This question paper contains **3** printed pages]

NEPRM—1001—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

RESEARCH METHODOLOGY

Paper SVECRM-401

(Tuesday, 16-4-2024) **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Log table and calculator is allowed.

1. Attempt any *three* of the following : 15

(*a*) Write a note on qualities of good research.

(*b*) Explain need of research design.

(*c*) Give an account on ANOCOVA.

(*d*) Explain data processing operations.

P.T.O.

2. Attempt the following :

(*a*) What is research ? Describe types of research. 8

(*b*) Explain objectives of research. 7

3. Attempt the following :

(*a*) What is Sampling ? Explain the characteristics of good sampling. 8

(*b*) Explain important concepts relating to research design. 7

4. Attempt the following :

(*a*) Discuss questionnaire method as a technique of data collection. 8

(*b*) Calculate the mean, median and mode of the following data : 7

CI	**F**
40	2
35	8
30	10
25	15
20	8
15	5
10	2

5. Attempt the following :

(*a*) What is research hypothesis ? What are the types of research hypothesis ? 8

(*b*) Describe the procedure for hypothesis testing. 7

6. Write brief notes on : 15

(*a*) Technique involved in defining a problem.

(*b*) Case study method.

(*c*) Steps in sample design.

This question paper contains **2** printed pages]

NEPRT—64—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

(SBOTE-401)

(Bioinstrumentation and Methods in Biology)

(Tuesday, 30-04-2024) **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Draw neat and well labelled diagrams wherever required.

1. Write brief notes on any *three* : 15

   (*a*) Fixation and staining

   (*b*) Gas chromatography

   (*c*) Radiation hazards

   (*d*) AFLP technique.

2. Write in brief on :

   (*a*) Safe use of laboratory equipments. 8

   (*b*) Micrometry. 7

3. Describe in brief on :

   (*a*) Principle and applications of HPTLC. 8

   (*b*) Working and applications of oven. 7

P.T.O.

4. Write in brief on :

(*a*) Principle and techniques of colorimeter. 8

(*b*) Uses of radioisotopes in Biotechnology and life sciences. 7

5. Explain in brief on :

(*a*) Methods and applications of western blotting techniques in life sciences. 8

(*b*) Cooling centrifuge—principle and applications. 7

6. Write brief notes on any *three* : 15

(*a*) Hazards and waste disposal

(*b*) Sterilization by filtration

(*c*) Autoradiography

(*d*) PAGE electrophoresis.

This question paper contains **2** printed pages]

NEPRT—23—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper SBOTC-402

(Diversity of Cryptogams)

(Monday, 22-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

Note :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining attempt any *three* questions.

(*iii*) Draw neat and labelled diagrams wherever necessary.

1. Write short notes on the following : 20

(*a*) Algal blooms

(*b*) Pleurilocular sporangia

(*c*) Economic importance of bryophytes

(*d*) Fossilization process.

P.T.O.

2. Describe in brief :

(*a*) Algal classification as per F.E. Fritsch (1944). 10

(*b*) Thallus organization in algae. 10

3. Write in brief :

(*a*) General morphology and sexual reproduction in charophyta. 10

(*b*) General morphology and vegetative reproduction in cyanophyta. 10

4. Describe in brief :

(*a*) Internal structure of Anthoceros thallus. 10

(*b*) Sexual reproduction in Marchantiales. 10

5. Describe in brief :

(*a*) Morphological and anatomical characters of Lycopodium. 10

(*b*) Heterospory and seed habit. 10

6. Write brief notes on the following : 20

(*a*) SCP

(*b*) Thallus of oedogonium

(*c*) Funaria capsule

(*d*) Economic importance of Pteridophytes.

This question paper contains **2** printed pages]

NEPRT—41—2024

FACULTY OF SCIENCE

M.Sc. (NEP) (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper (SBOTC-403)

(Taxonomy and Argiosperms and Gymnosperms)

(Wednesday, 24-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Draw neat and labelled diagrams wherever necessary.

1. Write brief notes on the following : 20

   (*a*) Economic importances of gymnosperms.

   (*b*) Taxonomic structure.

   (*c*) Merits and demerits of Bentham and Hooker's classification.

   (*d*) Applications of molecular systematics.

