinated crops. **[4]**

b) Give an account of slurry treater. **[4]**

c) Write on seed germination. **[2]**

Q3) a) Comment on quick viability test. **[4]**

b) Explain types of seed legislation. **[4]**

c) What are artificial seeds? **[2]**

Q4) a) Comment on seed certification board. **[4]**

b) What is roughing? **[4]**

c) Define seed. **[2]**

P.T.O.

Q5) a) Comment on orthodox and recalcitrant seed. **[5]**

b) Discuss mechanism of seed transmission. **[5]**

Q6) a) Give preventive measures of seed deterioration. **[5]**

b) Explain causes of seed dormancy. **[5]**

Q7) a) Write economic importance of seed borne diseases. **[5]**

b) Give an account of seed vigour and seed ageing. **[5]**

Q8) a) Give an account of production of breeders seeds in cross pollinated crops. **[5]**

b) Comment on packaging and handling of seeds. **[5]**

Total No. of Questions :8]

SEAT No. :

P1719

[Total No. of Pages : 2

[5229]-312
M.Sc.- II
BOTANY
BO - 3.50 : Advanced Biodiversity
(2013 Pattern) (New) (Credit System) (Semester - III)

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

Instructions to the candidates:

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

Q1) a) Describe pteridophyte diversity w.r.t distribution and evolutionary success. **[4]**

b) Explain urban and periurban diversity. **[4]**

c) Write on measurement of genetic diversity. **[2]**

Q2) a) Discuss Algal diversity w.r.t habit and habitat. **[4]**

b) Give a brief account of Artic and Alpine ecosystems. **[4]**

c) What is species richness. **[2]**

Q3) a) Explain Mvp and population viability analysis. **[4]**

b) Discuss Global distribution of biodiversity. **[4]**

c) Write on diversity indices based on species abundance. **[2]**

Q4) a) Write on Endemism and biodiversity giving examples **[4]**

b) Explain inbreeding depression. **[4]**

c) Enlist sampling techniques for monitoring fish biodiversity. **[2]**

P.T.O.

Q5) a) Discuss about the conservation of genetic and ecosystem diversity. **[5]**

b) Comment on identification of diversity hot - spots. **[5]**

Q6) a) Write in detail about any two methods of ex-sites conservation of biodiversity. **[5]**

b) Give an overview of the variety of life forms. **[5]**

Q7) a) Discuss the role of educational institutes in biodiversity conservation. **[5]**

b) Explain IUCN threatened categories and unknown categories. **[5]**

Q8) a) Comment on factors affecting ecosystem degradation and loss. **[5]**

b) Describe the role of biotechnology in assessment of biodiversity and bioresources. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1720

[Total No. of Pages : 2

[5229]-401

M.Sc.

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 diagrams wherever necessary.***

Q1) a) Explain Mode, Median and Mean. Calculate the mean from given data:- 28, 32, 45, 54 60, 61, 70, 63, 70, 72, 76, 54, 63, 76, 32, 54, 60, 45, 72, 98. **[4]**

b) What is correlation? Describe the scattered diagram method of correlation. **[4]**

c) Comment on P-Value. **[2]**

Q2) a) Define x^2 test. Give applications of x^2 test. **[4]**

b) What is biological data base? **[4]**

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

Q3) a) Explain Dunnet's test for comparison of treatment means with control. **[4]**

b) Mention the role of molecular tools in protein α nucleotide sequence analysis. **[4]**

c) Comment on concept of sample and population. **[2]**

Q4) a) How much NaOH is needed to make 1 liter of aqueous 1 M solution? Express the concentration of the solution in terms of percent (W/V). **[4]**

b) What is Variance? Calculate the variance for the data 7, 3, 4, 6, 1, 6, 7, 6, 5. **[4]**

c) Comment on equillibrium constant. **[2]**

P.T.O.

Q5) a) An analysis of seed number per fruit in 10 fruits, each of two batches is given below. Explain which group has lower range of coefficient of variation. **[5]**

Fruit No.		1	2	3	4	5	6	7	8	9	10
No. of	Batch I	7	9	6	8	6	5	7	8	6	8
Seeds	Batch II	10	8	9	10	11	10	5	6	4	7

b) Comment on critical difference for pairs of treatments. **[5]**

Q6) a) Write the role of FASTA and BLAST. **[5]**

b) Explain the procedure generally followed in testing hypothesis. **[5]**

Q7) a) Give an account on skewness and its Measurements. **[5]**

b) Explain one way classification technique of ANOVA. **[5]**

Q8) a) Discuss the role of Bioinformatics in determining phylogenetic relationship. **[5]**

b) Distinguish between random and non-random sampling. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1721

[Total No. of Pages : 2

[5229]-402

M.Sc.

