Seat No.	

Set **P**

M.Sc. (Botany) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Biology and diversity of Algae, Bryophytes, Pteridophytes and Fungi
(2314101)

Day & Date: Wednesday, 29-10-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) All questions carry equal marks.
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative (MCQ). 08

1) Cell wall of Algae is made up of _____.
   a) Cellulose b) Pectin
   c) Chitin d) Both a & b

2) The algae which grow on high salt concentration are known as ___.
   a) Halophytic b) Thermophytic
   c) Lithophytic d) Symbiotic

3) Plate type arrangement of stele is known as _____.
   a) Plectostele b) Holostele
   c) Actinostele d) Protostele

4) Which of the following belongs to division Cyanophyta _____.
   a) Nostoc b) Ulva
   c) Laminaria d) Sargassum

5) _____ among the following is one of the Pteridophytic member.
   a) Marchantia b) Spagnum
   c) Equisetum d) Chara

6) Mucor belongs to division _____.
   a) Zygomycotina b) Basidiomycotina
   c) Ascomycotina d) Mucoromycota

7) Vegetative reproduction in algae takes place with _____.
   a) Adventitious branches b) Fragmentation
   c) Aplynospoers d) Both a & b

8) _____ among the following is one of the marine algae.
   a) Spiropgyra b) Chara
   c) Nostoc d) Sargassum

B) Write True or False. **04**

1) Funariales belongs to pteridophytes.
2) Division cyanophyta shows presence of prokyriotic algae.
3) Classification system for fungi proposed by Smith.
4) Stellar evolution observed in pteridophytes.

Q.2 Answer the following. (Any Six) **12**

a) Give any 4 general characters of pteridophytes.
b) Give any 4 characters of fungi.
c) Draw a well labeled diagram of antheridium of sphagnum.
d) Give any 4 unusual habitats of algae.
e) What is telome concept?
f) Give flowchart of classification of bryophytes.
g) Give differentiating characters of Algae & Pteridophytes.
h) Draw a well labeled life cycle of Algae.

Q.3 Answer the following. (Any Three) **12**

a) Give the economic importance of bryophytes.
b) Write a note on stellar evolution in Pteridophytes.
c) Give general characters of fungi.
d) Write a note on morphology & reproduction in Equisetum.

Q.4 Answer the following. (Any Two) **12**

a) Write a note on reproduction in Marchantiales.
b) Give the interrelationship of division Chlorophyta & Cyanophyta.
c) Give the silent features of basidiomycotina.

Q.5 Answer the following. (Any Two) **12**

a) Write a note on anatomy of stem & reproduction in Selaginella.
b) Give the interrelationship in class Marchantiales & Jungermanniales.
c) Write a note on general trends of research in pteridophytes.

Seat No.	

Set | P

M.Sc. (Botany) (Semester - I) (New) (NEP CBCS) Examination: October/November - 2025
Taxonomy of Angiosperms (2314102)

Day & Date: Friday, 31-10-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative (MCQ). 08

1) _____ among the following is an example of family Fabaceae.
   a) Crinum b) Clitoria
   c) Citrus medica d) Clematis trilobata

2) Conservation of plants within their own habitat is included under _____.
   a) Conservation b) In-Situ conservation
   c) Ex-Situ conservation d) Tissue culture

3) The species on the verge of becoming extinct is called as _____.
   a) Endangered b) Varnuable
   c) Rare d) Endemic

4) Current activity of botanical nomenclature governed by the _____.
   a) BSI b) ICNB
   c) ICN d) ICZN

5) Cronquist's system of classification is _____ system of classification.
   a) Evolutionary b) Natural
   c) Phylogenetic d) Artificial

6) The herbarium specimen is basic tool for plant _____.
   a) Identification b) Nomenclature
   c) Phylogeny d) Classification

7) The term 'Taxonomy' was coined by _____.
   a) Sir J. D. Hooker b) C. V Linnaeus
   c) A.P. de Candolle d) C. Bessey

8) *Manilkarazapota* belongs to _____ family.
   a) Urticaceae b) Commelinaceae
   c) Sapotaceae d) Aracaceae

B) Write True or False. **04**

1) Taxonomy is solely concerned with the identification of species.
2) A species is the basic unit of classification in taxonomy.
3) Biodiversity hotspots are regions that are rich in endemic species but have lost a significant amount of habitat.
4) Azadirachta belongs to Meliaceae.