2. (*a*) Describe in detail comparative account on Cycadales. 10

   (*b*) Explain in detail general account on Pentoxylates. 10

3. (*a*) Describe in detail concept and types of plant speciation. 10

   (*b*) Describe in detail theories of origin of Angiosperms. 10

4. (*a*) Describe in detail Englar and Prantl's system of classification with its merits and demerits. 10

   (*b*) Give a detailed account of general characters of family annonaceae with its floral formula and floral diagram. 10

P.T.O.

5. (*a*) Describe in detail Numeral Taxonomy. 10

(*b*) Give a detailed account on Biosystematics. 10

6. Write brief notes on the following : 20

(*a*) Classification of gymnosperm proposed by Bhatnagar and Moitra (1996).

(*b*) Typological species concept.

(*c*) Diagnostic characters of family Orchidaceae.

(*d*) Chemotaxonomy.

This question paper contains **2** printed pages]

NEPRT—100—2024

FACULTY OF SCIENCE

M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper SBOTC 1451

(Cell Biology, Genetics and Plant Breeding)

(Thursday, 18-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Draw neat and well lebelled diagrams wherever necessary.

1. Write brief notes on the following : 20

(*a*) Euchromatin and heterochromatin

(*b*) Rh factor

(*c*) C-value paradox

(*d*) Male sterility.

P.T.O.

2. (*a*) Explain structure and functions of cytoskeleton. 10

(*b*) Define cell cycle. Add a note on regulation and control of cell cycle. 10

3. (*a*) Describe the structure and regulation of gene expression in prokaryotes. 10

(*b*) Give an account of structural aberrations in chromosomes. 10

4. (*a*) Describe epistatic gene interaction with a suitable example. 10

(*b*) Describe sex linked inheritance in man with suitable example. 10

5. (*a*) Describe the methods of plant breeding in self-pollinated crops. 10

(*b*) Describe different types of cross pollination. 10

6. Write brief notes on the following : 20

(*a*) Cell receptors

(*b*) Dosage compensation

(*c*) Genetic drift

(*d*) Emasculation.

This question paper contains **2** printed pages]

NEPRT—142—2024

FACULTY OF SCIENCE AND TECHNOLOGY??

M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper SBOTC1453

(Plant Anatomy and Embryology of Angiosperms)

(Tuesday, 23-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

Note :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining attempt any *three* questions.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Write brief notes on the following : 20

(*a*) Cytological and molecular aspects of SAM

(*b*) Development of leaf

(*c*) Pollen wall

(*d*) Allergic properties of pollen.

P.T.O.

2. Describe in detail :

(*a*) Organization of RAM. 10

(*b*) Wood development in relation to environmental factors. 10

3. Describe in detail :

(*a*) Types and function of secretory tissue. 10

(*b*) Structure and types of stomata. 10

4. Describe in detail :

(*a*) Development of male gametophyte. 10

(*b*) Development of dicot embryo. 10

5. Describe in detail :

(*a*) Role of Palynology in taxonomy. 10

(*b*) Pollen storage and viability. 10

6. Write brief notes on the following : 20

(*a*) Scope of histology

(*b*) Structure and types of trichomes

(*c*) Polyembryony

(*d*) Pollen calendar and its importance.

This question paper contains **2** printed pages]

NEPRT—169—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

(Plant Ecology, Environmental Biology and Phytogeography)

(Monday, 29-04-2024) **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

Note :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining, attempt any *three* questions.

(*iii*) Draw neat and labelled diagrams wherever required

1. Write short notes on (any *three*) : 15

(*a*) Food chain

(*b*) Ecotones

(*c*) Global warming

(*d*) Importance of forest

P.T.O.

2. Describe in brief :

(*a*) Mechanism of nitrogen cycle. 8

(*b*) Models of energy flow in ecosystem. 7

3. Explain in brief :

(*a*) Concept of metapopulation. 8

(*b*) R and K selection theory. 7

4. Describe in brief :

(*a*) Causes, effects and control measures of air-pollution. 8

(*b*) Aim and objectives of EPA 1986. Add a note on its main provision. 7

5. Explain in brief :

(*a*) Forest types of India. 8

(*b*) Different botanical provinces of India. 7

6. Write brief notes on (any *three*) : 15

(*a*) Pyramid of number

(*b*) Logistic growth curve

(*c*) Acid rain

(*d*) Shifting of poles.

