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

NEPSST—1—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

RESEARCH METHODOLOGY

Paper NEPRN-1001

(Wednesday, 16-4-2025) **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 solve any *three* questions.

(*iii*) Calculator and log table is allowed.

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

(*a*) Qualities of good research.

(*b*) Features of good design.

(*c*) ANOVA

(*d*) Types of data.

2. (*a*) What is research ? Explain steps involved in research process. 8

(*b*) Discuss interview as a technique of data collection. 7

P.T.O.

3. (*a*) Calculate the Mean, Median and Mode of the following data : 8

Class Interval (CI)	**Frequency (F)**
50–54	2
45–49	5
40–44	8
35–39	7
30–34	10
25–29	5
20–24	9
15–19	2
10–14	1
5–9	1

(*b*) What is hypothesis ? Give the characteristics of good research hypothesis. 7

4. (*a*) Describe non-probability and probability sampling. 8

(*b*) Calculate the Chi-square value of the following data : 7

Excellent	Average	Poor	Total
58	32	30	120

5. (*a*) Define case study. Give their components. 8

(*b*) Explain extraneous variable. 7

6. Write short notes on : 15

(*a*) Descriptive types of research

(*b*) Non-parametric test

(*c*) Primary data sources.

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

NEPSST—57—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

(SBOTC-401)

(Diversity of Microbes)

(Saturday, 19-04-2025) **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 diagram wherever required.

1. Write brief notes on the following : 20

(*a*) Role of fungi in medicine

(*b*) Structure of Ascocarp of sac fungi

(*c*) General characters of virus

(*d*) Structure of mesosome of bacteria.

P.T.O.

2. Write brief notes on the following :

(*a*) Transduction in bacterial cell. 10

(*b*) Transmission of plant virus. 10

3. Write brief notes on the following :

(*a*) Life cycle of yellow rust of wheat. 10

(*b*) Fungi as a biological control of fungi and biofertilizer. 10

4. Write brief notes on the following :

(*a*) General characters of lichen and economic importance. 10

(*b*) Structure of basidiocarp. 10

5. Write brief notes on the following :

(*a*) General characters and chemical composition of virus. 10

(*b*) Write in detail cell wall of gram +ve and gram –ve bacteria. 10

6. Write brief notes on the following : 20

(*a*) Symptoms of soft rot of potato.

(*b*) Economic importance of mycoplasma

(*c*) Nutrition in fungi

(*d*) Medicinal use of mushroom.

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

NEPSST—153—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTC-402

(Diversity of Cryptogams)

(Tuesday, 22-04-2025) **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 required.

1. Write brief notes on the following : 20

(*a*) Algal habitat. 5

(*b*) Economic importance of Alage. 5

(*c*) Economic importance of Bryophyta. 5

(*d*) Heterospory. 5

P.T.O.

2. Describe in detail the following : 20

(*a*) Ultrastructure of algal cell. 10

(*b*) Smith's classification of algae.

3. Describe in detail the following : 15

(*a*) Asexual reproduction in Chlorophyta. 10

(*b*) Sexual reproduction in Xynthophyta. 10

4. Describe in detail the following : 20

(*a*) Proskauer's classification of Bryophyta. 10

(*b*) Internal structure of Marchantiales. 10

5. Describe in detail the following : 20

(*a*) Internal structure of Psilotales. 10

(*b*) Stelar evolution in Pteridophyta 10

6. Write brief notes on the following : 20

(*a*) Algal blooms 5

(*b*) Morphology of Cyanophyta 5

(*c*) Thallus structure of Anthocerotales 5

(*d*) Morphology of Marsileales. 5

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

NEPSST—259—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTC-403

(Taxonomy of Angiosperms and Gymnosperms)

(Thursday, 24-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

(2) Of the remaining attempt any *three* questions required.

(3) Draw neat and well labelled diagrams wherever necessary.

1. Write brief notes on : 20

(*a*) General characters of Gymnosperms

(*b*) Principles of Internation Code of Nomenclature

(*c*) Economic importance of Asteraceae family

(*d*) Chemotaxonomy.

2. Write brief notes on :

(*a*) Cycadales 10

(*b*) Types of fossils. 10

P.T.O.

3. Write brief notes on :

(*a*) Allopatric and Sympatric speciation 10

(*b*) Theories of origin of Angiosperms. 10

4. Write brief notes on :

(*a*) Bentham and Hooker's classification system with its merits and demerits 10

(*b*) Give account on family Apocynaceae with its foral formula and floral diagram. 10

5. Write brief notes on :

(*a*) Numerical taxonomy 10

(*b*) Biosystematics. 10

6. Write brief notes on : 20

(*a*) Classification of Gymnosperms by Prof. Birbal Sahni (1920)

(*b*) Aims of taxonomy

(*c*) Economic importance of Apiaceae

(*d*) Applications of molecular systematics.