Q.2 Answer the following (Any Six). **12**

a) Define Herbarium.
b) Decline Omega taxonomy.
c) Define neotype.
d) Write any two biodiversity hotspots in India.
e) Define Ex-situ conservation.
f) Write any one rule of ICBN.
g) Write any two salient features of family Verbenaceae.
h) Write any two economic importance of family Orchidaceae.

Q.3 Answer the following. (Any Three) **12**

a) Describe the aims of the Taxonomy.
b) Explain general evolutionary trends in androecium.
c) Write the Principles of ICN.
d) Describe magnitude and distribution.

Q.4 Answer the following. (Any Two) **12**

a) Describe the significances of Herbarium.
b) Explain floristic work in Maharashtra.
c) Describe salient features of family Annonaceae.

Q.5 Attempt the following. (Any Two) **12**

a) Describe the different types of type specimens.
b) Write a note on species concept.
c) Give an economic importance of family Arecaceae.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - I) (New) (NEP CBCS) Examination: October/November - 2025
Plant Growth and Development (2314107)

Day & Date: Monday, 03-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Draw neat and labelled diagrams wherever necessary.
3) Figures to the right indicate full marks.

Q.1 A) Choose correct from the following: **08**

1) Retardation towards death is called as _____.
   a) Vernalization b) Photosynthesis
   c) Senescence d) All

2) _____ influence the process of flowering.
   a) Rate of respiration b) Phtoperoidism
   c) Vernalization d) All

3) Phytochrome is _____ pigment.
   a) Photosensitive b) Photo in active
   c) Degenerative d) All

4) Which of the following hormone can replace vernalization?
   a) Auxin b) Cytokinine
   c) Ethylene d) GA

5) Which of the following pigment involved in red-far red light inter conversion?
   a) Cytochrome b) Lucopene
   c) Phytochrome d) Both a & c

6) Which statement is true about cell signaling _____.
   a) In plants signalling occurs through phytochromes
   b) Cell signalling is used to study signalling between cells of organism
   c) Both a & b
   d) Cell signalling causes defects in plants

7) SH2 domains usually binds to _____.
   a) Phosphorelated serine transpharase
   b) Phosphorelated tyrosine reductase
   c) GDP
   d) CA++

8) _____ is full form of CCC.
   a) Chloroflorocarbon
   b) 2 Chloroform ethyl carbon compound
   c) 2 chloroethyl trimethylammonium chloride
   d) None

B) Fill in the blanks **04**

1) Gibberellins acids are isolated from _____.
2) Dwarf plants can be made taller with the help of _____.
3) _____ hormone is useful to make RNA & proteins.
4) Pfr absorbs the light in the range of _____.

Q.2 Answer the following (Any Six) **12**

a) Define Photoperiodism.
b) Define growth.
c) Define plant growth regulators.
d) What is post harvest technology?
e) What is programmed cell death?
f) Define Phytochrome.
g) Give any 4 physiological roles of Cytokinine.
h) Give any 4 physiological roles of ABA.

Q.3 Answer the following (Any Three). **12**

a) Define plant growth & describe role of cytochrome.
b) Describe post harvest technology for leafy vegetables.
c) Describe mechanism of action of polyamines.
d) Write a note on physiology of seed germination.

Q.4 Answer the following (Any Two). **12**

a) Write a note on signalling mechanism of Gibbrellins.
b) Write a note on biochemical changes during fruit ripening.
c) Describe role of malic hydrazide.

Q.5 Attempt the following (Any Two). **12**

a) Describe Mutants in Arabidopsis for flowering.
b) Write a note on petal senescence.
c) Give discovery & mechanism of action of triacontanol.