This question paper contains **2** printed pages]

NEPRT—121—2024

FACULTY OF SCIENCE

M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

(Plant Resource Utilization and Biodiversity Conservation)

(Saturday, 20-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

Note :— (*i*) Question No. **1** is compulsory.

(*ii*) Of the remaining attempt any *three* questions.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Write brief notes on the following : 20

   (*a*) Medicinal plants

   (*b*) Species diversity

   (*c*) National parks

   (*d*) Sacred groves.

2. (*a*) Describe in detial the Vavilov's centres of origin. 10

   (*b*) Explain origin, method of cultivation, harvesting and economic importance of any *one* edible oil crop. 10

P.T.O.

3. (*a*) Describe in detail concept of biodiversity. 10

(*b*) Explain in detial Endemism concept and types. 10

4. (*a*) Explain in detial benefits and adverse consequences of green revolution. 10

(*b*) Explain in detial the concept of biosphere reserves. 10

5. (*a*) Describe in detail the role of botanical garden in plant conservation. 10

(*b*) Describe in detail the principles and practices of Ex-situ conservation. 10

6. Write short notes on : 20

(*a*) Domestication of plants

(*b*) Red data book

(*c*) Sanctuaries

(*d*) Pollen banks.

This question paper contains **2** printed pages]

RT—282—2024

FACULTY OF SCIENCE

M.Sc. (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper-IV

(Plant Anatomy and Development Biology)

(Wednesday, 24-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Describe in detail different types of meristem. 15

Or

Describe in detail primary and secondary growth in stem of angiosperms.

2. Describe in detail types and functions of secretory tissues. 15

Or

Describe in detail floral meristem and floral development in *Antirrhinum*.

3. Describe in detail development of an embryo in angiosperms. 15

Or

Describe in detail process and significance of double fertilization and triple fusion in angiosperms.

P.T.O.

4. Describe in detail role of palynology in taxonomy. 15

Or

Give an account of aeropalynology.

5. Write short notes on any *three* of the following : 15

(1) Wood development

(2) Stomata

(3) Apomixes

(4) Agropalynology.

This question paper contains **2** printed pages]

RT—60—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper VI

(Bioinstrumentation and Methods in Biology)

(Thursday, 18-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with suitable diagram, scheme etc.

1. Describe working and application of dark field microscope.

Or

Describe working and application of flow cytometry.

2. Describe the principles, working and applications of autoclave and incubator.

Or

Describe the principle and applications of thin layer chromatography.

P.T.O.

3. Describe the principles and techniques of NMR.

Or

Describe the effect of radiations on biological systems and uses of radioisotopes in life sciences and biotechnology.

4. Describe the method of southern and northern blotting techniques. Add a note on application in life sciences.

Or

Describe the principle and applications of cooling and ultracentrifuge.

5. Write short notes on (any *three*) :

(*i*) Simple microscope

(*ii*) pH meter

(*iii*) Colorimeter

(*iv*) RAPD techniques.

This question paper contains **2** printed pages]

RT—139—2024

FACULTY OF SCIENCE

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper–VII

(Cell Biology, Genetics and Plant Breeding)

(Saturday, 20-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. Describe structure and functions of Lysosomes and Endoplasmic reticulum. 15

Or

Write down regulation and control of cell cycle.

P.T.O.

2. Describe chromosomal basis of sex determination and molecular basis of sex differentiation. 15

Or

Give an account of physical mapping of chromosome.

3. What is Hardy Weinberg's Law. Describe factors affecting Hardy Weinberg equilibrium. 15

Or

Describe structural aberrations in chromosome.

4. What is incompability. Describe types, mechanism and applications in plant breeding. 15

Or

Write down types and role of mutations in plant breeding.

5. Write short notes on (any *three*) : 15

(*a*) Cell signaling

(*b*) Linkage groups

(*c*) C-value paradox

(*d*) Heterosis

This question paper contains **2** printed pages]

RT—343—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper IX

(Plant Ecology, Environmental Biology and Phytogeography)

(Monday, 29-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. Define ecological pyramid. Describe pyramid of number and pyramid of biomass. 15

Or

Describe in detail structure of forest ecosystem.

2. Define ecological succession and explain basic types of ecological succession. 15

Or

Describe in detail different levels of species diversity and its measurement.

3. What is global warming ? Describe acid rains. 15

Or

Describe in detail different biotic environmental factors.

P.T.O.

4. Explain shifting of poles. 15

Or

Describe in detail theories of differentiation and natural selection.