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

NEPSST—452—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(CBCS/NEP-2020 Pattern)

BOTANY

Paper SBOTE-401

(Bioinstrumentation and Methods in Biology)

(Saturday, 26-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—60

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

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

(3) Draw neat and well labelled diagram wherever necessary.

1. Write brief notes on the following : 15

(*a*) Staining in Microtomy 4

(*b*) Applications of hot air oven 4

(*c*) Beer-Lambert's law 4

(*d*) Cooling centrifuge. 3

P.T.O.

2. Describe in detail on the following : 15

(*a*) Working and application of Microtomy. 8

(*b*) Working and application of phase contrast microscope. 7

3. Describe in detail on the following : 15

(*a*) Principle and applications of Laminar air flow. 8

(*b*) Principles, working and applications of Incubator. 7

4. Describe in detail on the following : 15

(*a*) Principles and techniques of X-ray diffraction. 8

(*b*) Principles and techniques of colorimeter, UV-Visible spectrophotometer. 7

5. Describe in detail on the following : 15

(*a*) Principle and applications of 2D Electrophoresis. 8

(*b*) Principle and applications of PAGE. 7

6. Write brief notes on the following : 15

(*a*) Hazards and waste disposal 4

(*b*) Paper chromatography 4

(*c*) Liquid scintillation counting 4

(*d*) RFLP techniques. 3

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

NEPSST—27—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper–SBOTC-1451

(Cell Biology, Genetics and Plant Breeding)

(Thursday, 17-4-2025) **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 labelled diagrams wherever necessary.

1. Describe in brief : 20

(*a*) Cell cycle

(*b*) Significance of crossing over

(*c*) Duplications

(*d*) Self-pollination.

P.T.O.

2. (*a*) Describe structure and functions of chloroplast. 10

(*b*) Define Mitosis. Write down the stages of mitosis and give its significance. 10

3. (*a*) Describe coupling and repulsion hypothesis in Linkage. 10

(*b*) Describe the XX–XO and XX–YY type of sex determination. 10

4. (*a*) Explain cytoplasmic inheritance in mitochondria. 10

(*b*) Give an account of numerical aberrations in chromosome. 10

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

(*b*) What is Mutation Breeding ? Write down its role in plant breeding. 10

6. Write in brief on the following : 20

(*a*) Structure of endoplasmic reticulum

(*b*) Significance of Linkage

(*c*) Gene pool

(*d*) Importance of Hybridization.

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

NEPSST—105—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper-SBOTC-105

(Plant Resource Utilization and Biodiversity Conservation)

(Monday, 21-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

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

(3) Draw neat and well labelled diagrams wherever necessary.

1. Write brief notes on the following : 20

   (*a*) Plants as source of renewable energy

   (*b*) Species diversity

   (*c*) National parks

   (*d*) Chipko movement.

2. (*a*) Describe in detail Vavilov's centers of origin. 10

   (*b*) Explain role of Biotechnology in agriculture. 10

P.T.O.

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

(*b*) What is IUCN ? Describe its categories. 10

4. (*a*) Explain in detail benefits and adverse consequences of Green revolution. 10

(*b*) What is conservation ? Explain the conservation strategies. 10

5. (*a*) Describe in detail the role of Botanical Garden in plant conservation. 10

(*b*) Explain the role of BSI in sustainable development. 10

6. Write short notes on : 20

(*a*) Domestication of Plants

(*b*) Red data book

(*c*) Home garden conservation

(*d*) ICAR.

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

NEPSST—202—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTC-1453

(Plant Anatomy and Embryology of Angiosperms)

(Wednesday, 23-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

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

(3) Draw neat and well labelled diagrams wherever necessary.

1. Write brief notes on the following : 20

(*a*) Importance and scope of plant anatomy

(*b*) Development of leaf

(*c*) Experimental embryology

(*d*) Allergic properties of pollen.

2. Describe in detail :

(*a*) Organization of SAM. 10

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

P.T.O.

3. Describe in detail :

(*a*) Vascular anatomy of flower. 10

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

4. Describe in detail :

(*a*) Development of female gametophyte. 10

(*b*) Development of dicot embryo. 10

5. Describe in detail :

(*a*) NPC classification of pollen. 10

(*b*) Pollen storage and viability. 10

6. Write brief notes on the following : 20

(*a*) Types of meristem

(*b*) Structure and types of trichomes

(*c*) Apomixes

(*d*) Pollen calendar and its importance.