Seat No.		Set	P

M.Sc. (Botany) (Semester - I) (New) (NEP CBCS) Examination: October/November - 2025
Herbal and Drug Technology (2314108)

Day & Date: Monday, 03-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) Undesired plants in the field are known as _____.
   a) Pests b) Weeds
   c) Cover crops d) Buffers

2) The term Nutraceuticals was coined by ____.
   a) William Gerwick b) Met Chinol F
   c) Stephen De Felice d) Samuel Thompson

3) Asavas & Aristas are fermented for _____.
   a) Removal of alcohol b) Liberation of alcohol
   c) Removal of water d) Liberation of water

4) Part II of GMP includes _____.
   a) SOP''S b) Distribution
   c) Medical service d) Advertisement

5) Herbal medicine is also known as _____.
   a) herbalism b) phytomedicine
   c) a) and b) d) none of these

6) Unani system of herbal medicine originates from _____ culture.
   a) Greece b) Iran
   c) India d) China

7) Homeopathy system of medicine first appeared in _____.
   a) 1907 b) 1807
   c) 1870 d) 1780

8) Tridosha exist in _____.
   a) Chinese system of medicine
   b) Ayurveda
   c) Unani system of medicine
   d) Siddha system of medicine

B) Fill in the blanks **04**

1) GMP stands for _____.
2) DTAB Stands for _____.
3) The finished goods storage area should be marked as _____.
4) Common name of *Allium sativum* is _____.

Q.2 Answer the following (Any Six) **12**

a) Write the Advantage of biopesticides.
b) Enlist the examples of anti-aging herbs.
c) Write the basic principle of Siddha system.
d) What is the Ayurveda system of medicine?
e) Write the advantages of excipient.
f) Give the application of Spirulina.
g) Write down the sources of homeopathy medicine.
h) Write down the four different classes of herbal medicine.

Q.3 Answer the following (Any Three). **12**

a) What is the churna? And explain the method of preparation of churna.
b) Write down the sources and uses of Indian gooseberry.
c) What is Tridosha theory.
d) Write down the principles of homeopathy.

Q.4 Answer the following (Any Two). **12**

a) Write down in detailed about sources of herbs.
b) Write down the preparation methods and standardization parameters of aristas and asavas.
c) Write down the general requirements of Good manufacturing practices.

Q.5 Attempt the following (Any Two). **12**

a) Describe in detail sources and description of diluents and viscosity builders.
b) Write down in detailed about Unani system.
c) What is Nutraceuticals? Write down the Health benefits and sources of ashwagandha and spirulina.

SLR-HD-6

Seat No.		Set	P

M.Sc. (Botany) (Semester - I) (New) (NEP CBCS) Examination: October/November - 2025
Research Methodology (2314103)

Day & Date: Thursday, 06-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) ANOVA means _____.
   a) A government body which collects social statistics
   b) The name of statistical package
   c) Analysis of variance
   d) None of above

2) The first page of research report is _____.
   a) appendix b) bibliography
   c) index d) title page

3) Random sampling is also called _____ sampling.
   a) Availability b) Probation
   c) Probability d) Prospectus

4) Research is _____.
   a) Working in scientific way to search truth of any problem
   b) Finding solution to any problem
   c) Searching again and again
   d) None of above

5) The first step of research process is _____.
   a) problem identification b) literature review
   c) hypothesis testing d) data collection

6) Final stage of research is _____.
   a) Problem formulation b) Data analysis
   c) Data collection d) Report writing

7) A patent is typically granted for _____.
   a) Literary work b) Artistic creation
   c) New invention d) Brand logos

8) A patent protects an invention _____ years.
   a) 10 b) 20
   c) 30 d) 50

B) Fill in the blanks **04**

1) Collection of data from book is _____ data.
2) The term for unauthorized use of patented invention is _____.
3) The recommended font size in poster presentation is _____ points.
4) The impact of productivity of research publication measured by _____ index.

Q.2 Answer the following (Any Six) **12**

a) What is mean by intellectual property right.
b) Write the methods of primary data collection.
c) State the methodology of research.
d) What is hypothesis?
e) Enlist the computer application in research.
f) Enlist the types of patents in India.
g) What is mean by citation index?
h) Calculate the mean of given data: 4,8,12,16,20.

Q.3 Answer the following (Any Three). **12**

a) Write a note on concept of plagiarism.
b) Give an account of patent procedure in India.
c) How to do oral presentation?
d) What is mean by sampling? Give steps involved in sampling.

Q.4 Answer the following (Any Two). **12**

a) Explain the process of data collection in research.
b) What is chi square test? Explain with suitable example.
c) Explain in brief process of identification in research problem.