BOTANY

BO-4.2 : Plant Organism Interaction

(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) ***Neat labelled diagram must be drawn wherever necessary.***

Q1) a) Write an account of any two parasitic associations in plants. **[4]**

b) Describe any two carnivorons plants. **[4]**

c) Briefly write on insect - plant interactions. **[2]**

Q2) a) Comment on allelopathy. **[4]**

b) Explain epiphytic plant interactions. **[4]**

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

Q3) a) Write briefly on genetic engineering and improved tolerance against herbivores. **[4]**

b) Explain plant defence against herbivores. **[4]**

c) Give any two examples of mimicry. **[2]**

Q4) a) Write on endomycorrhizae. **[4]**

b) What are endophytic fungi? **[4]**

c) Give forms of Lichen thalli. **[2]**

P.T.O.

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

b) Write on endophytic bacteria and algae. **[5]**

Q6) a) Comment on modulating bacteria. **[5]**

b) Explain algae - coral symbiosis. **[5]**

Q7) a) Comment on fungal insect interactions. **[5]**

b) How bees and butterflies act as pollinators? **[5]**

Q8) a) Write cantrivances for self pollination. **[5]**

b) Fruit morphology is relevant to dispersal mechanism. Explain. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1722

[Total No. of Pages :2

[5229] - 403

M.Sc.

BOTANY

BO - 4.3 : Industrial Botany - II

(Semester - IV) (2013 Pattern) (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) Describe aromatic plants as a source of essence. **[4]**

b) Add a note on laboratory design for plant tissue culture. **[4]**

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

Q2) a) Briefly write on various styles of gardening. **[4]**

b) Describe the process of production of jams & jellies. **[4]**

c) What is herbal technology? **[2]**

Q3) a) Give an account of medicinal plants used in cosmetics. **[4]**

b) Comment on factors affecting flower production. **[4]**

c) Write on surface sterilization technique for micropropagation of Banana. **[2]**

P.T.O.

Q4) a) Comment on transporting of ex-agar plantlets. **[4]**

b) Describe the process of production & canning of fruit beverages. **[4]**

c) What is centralised packing operation. **[2]**

Q5) a) Write a note on value addition to biodiversity through chemo-prospection. **[5]**

b) Give an account of techno-commercial report & Micropropagation of sugarcane. **[5]**

Q6) a) Give an importance & Scope of floricultures of add a note on cultivation of Gerbera. **[5]**

b) Describe the post-harvest pathological disorders in fruits. **[5]**

Q7) a) Write on medicinal mushroom for healthy life. **[5]**

b) Give an account of international trade in tropical & Subtropical fruits. **[5]**

Q8) a) What is landscape gardening? Give the plan of garden for educational institute. **[5]**

b) Comment on biotechnological approaches for improving quality and post harvest life & fruits. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1723

[Total No. of Pages : 2

[5229]-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) ***Draw neat labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) a) State causes of plant diseases. Describe any two of them. **[4]**

b) Give an account on the pathogenicity of biotrophic pathogens. **[4]**

c) Write any two objectives of plant pathology. **[2]**

Q2) a) Give an account on the biochemical defense in plants. **[4]**

b) Explain the role of enzymes in disease development in plants. **[4]**

c) Write about the contributions of any one plant pathologists from India. **[2]**

Q3) a) Give an account on the role of temperature and humidity in disease development. **[4]**

b) What is disease cycle ? Differentiate between penetration and infection. **[4]**

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

Q4) a) Give any two ways of the classification of plant diseases. **[4]**

b) Write about phytoalexin and antigen hypothesis. **[4]**

c) Give an account an any two methods of active dispersal of plant pathogens. **[2]**

Q5) a) Describe any two diagnostic methods for detecting plant pathogens. **[5]**

b) Give an account on bacterial diseases in plants. **[5]**

Q6) a) Explain physiological specialization and adaptation of fungi to different hosts. **[5]**

b) Briefly describe the breeding methods for improving resistance in plants. **[5]**

P.T.O.

Q7) a) Comment on post harvest diseases. **[5]**

b) Give an account on biological and Chemical activators of resistance in plants. **[5]**

Q8) a) Give an account on the role of biotechnology in plant pathology. **[5]**

b) What is disease forecasting? Explain any two factors affecting forecasting of plant disease. **[5]**

✡ ✡ ✡