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

NEPSST—349—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

BOTANY

(Plant Ecology, Environmental Biology & Phytogeography)

(Friday, 25-4-2025) **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours* *Maximum Marks*—60

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

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

(*iii*) Draw neat and labelled diagram wherever required.

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

   (*a*) Importance of ecology in India

   (*b*) State ecotone with the help of example

   (*c*) Environment Protection Act (EPA), 1986.

   (*d*) Social forestry

2. Describe in brief :

   (*a*) Explain structure and functions of grassland ecosystem. 8

   (*b*) Define biogeochemical cycle. Explain carbon cycle. 7

P.T.O.

3. Write in brief :

(*a*) What is population ? Write characteristics of population. 8

(*b*) Define metapopulation. Explain causes of extinction. 7

4. Describe in brief :

(*a*) Causes, effect and control measures of water pollution. 8

(*b*) What is biotic interaction ? Explain any *two* types of biotic interaction. 7

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

(*a*) Pyramid of energy

(*b*) Concept of climax

(*c*) Effects of global warming

(*d*) Theory of tolerance.

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

NEPSST—06—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

BOTANY

(SBOTC-501)

(Plant Physiology)

(Wednesday, 16-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

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

(*iii*) Draw neat and labelled diagram wherever required.

1. Write brief notes on the following : 20

   (*a*) Process of Diffusion and its role in plant life. 5

   (*b*) Practical applications of Gibbrellic acid. 5

   (*c*) Ultrastructure of Chloroplast. 5

   (*d*) Alcoholic fermentation. 5

2. Write brief notes on the following : 20

   (*a*) What is transpiration and note on mechanism of opening and closing of stomata. 10

   (*b*) What are macro nutrients ? Write a note on role and deficiency symptoms of 'N', 'P' and 'K'. 10

P.T.O.

3. Write brief notes on the following : 20

(*a*) Breaking of Seed Dormancy. 10

(*b*) What is Tropic plant movement ? Write a note on its types. 10

4. Write brief notes on the following : 20

(*a*) Non-cyclic photophosphorylation. 10

(*b*) C4-Pathway. 10

5. Write brief notes on the following : 20

(*a*) Kerb's cycle. 10

(*b*) Pentose Phosphate Pathway. 10

6. Write brief notes on the following : 20

(*a*) Phloem Loading and Unloading 5

(*b*) Abscisic acid 5

(*c*) Quantum requirement and quantum yield 5

(*d*) Ultrastructure of Mitochondria. 5

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

NEPSST—58—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

(SBOTC-502)

(Molecular Biology and Biostatistics)

(Saturday, 19-04-2025) **Time : 2.00 p.m. to 5.00 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 diagram wherever required.

1. Write brief notes on the following : 20

(*a*) Nuclear DNA content

(*b*) DNA polymerases

(*c*) Transposons

(*d*) ANOVA.

P.T.O.

2. Write brief notes on the following :

(*a*) Basics of nucleic acids 10

(*b*) Eukaryotic transcription and regulation. 10

3. Write brief notes on the following :

(*a*) Enzymes of DNA replication and their role. 10

(*b*) Regulation of gene expression in eukaryotes. 10

4. Write brief notes on the following :

(*a*) Ribosomes composition and assembly. 10

(*b*) Lytic and lysogenic cycles of bacteriophage. 10

5. Write brief notes on the following :

(*a*) Probability distributions 10

(*b*) Multivariate statistics. 10

6. Write brief notes on the following : 20

(*a*) Unique and repetitive DNA

(*b*) DNA methylation

(*c*) Splicing

(*d*) Types of errors.

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

NEPSST—154—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

(CBCS Pattern)

BOTANY

PAPER SBOTC-503

(Pharmacognosy and Phytochemistry)

(Tuesday, 22-04-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—60

Note :— (*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 the following : 15

(*a*) Microscopic evaluation of crude drugs. 4

(*b*) Auxins and their application 4

(*c*) Properties and identification test of tannins. 4

(*d*) Properties and identification test of resins. 3

P.T.O.