Q.5 Attempt the following (Any Two). **12**

a) What is manuscript? Describe the steps of its preparation.
b) What is mean by research? Explain its significance.
c) Explain in brief patenting of biological material with example.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - II) (New) (NEP CBCS) Examination: October/November - 2025
Biology and Diversity of Gymnosperm and Paleobotany (2314201)

Day & Date: Tuesday, 28-10-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) _____ is the extinct genus of vascular plant having star shaped xylem.
   a) Asteroxylon b) Lepidodendron
   c) Rhynia d) Psilophyton

2) Coralloid root in _____ shows symbiotic association with blue green algae.
   a) Pinus b) Cycas
   c) Zamia d) Ginkgo

3) _____ is a lycopsid carboniferous fossil known for its strobili.
   a) Stigmaria b) Annularia
   c) Lepidocarpon d) Lepidodendron

4) The valuable source of ephedrine drug is _____.
   a) Taxus b) Araucaria
   c) Ephedra d) Juniperus

5) _____ is the process in which bacteria turn the plant life into carbon.
   a) Mineralization b) Encrustation
   c) Distillation d) Carbonization

6) The plant body of _____ resembles that of living cycads.
   a) Bennettitales b) Pentoxylales
   c) Conferiales d) Cordaitales

7) _____ is the fossil genus of petrified flowering plant.
   a) Stigmaria b) Sahnianthus
   c) Enigmocarpon d) Medullosa

8) Canada balasm is obtained from _____.
   a) Abies balsamea b) Cedrus deodara
   c) Pinus d) Cycas

B) Write True /False. **04**

1) Circinate venation is found in Taxus.
2) Gymnosperms lack vessels.
3) Gingko bioloba is also known as maindenhair tree.
4) Carbon film which gives fine image of soft tissues is formed by encrustation process of fossilization.

Q.2 Answer the following. (Any Six) **12**

a) Define Fossil.
b) Explain lepidodendron.
c) Explain any two process of fossil formation.
d) Give any four morphological characters of Cycadales.
e) Describe leaf of *Ginkgo biloba*.
f) Explain Lyginopteris.
g) Explain Calamostachys.
h) Explain Corolloid root.

Q.3 Answer the following. (Any Three) **12**

a) Explain different types of fossils.
b) Write a note on Indian fossil flora.
c) Explain Annularia with a diagram.
d) Give salient features Coniferales.

Q.4 Answer the following. (Any Two) **12**

a) Describe Rhynia and Astroxylon with diagram.
b) Give economic importance of Gymnosperms.
c) Give the salient features of Welwitschiales.

Q.5 Answer the following. (Any Two) **12**

a) Describe morphology of Ephradales.
b) Give the classification of Gymnosperms according to K.R Sporne.
c) Explain Stigmaria and Lepidocarpon.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - II) (New) (NEP CBCS) Examination: October/November - 2025
Advances in Pathology (2314202)

Day & Date: Thursday, 30-10-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 AM

Instructions: 1) All questions are compulsory.
2) Draw neat and labelled sketches wherever necessary.
3) Figures to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ). 08

1) Grassy shoot of sugarcane is incited by _____.
   a) MLO b) Bacteria
   c) Fungi d) Virus

2) Tikka disease of groundnut is caused by _____.
   a) *Aspergillus* b) *Puccinia*
   c) *Cercospora* d) *Fusarium*

3) Disease triangle is formed by _____ factors.
   a) host b) pathogen
   c) environment d) All the above

4) Which of the following pathogen is seed borne?
   a) *Cercospora arachidicola* b) *Cercospora personata*
   c) *Phytophthora infestans* d) *Sphacelotheca sorghi*

5) Leaf blight is _____ symptom.
   a) hypertrophy b) necrosis
   c) hypoplasia d) All the above

6) Club root of crucifer is caused by _____ sp. of a fungus.
   a) *Fusarium* b) *Aspergillus*
   c) *Plasmodiophora* d) *Verticillium*

7) The name ‘smut diseases’ is given to those produced by Ustilago because _____.
   a) its mycelium is black in colour
   b) it parasitizes cereals
   c) the host becomes completely black masses
   d) the fungus produces black sooty spore

8) Root knot disease is caused by _____.
   a) *Fusarium* sp. b) *Aspergillus* sp.
   c) *Meloidogyne* sp. d) *Pseudomonas* sp.