5. Write short notes on any *three* of the following : 15

(*i*) Land bridges

(*ii*) Energy flow in an ecosystem

(*iii*) Urban problems related to energy

(*iv*) Carbon cycle.

This question paper contains **2** printed pages]

RT—230—2024

FACULTY OF SCIENCE

M.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper-VIII

(Plant Resource Utilization and Biodiveristy Conservation)

(Tuesday, 23-04-2024) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Describe in detail origin, cultivation harvesting and economic importances of fodder plants. 15

Or

Give a detailed account on role of Biotechnology in Medicine.

2. Give a detailed account on concept and types of Endemism. 15

Or

Describe in detail concept and types of Biodiversity.

3. Describe in detail In-situ conservation of Biodiversity. 15

Or

Give a detailed account on current practices in conservation of genetic, species and ecosystem diversity.

P.T.O.

4. Describe in detail role of CSIR in sustainable development. 15

Or

Give a detailed account on social approaches to conservation.

5. Write short notes on (any *three*) : 15

(*i*) Plants as a source of Timber

(*ii*) Red Data Book

(*iii*) Green revolution

(*iv*) Botanical Garden.

This question paper contains **2** printed pages]

RT—188—2024

FACULTY OF SCIENCE

M.Sc. (Third Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Pattern)

BOTANY

Paper XIII

[Angiosperms-I (Systematics of Angiosperms-I)]

(Monday, 22-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. What is leaf ? Describe types of simple and compond leaves and add a note on phyllotaxy. 15

Or

Describe concept of primitive stamen and primitive carpel.

P.T.O.

2. Describe in detail Takhtajan's system of plant classification with its merits and demerits. 15

Or

Describe ICBN principles, rule of priority and author citation rules.

3. Describe in detail range of floral variation in Malvales and discuss interrelationship of the taxa included therein. 15

Or

Describe the range of floral variation in Geraniales and discuss the interrelationship between taxa included therein.

4. Describe the range of floral variation in Liliflorae and discuss the interrelationship between taxa included therein. 15

Or

Describe the range of floral variation in Pandanales and discuss the interrelationship between taxa included therein.

5. Write short notes on any *three* : 15

(*a*) Polyphyletic origin of Angiosperms

(*b*) Author citation

(*c*) Interrelationship of Papavaraceae

(*d*) Economic importance of Orchidaceae.

This question paper contains **2** printed pages]

RT—382—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper-XIV

(Angiosperms-II Plant Structure and Reproductive Biology)

(Tueday, 30-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Describe in detail development of adventitious roots and lateral roots. 15

Or

Describe in detail secondary growth in dicot and monocot roots.

2. Describe in detail vascular anatomy of flower. 15

Or

Give in detail the general account of fruit and seed anatomy of flowering plants.

3. Describe in detail biochemical, physiological and genetic events involved in the pollen development. 15

Or

What is pollen sterility ? Describe in detail the genetic and cytoplasmic male sterility in plants.

P.T.O.

4. Describe in detail development of monosporic, bisporic and tetrasporic female gametophyte. 15

Or

Describe in detail development of embryo in angiosperms.

5. Write short notes on any *three* of the following : 15

(1) Cell fate and lineage

(2) Types of wood.

(3) NPC classification

(4) Dynamics of fruit growth.

This question paper contains **2** printed pages]

RT—283—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper-XIV-A

(Basic Plant Pathology and Plant Diseases)

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Give an account of classification of plant diseases on the basis of causal organism. 15

Or

Write in brief :

(*a*) Nature and concept of plant disease. 8

(*b*) Preservation of plant pathogens and disease specimens. 7

2. What are seed-borne pathogens ? Describe methods for detection of fungi. 15

Or

Write in brief :

(*a*) Control of seed-borne pathogens. 8

(*b*) Significance of seed health. 7

3. Describe symptoms, causal organism, etiology and management of black stem rust of wheat and bean mosaic. 15

P.T.O.

Or

Write in brief :

(*a*) Brown leaf spot of rice. 8

(*b*) Wilt of pigeon pea. 7

4. Describe symptoms, causal organism, etiology and management of white rust of mustard and early blight of Tomato. 15

Or

Write in brief :

(*a*) Leaf spot of Groundnut. 8

(*b*) Powdery mildew of Bhendi. 7

5. Write short notes on (any *three*) : 15

(*i*) Effect of plant diseases on human affairs

(*ii*) Seed treatments

(*iii*) Leaf spot of Jowar

(*iv*) Leaf curl of chilli

(*v*) Leaf spot of cabbage.