2. Describe in detail the following : 15

(*a*) Organized and unorganized drugs. 8

(*b*) Direct drug adulteration. 7

3. Describe in detail the following : 15

(*a*) Polyploidy with reference to medicinal plants. 8

(*b*) Cultivation and collection of drug plants. 7

4. Describe in detail the following : 15

(*a*) Role of pharmacognosy in homeopathy. 8

(*b*) Glycosides. 7

5. Describe in detail the following : 15

(*a*) Evaluation of primary metabolites. 8

(*b*) Castor oil and Bee wax. 7

6. Write brief notes on the following : 15

(*a*) Scope of pharmacognosy 4

(*b*) Hybridization with reference to medicinal plants 4

(*c*) Classification of alkaloids 4

(*d*) Properties of volatile oil. 3

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

NEPSST—260—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

SBOTE-501

(Classical Angiosperm Systematics)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 4.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

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

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

(3) Draw neat and labelled diagrams wherever necessary.

1. Write short notes on : 15

(*a*) Principles of plant taxonomy 4

(*b*) Monophyly 4

(*c*) Systematic position of family Moringaceae 4

(*d*) Economic importance of family Liliaceae. 3

2. (*a*) Describe in brief general evolutionary trends in Angiosperms. 8

(*b*) Describe in brief Probable Ancestors of Angiosperms. 7

P.T.O.

3. Explain in brief : 15

(*a*) Explain in brief pre-Darwanian classification. 8

(*b*) Explain in brief evolution of inflorescence in Angiosperms. 7

4. Describe in brief : 15

(*a*) Describe in brief general characters of family Apocynaceae with its floral formula and floral diagram. 8

(*b*) Describe in brief general characters of family Malvaceae with its floral formula and floral diagram. 7

5. Explain in brief : 15

(*a*) Explain in brief the family Typhaceae with its economic importance. 8

(*b*) Explain in brief the family Gramineae with its economic importance. 7

6. Write brief notes on : 15

(*a*) Interrelationship of family Pandanaceae 4

(*b*) Reproductive morphology of family Papaveraceae 4

(*c*) John Rat classification 4

(*d*) Quantitative character. 3

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

NEPSST—261—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTE-501

(Fundamentals of Plant Pathology)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 4.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

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

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

(3) Draw neat and labelled diagram wherever required.

1. Write brief notes on the following : 15

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

(*b*) The rhizosphere mycoflora

(*c*) Deficiency of essential nutrients for growth of pathogen

(*d*) Avoidance of the pathogen.

2. Write brief notes on the following :

(*a*) Parasitic diseases 8

(*b*) Studying of plant diseases in field. 7

P.T.O.

3. Write brief notes on the following :

(*a*) Entry of plant pathogens through bud and root hairs. 8

(*b*) Dispersal of plant pathogens through insects and man. 7

4. Write brief notes on the following :

(*a*) Formation of abscission layers. 8

(*b*) Role of antimicrobial compounds in pre-existing biochemical defence. 7

5. Write brief notes on the following :

(*a*) Cultural practices for disease management. 8

(*b*) Organic sulphur fungicides. 7

6. Write brief notes on the following : 15

(*a*) Plant pathology as profession

(*b*) Dispersal of plant pathogens through man and phanerogramic plant parasites

(*c*) Role of cork layer and tyloses in post infectional structural defence

(*d*) Biopesticides.

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

NEPSST—262—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTE-501

(Seed Technology—I)

(Thursday, 24-4-2025) **Time : 2.00 p.m. to 4.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—60

N.B. :— (1) *All* questions carry equal marks.

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

(3) Draw neat and labelled diagram wherever necessary.

1. Write brief notes on : 15

   (*a*) Synthetic seeds 4

   (*b*) Importance of seed moisture content 4

   (*c*) K.C. Mehta 4

   (*d*) Alternaria. 3

2. (*a*) Define seed dormancy. Describe methods of breaking of seed dormancy. 8

   (*b*) Describe the process of double fertilization in crop plants. 7

P.T.O.

3. (*a*) Define seed vigour. Describe different methods of testing vigour. 8

(*b*) Explain in detail process of determination of seed moisture content. 7

4. (*a*) Describe in detail losses caused by seed brone fungi. 8

(*b*) Explain general characters of Aspergillus and Fusarium. 7

5. (*a*) Explain in detail symptoms, causal organism, disease cycle of gram smut of Jowar. 8

(*b*) Explain in detail symptoms, causal organism, disease cycle of wilt of Tur. 7

6. Write brief notes on : 15

(*a*) Recalcitrant seeds 4

(*b*) Criteria for genetic purity testing 4

(*c*) Penicillium 4

(*d*) Botrytis grey mould of Gram. 3

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

NEPSST—43—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

RESEARCH AND PUBLICATION ETHICS

NEPPE-1002

(Thursday, 17-4-2025) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. *:—* (*i*) Question Number **1** is compulsory.