B) Write True/False. **04**

1) Facultative saprophytes reproduce on dead organic matter.
2) Littel leaf of Brinjal caused by MLO.
3) Wax, thick cuticle are preexisting structural defence.
4) Exclusion consists of Quarantine, inspection, certification.

Q.2 Answer the following. (Any Six) **12**

a) What is epidemic disease?
b) Importances of plant disease.
c) Define characteristics of MLO.
d) What is epidemology?
e) Enlist control measure of plant disease.
f) Define prepanetration.
g) What is penetration?
h) What is avoidance?

Q.3 Answer the following. (Any Three) **12**

a) Describe climate change and its impact on plant diseases.
b) Write note on little leaf of brinjal.
c) Write essay on any two phanerogamic diseases.
d) Write note on any two fungal diseases.

Q.4 Answer the following. (Any Two) **12**

a) Explain in detail the rust of wheat.
b) Write note on grassy shoot diseases of sugarcane.
c) Explain in detail biochemical defense mechanism.

Q.5 Attempt the following. (Any Two) **12**

a) Describe disease forecasting.
b) Write note on any two principles of plant disease control.
c) Write note on structural defence mechanism of infection.

SLR-HD-9

Seat No.	

Set P

M.Sc. (Botany) (Semester - II) (New) (NEP CBCS) Examination: October/November - 2025
Crop Physiology (2314207)

Day & Date: Saturday, 01-11-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ). 08

1) _____ among the following hormone used to promote the growth.
   a) Auxin b) Cytokinine
   c) GA d) ABA

2) Vernalization is the _____.
   a) Chilling treatment b) Hot treatment
   c) Fermentation treatment d) All of these

3) Growth curve is always _____ shape.
   a) S b) M
   c) G d) B

4) The plants which need maximum light period & optimum dark period are called as _____.
   a) Short Day Plants b) Long Day Plant
   c) Day Neutral Plants d) Night plants

5) _____ light is best for growth of plants.
   a) UV b) Red
   c) Far red d) Both b & c

6) Jowar plant mainly grows in region having _____.
   a) High rainfall b) High humidity
   c) Drought conditions d) Highest temperature

7) _____ among following plant has nitrogen fixation capacity.
   a) Mango b) Ber
   c) Capsicum d) Chick pea

8) Central soil salinity research lab situated in _____.
   a) Mumbai b) Goa
   c) Karnal d) Jodhpur

B) Write true/false. **04**

1) CAZRI situated in Jodhpur.
2) During ripening fruits becomes hard.
3) Vernaline harmone promotes flowering in plants.
4) Alternate exposure of red & far red light enhances plant growth.

Q.2 Answer the following (Any Six) **12**

a) Define crop physiology.
b) Full form of IARIT.
c) Enlist nutrients in ground nut.
d) Define source & sink.
e) Define weedisides.
f) Enlist types of fertileizers.
g) Define photoperiodism.
h) Enlist physiological conditions required for growth of sugarcane.

Q.3 Answer the following (Any Three). **12**

a) Fruit physiology of mango.
b) Mineral nutrition of ground nut.
c) Write note on photoperiodism.
d) Write a note on organic farming.

Q.4 Answer the following (Any Two). **12**

a) Describe mandates &objectives of ICRISAT.
b) Describe nitrogen fixation in chickpea.
c) Describe CIMAP Lucknow.

Q.5 Attempt the following (Any Two). **12**

a) Describe in detail process of vernalization.
b) Describe post-harvest technology for grapes.
c) Describe common weedicides & their role.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - II) (New) (NEP CBCS) Examination: October/November - 2025
Angiosperm Systematics (2314208)

Day & Date: Saturday, 01-11-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ). 08

1) In three kingdom system classification, the kingdoms are _____.
   a) Fungi, algae & Protista
   b) Animalia, plantae & Protista
   c) Protista, plantae & Animalia
   d) None of these

2) A group of specific species is called _____.
   a) Clade b) Kingdom
   c) Genus d) Family

3) The first botanical garden was established by Theophrastus at _____.
   a) London b) Athens
   c) Sydney d) Singapore