This question paper contains **2** printed pages]

RT—102—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Third Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper-XII

(Molecular Biology and Biostatistics)

(Friday, 19-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with suitable diagram, scheme etc.

1. Describe positive and negative transcriptional regulation. 15

Or

Describe in detail types of repetitive DNA.

2. Describe organization and structure of prokaryotic genes. 15

Or

Describe regulation of gene expression in eukaryotes.

3. Describe post-translational modifications. 15

Or

Describe genetic transformation, conjugation and transduction in bacteria.

P.T.O.

4. Describe mean deviation and standard deviation with suitable example. 15

Or

Give the difference between parametric and non-parametric statistics.

5. Write short notes on (any *three*) : 15

(*i*) Physical properties of nucleic acids

(*ii*) Structure and role of exons

(*iii*) Non-conjugative plasmids

(*iv*) Sampling distribution.

This question paper contains **2** printed pages]

RT—296—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Course)

BOTANY

Paper-XIV

(Plant Pathology-II) : (Diseases of Crop Plants and their Management)

(Wednesday, 24-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. Give an account of classification of plant diseases based on symptoms produced by diseased plant. 15

Or

Describe in detail detection and diagnosis of plant diseases.

2. Give an account of systemic fungicides. Add a note on their mode and mechanism of action. 15

Or

Give an account on eradication of plant pathogens.

3. Describe symptoms, causal organism, disease cycle and management of green ear of Bajra and loose smut and wheat. 15

Or

Describe symptoms, causal organism, disease cycle and management of Ergot of Bajra and Bean Mosaic.

P.T.O.

4. Describe symptoms, causal organism disease cycle and management of white rust of mustard and yellow vein mosaic of Bhendi. 15

Or

Describe symptoms, causal organism disease cycle and management of leaf spot of sunflower and die back of chilli.

5. Write notes on (any *three*) : 15

(*a*) Nature and concept of plant disease

(*b*) Avoidance of the pathogen

(*c*) Sterility mosaic of pigeonpea

(*d*) Sesamum phyllody.

This question paper contains **2** printed pages]

RT—187—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Pattern)

BOTANY

Paper XIII-A

(Plant Pathology-I : Principles of Plant Pathology)

(Monday, 22-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Write in detail contribution of Anton de Bary and C.V. Subramaniam in the field of plant pathology. 15

Or

Describe in detail survival of fungal pathogens and phytopathogenic bacteria.

P.T.O.

2. Describe in detail entry of plant pathogen through intact surface and non-cutinized surface. 15

Or

Describe in detail effect of temperature, light and pH on pathogenesis.

3. Give an account on plant disease forecast system with any *two* examples. 15

Or

Describe in detail methods for detection of a aerospora.

4. Describe in detail pre-existing structural defence mechanism in plants. 15

Or

Describe in detail synthesis, characteristics and role of phytoalexins.

5. Write short notes on (any *three*) : 15

(*a*) The practice and practioners of plant pathology

(*b*) The rhizosphere

(*c*) Slow and rapid epidemics

(*d*) Defence through detoxification of pathogen toxins.

This question paper contains **2** printed pages]

RT—22—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper–XI

(Plant Physiology)

(Tuesday, 16-4-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) *All* questions are compulsory and carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Give a detailed account on sources, functions and deficiency symptoms of different macroelements. 15

Or

Give a detailed account on mechanism of phloem transport in plant and add a note on process of phloem loading and unloading.

2. Describe in detail practical applications and mechanism of biosynthesis of Cytokinin. 15

P.T.O.

Or

Give a detailed account on phenomenon of Photoperiodism with suitable examples.

3. Describe in detail mechanism of Carbon reduction through Calvin Cycle. 15

Or

Give an account on Photorespiration. Add a note on its significances.

4. Give a detailed account on mechanism and regulation of Glycolysis. 15

Or

Describe in detail mechanism of Glyoxalate pathway with its significance.

5. Write short notes on (any *three*) : 15

(*a*) Diffusion

(*b*) Applications of Ethylene

(*c*) Cyclic Photophosphorylation

(*d*) Concept of RQ.