(*ii*) Solve any *three* questions of the remaining.

1. Write notes on : 5×2=10

(*a*) Nature of philosophy

(*b*) Research integrity

(*c*) Importance of publication ethics

(*d*) Characteristics to call a journal open

(*e*) *h*-index.

P.T.O.

2. (*a*) Define philosophy. Explain its branches. 5×2=10

(*b*) What do you mean by fabrication, falsification and plagiarism (FFP).

3. (*a*) Define publication ethics. Write the importance of publication ethics. 5×2=10

(*b*) Describe SHERPA/ROMEO online resource and list three variant of text.

4. (*a*) What is predatory journal ? List the common characteristics of it. 5×2=10

(*b*) What is impact factor ? How does it calculate ? Explain it with a suitable example.

5. (*a*) What is plagiarism ? Give their types. 2×5=10

(*b*) Describe in detail SNIP and SJR.

6. Write short notes on : 4×2.5=10

(*a*) Moral philosophy

(*b*) Duplicate publication

(*c*) Principle of transparency

(*d*) Turnitin.

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

NEPSST—106—2025

FACULTY OF SCIENCE

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

APRIL/MAY, 2025

BOTANY

Paper SBOTC-551

(Biochemistry and Plant Metabolism)

(Monday, 21-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—80

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

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

(3) Draw neat and labelled diagram wherever required.

1. Write brief notes on the following : 20

(*a*) Ramchandran Plot

(*b*) Classification of enzymes

(*c*) Nitrification

(*d*) Monosaccharides.

2. Describe in detail : 20

(*a*) Transcription of protein

(*b*) Structure and various physico-chemical properties of Amino acids.

P.T.O.

3. Describe in detail : 20

(*a*) Michaelis-Menten equation

(*b*) Coenzymes and cofactors.

4. Write in detail : 20

(*a*) Biological Nitrogen fixation

(*b*) Role and sources of Nitrogen in plants.

5. Describe in detail : 20

(*a*) β-oxidation of fatty acids

(*b*) Chemistry and Biological role of cellulose and starch.

6. Write brief notes on the following : 20

(*a*) Transamination

(*b*) Ribozymes

(*c*) Nitrogenase enzymes

(*d*) Glycogen.

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

NEPSST—203—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

BOTANY

Paper–SBOTC-552

(Biotechnology and Genetic Engineering)

(Wednesday, 23-4-2025) **Time : 2.00 p.m. to 5.00 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 labelled diagram wherever necessary.

1. Write brief notes on the following : 20

   (*i*) Totipotency 5

   (*ii*) Applications of tissue culture for secondary metabolites production 5

   (*iii*) cDNA libraries 5

   (*iv*) Synthetic DNA vectors. 5

2. Describe the following in detail : 20

   (*a*) Culture of Callus. 10

   (*b*) Advantages and disadvantages of micropropagation. 10

P.T.O.

3. Describe the following in detail : 20

(*a*) Pollen culture and its merits and demerits. 10

(*b*) Applications of Protoplast Culture. 10

4. Describe the following in detail : 20

(*a*) Polymerase Chain Reaction (PCR). 10

(*b*) Construction of genomic libraries. 10

5. Describe the following in detail : 20

(*a*) Genome imprinting. 10

(*b*) Restriction mapping. 10

6. Write brief notes on the following : 20

(*i*) Cellular Differentiation 5

(*ii*) Storage of Germplasm 5

(*iii*) Restriction digestion 5

(*iv*) Plasmids. 5

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

NEPSST—351—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

BOTANY

Paper–SBOTE-552

(Physiological Plant Pathology and Plant Diseases)

(Friday, 25-4-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—60

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 : 15

(*a*) Effect of infection on cell wall permeability.

(*b*) Macerating enzymes.

(*c*) Rust of groundnut.

(*d*) Birds eye disease of grape.

2. Write brief notes on the following :

(*a*) Effect of infection on Photosynthesis in plants. 8

(*b*) Effect of infection on plant growth regulators. 7

P.T.O.

3. Write brief notes on the following :

(*a*) Pectolytic enzymes. 8

(*b*) General account of aflatoxin. 7

4. Write brief notes on the following :

(*a*) Late blight of potato. 8

(*b*) Grain shut fo Jowar. 7

5. Write brief notes on the following :

(*a*) Powdery mildew of Grapes. 8

(*b*) Principles of post-harvest disease management. 7

6. Write brief notes on the following : 15

(*a*) Effect of pathogen on transcription

(*b*) Proteolytic enzymes

(*c*) Die back of chilli

(*d*) Papaya leaf curl.