4) The four pollen grains arranged in a straight line is known as _____.
   a) Tetrahedrad tetrad b) Linear tetrad
   c) Rhomboidal tetrad d) Tetragonal tetrad

5) *Tabacco* alkaloid nicotine is synthesized from _____.
   a) Morphine & nicotinic acid b) Morphine & caffeine
   c) Nicotinic acid & caffeine d) All of these

6) Who invented herbaria?
   a) Bauhin b) Luca Ghini
   c) Theophrastus d) Linnaeus

7) What is basic output of GIS or spatial data analysis?
   a) Software b) Numbers
   c) Locations d) Map

8) Family Amranthaceae is classified under in which series of dicot by Bentham and Hooker system of classification?
   a) Curvembrae b) Microspermae
   c) Glumaceae d) Achlymydosporeae

B) Fill in the blanks. **04**

1) Carolous Linnaeus proposed the two-kingdom system classification in _____.
2) The genus trapha earlier included under the family _____.
3) Which type of the paper is used for drying plant specimens?
4) GIS strand for _____.

Q.2 Answer the following (Any Six) **12**

a) What is Biosystematics?
b) Define chemotaxonomy.
c) Name any two important botanical gardens in India.
d) States the merits and demerits of Bentham and Hooker system of classification.
e) Write down the applications of GIS.
f) What is monograph?
g) What is plant anatomy?

Q.3 Answer the following (Any Three). **12**

a) Add a short note on order Microspermae.
b) Give the brief account on herbarium fumigation.
c) Add a short note on Tropicos.
d) Give the characteristic feature of order Glumaceae.

Q.4 Answer the following (Any Two). **12**

a) Add a short note on functions of botanical gardens in India.
b) Describe in brief the order malvales with respect to Bentham and Hooker system.
c) Explain in detail taxonomic evidences with respect to plant anatomy.

Q.5 Attempt the following (Any Two). **12**

a) Give a brief account on Taxonomic evidences based on morphology.
b) Define herbarium. Explain in details steps involved in herbarium.
c) Give the vegetative and floral characters of family Lamiaceae with floral formula and floral diagram.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Plant Embryology and Palynology (2314301)

Day & Date: Wednesday, 29-10-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw a neat, well labeled, complete diagram wherever necessary.

Q.1 A) Choose correct answer from given alternative: 08

1) Male gametophyte in angiosperms is shed as _____.
   a) Four celled pollen grain b) Anther
   c) Microspore mother cell d) three celled pollen grain

2) The first polyembryony was reported by _____.
   a) Maheshwari b) Antoni van Leeuwenhoek
   c) Johari d) Swamy

3) _____ is a type of allergy triggered by pollen from different plants.
   a) Malaria b) Yellow fever
   c) Hay fever d) Dengue

4) The study related to the various aspects of the palynology of honeys and related substances is _____.
   a) Aeropalynology b) Stenopalynology
   c) Melittopalynology d) None of them

5) The branch which deals with study of pollen grain is _____.
   a) Cytology b) Palynology
   c) Genetics d) Paleobotany

6) In angiosperms development of male gametophyte from microspore is known as _____.
   a) Microsporogenesis b) Megasporogenesis
   c) Microgametogenesis d) Megagametogenesis

7) The term Palynology has been coined for the first time by _____.
   a) Hyde and Williams b) P.K.K. Nair
   c) G. Eradtman d) None of the above

8) The outer wall of the pollen is composed of ____.
   a) Lignin b) Cutin
   c) Sporopollenin d) Resin

B) Write True or False. **04**

1) The first polyembryony was reported in orange seeds by Antoni van Leeuwenhoek in.
2) Honey is truly an insect product.
3) Compound pollen grains are found in Drosera.
4) The outer wall of pollen grain is composed of pectinous substance called pollenin.

Q.2 Answer the following. (Any Six) **12**

a) Define polyembryony with causes.
b) What is tapetum?
c) Significance of pollen pistil interaction.
d) Define Apospory with suitable example.
e) What is Aeropalynology?
f) What is pollen calendar?
g) Write significance of Pollen germination.
h) What is Melittopalynology?

Q.3 Answer the following. (Any Three) **12**

a) Abnormal male gametophyte and their feature.
b) Agropalynology.
c) Describe the methods to overcome sexual incompatibility.
d) What are the causes of apomixes?