This question paper contains **2** printed pages]

RT—189—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Pattern)

BOTANY

Paper XIII-C

[Seed Technology-I (Principle of Seed Tech.)]

(Monday, 22-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *All* questions.

(*ii*) Draw neat and well labelled diagram wherever necessary.

1. Describe in detail concept of apomixis, parthenocarpy and polyembryony. 15

Or

What is sporogenesis ? Describe microsporogenesis and mega-sporogenesis.

2. Define seed dormancy ? Discuss the methods for breaking of seed dormancy. Add a note on importance of seed dormancy. 15

Or

Explain in detail concept, principles and procedures of different methods used for testing vigour of seeds.

P.T.O.

3. Describe various chemical bio-chemical and molecular methods of testing of genetic purity of seeds. 15

Or

Describe seed sampling methods for purify analysis.

4. Explain the various factors responsible to change the life span of seeds. 15

Or

Describe the methods of moisture estimation in seeds. Add a note on importance of moisture content in seed.

5. Write short notes on (any *three*) : 15

(*a*) Pollination

(*b*) Seed Germination

(*c*) Diaphanoscope

(*d*) Universal moisture meter

(*e*) Seed divider.

This question paper contains **2** printed pages]

RT—381—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Third Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper XIV-C

[(Seed Technology-II) (Seed Pathology)]

(Tuesday, 30-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Draw neat and well labelled diagrams wherever necessary.

1. What is plant quarantine ? Describe in detail plant quarantine and SPS under WTO. 15

Or

What is seedborne inoculum ? Describe in detail losses caused by seedborne diseases.

2. Explain in detail methods of detection of seedborne pathogens. 15

Or

Describe in detail epidimiological factors influencing the transmission of seed-borne diseases.

3. Write down the symptoms, causal organism, reproduction, disease cycle and contol measures of ergot of bajara. 15

Or

Explain in detail symptoms, causal organism, reproduction, disease cycle and control measures of leaf blight and seed rot of Jowar.

P.T.O.

4. Describe symptoms, causal organism, reproduction, disease cycle and control measures of powdery mildew of pea. 15

Or

Explain in detail wilt of pigeon pea and Botrytis grey mold of gram.

5. Write short notes on (any *three*) : 15

(*a*) Role of microorganisms in agriculture

(*b*) Environmental factors affecting infection

(*c*) Alternaria leaf blight of wheat

(*d*) Powdery mildew of green gram

(*e*) History of seed pathology.

This question paper contains **3** printed pages]

RT—398—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper-XIX

(Angiosperms-IV Phytochemistry & Pharmacognosy)

(Thursday, 2-05-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. Describe in detail methods of extraction, purification and identification of Alkaloid and Flavonoids. 15

P.T.O.

Or

Describe in detail distribution and synthesis, chemistry and biological activity of Tanins and Saponins.

2. Describe methods and techniques used in Ethnobotany. 15

Or

Describe in detail serology and taxonomy.

3. Describe morphological and chemical classification of crude drug. 15

Or

What is drug adulteration ? Describe types of drug adulteration and methods of detection of drug adulteration.

4. Describe morphology, anatomy, chemistry, uses & adulterants of Withania. 15

Or

Describe morphology, anatomy, chemistry, uses and adulterants of Adathoda.

5. Write short notes on (any *three*) : 15

(*a*) Gums

(*b*) Seed proteins

(*c*) Drying and storage of drug plants

(*d*) Anatomy of curcuma rhizome.

This question paper contains **2** printed pages]

RT—61—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Pattern)

BOTANY

Paper XVI

(Biochemistry and Plant Metabolism)

(Thursday, 18-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

Note :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. What are amino acids ? Give its general structure and add a note on their various physico-chemical properties. 15

Or

Give a detailed account on mechanism of protein translation.

P.T.O.

2. Describe in detail Michaelis Menten equation for determination of enzyme kinetics and add a note on significance of K_m and V_{max}. 15

Or

Define enzyme inhibitions. Describe in detail different types of enzyme inhibition with suitable examples.

3. Give a detailed accounts on mechanism of biological nitrogen fixation.

Or

Give an accounts on source uptake, transport and mechanism of phosphorous metabolism in plants.

4. Define glyconeogenesis. Give its mechanism and ?? a note on its biological significance. 15

Or

Give detail accounts on chemistry and classification of carbohydrates. 15

5. Write short notes on (any *three*) : 15

(*a*) Hydrogen bonding

(*b*) Active sites

(*c*) Leghaemoglobin

(*d*) Triglycerides.

This question paper contains **2** printed pages]

RT—140—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper XVII

(Biotechnology and Genetic Engineering)

(Saturday, 20-4-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with suitable diagram, scheme etc.

1. What is micropropagation ? Describe various explants used in micropropagation. 15

Or

Describe scope and importance of biotechnology.

2. Describe in detail various methods employed for fusion of protoplasts. 15

Or

What is ovule culture ? Describe application of ovule culture.

P.T.O.

3. Describe construction of genomic libraries. 15

Or

Describe in brief the production of recombinant DNA molecules.

4. Describe process of isolation of specific genes from bacteria. 15

Or

Describe different types of vectors used for gene cloning.

5. Write short notes on (any *three*) : 15

(*i*) Totipotency

(*ii*) Protoplast isolation

(*iii*) Gene trapping

(*iv*) Small RNAs.

This question paper contains **2** printed pages]

RT—231—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY : PLANT PATHOLOGY-III

Paper-XVIII

(Physiological and Molecular Plant Pathology)

(Tuesday, 23-04-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Describe in detail effect of infection on respiration in plants. 15

Or

Describe in detail effect of infection on growth regulators in plants.

2. Give an account of hemicellulases and proteolytic enzymes in pathogenesis. 15

Or

Describe in detail chemical nature and mode of action of fusaric acid and wild fire toxin.

3. Give an account of mechanism of variability in plant pathogens. 15

Or

Describe in detail physiological specialization and production of new races.

P.T.O.

4. Describe in detail methods for gene transfer for development of transgenic plants. 15

Or

Give an account of restriction endonucleases and their applications.

5. Write short notes on (any *three*) : 15

(*a*) Composition of plant cell wall

(*b*) Aflatoxins

(*c*) Genetic variability in viruses

(*d*) Ti-plasmid.

This question paper contains **3** printed pages]

RT—397—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

(New/CBCS Pattern)

BOTANY

Paper-XIX

Plant Pathology-IV (Diseases of Fruit Plants and their Management)

(Thursday, 2-05-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Describe symptoms, causal organism, etiology and management of powdery mildew of mango and moko disease of Banana. 15

P.T.O.

Or

Describe symptoms, causal organism, etiology and management of fruit stem end rot of mango and bacterial wilt of banana.

2. Describe symptoms, causal organism, etiology and management of downy mildew of grapes and citrus gumosis. 15

Or

Describe symptoms, causal organism, etiology and management of anthracnose of grapes and citrus greening.

3. Describe symptoms, causal organism, etiology and management of alternaria fruit spot of pomegranate and die back of guava. 15

Or

Describe symptoms, causal organism, etiology and management of wilt of pomegranate and anthracnose of guava.

4. Give an account on post-harvest diseases of banana and their management. 15

Or

Describe in brief alternaria rot of guava and blue mold of citrus.

5. Write short notes on (any *three*) : 15

(*a*) Sigatoka leaf spot of banana

(*b*) Citrus canker

(*c*) Papaya mosaic

(*d*) Causes of post-harvest diseases.

This question paper contains **2** printed pages]

RT—390—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Fourth Semester) EXAMINATION

APRIL/MAY, 2024

BOTANY

Paper-XIX

Seed Technology-IV (Seed Health Testing and Management)

(Thursday, 2-05-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Draw neat, well labelled diagram wherever necessary.

1. Describe field and storage fungi and biochemical changes occurred in seeds during infection. 15

Or

Define mycotoxins. Describe the effect of mycotoxins on human and animal health.

2. Describe in detail blotter paper and agar plate methods for examination of colonies developed from seeds. 15

P.T.O.

Or

Describe objectives of seed health testing and add a note on inspection of dry seed and ungerminated seeds.

3. What is seed treatment ? Describe chemical and biological methods of seed treatment. 15

Or

Describe in detail important storage pests causing damage of seeds and their management.

4. Give the importance and principle of quarantine regulations and add a note on international procedures of phytosanitary certificates. 15

Or

What is seed certification ? Describe development of certification concept.

5. Write short notes on (any *three*) : 15

(*a*) Penicillium

(*b*) Embryocount method

(*c*) Botanicals for seed treatment

(*d*) Seed control order 1983

(*e*) Botrytis.