Q.4 Answer the following. (Any Two) **12**

a) Describe in brief embryo culture.
b) Palyno-taxonomy.
c) Describe ultra structure of female gametophyte.

Q.5 Answer the following. (Any Two) **12**

a) What is polyembryony? Write detail classification of polyembryony.
b) Describe brief outline of ultra structure of male gametophyte.
c) Describe structure of style and stigma.

Seat No.	

Set | P

M.Sc. (Botany) (Semester - III) (New) (NEP CBCS) Examination: October/November - 2025
Cytogenetics and Crop Improvement (2314302)

Day & Date: Friday, 31-10-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) The group of genes within an organism that shares a common evolutionary origin and have similar functions is called _____.
   a) Gene amplification b) Gene conversion
   c) Gene family d) Gene modification

2) The development of hybrid plants through fusion of somatic protoplast of two different species is called _____.
   a) Hybridoma technology b) PCR
   c) Somatic hybridization d) Gene amplification

3) BLAST stands for _____.
   a) Basic Local Alignment Tool
   b) Base Local Alignment Technique
   c) Basic Logic Alignment Tool
   d) Base Logic Alignment Tool

4) Trademarks are registered under _____.
   a) Trade mark Act 1980 b) Trade mark Act 1999
   c) Trade mark Act 1990 d) Trade mark Act 1920

5) In hybridoma technology monoclonal antibodies are produced by fusing B-cells with _____.
   a) Myeloma cells b) WBC
   c) RBC d) T-cells

6) _____ sites are the DNA sequences that act as a recombination hotspot.
   a) Chi b) Telomere
   c) Centriole d) Spindle fibres

7) _____ is the database that stores three-dimensional structure of proteins.
   a) Protein Data Bank
   b) BLAST
   c) Nucleic acid sequence database
   d) GenBank

8) _____ is the process of determining the location of genes and DNA sequences on chromosomes.
   a) Chromosome mapping b) Recomination
   c) Crossing over d) Gene conversion

B) Write True/False. **04**

1) The duration of the Patent is 20 years.
2) Genomics deals with structure, functions, expressions and interactions of genes.
3) Trade secret is the sign that signifies the goods by different name, design, logo and symbol.
4) IPR stands for Intellectual Property Rights.

Q.2 Answer the following (Any Six) **12**

a) Define Recombination.
b) Explain Trade secret.
c) What is GenBank?
d) What is Copyright?
e) Define somatic cell.
f) Define Proteonomics.
g) Define transgenic plants.
h) Enlist the proteins involved in eukaryotic recombination.

Q.3 Answer the following (Any Three) **12**

a) Explain the process of Somatic hybridization.
b) Explain the role of Genetic markers.
c) Describe BLAST and give its type.
d) Explain the procedure of application form of patent.

Q.4 Answer the following (Any Two). **12**

a) Explain the Hybridoma technology.
b) Give the uses of bioinformatics in biological research.
c) Explain Protein Data Bank (PDB).

Q.5 Answer the following (Any Two). **12**

a) Write a note on molecular mechanism of Recombination.
b) Describe the domains of IPR.
c) Explain the organization of genome in Eukaryotes.

Seat No.		Set	P

M.Sc. (Botany) (Semester - III) (New) (NEP CBCS) Examination: October/November - 2025
Advances in Plant metabolism and Biochemistry (2314306)

Day & Date: Monday, 03-11-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 AM

Instructions: 1) All questions are compulsory.
2) All questions carry equal marks.
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) _____ is the key enzyme in photorespiration.
   a) Glycolate oxidase b) RUBP oxygenase
   c) RUBP carboxylase d) Catalase

2) The example of C_4 Plants _____.
   a) Maize b) Sugaecane
   c) Sorghum d) All of these

3) Glycolysis takes place in _____.
   a) Mitochondria b) Ribosome
   c) Chloroplast d) Glyoxysomes

4) The only 5C compound produced during Krebs cycle is _____.
   a) Citrate b) α – Ketoglutarate
   c) Succinate d) Oxalosuccinic acid

5) Which of the following enzymes acts in the pentose phosphate pathway?
   a) 6-phosphogluconatedehydrogenase
   b) Aldolase
   c) Phosphorylase
   d) Pyruvate kinase

6) _____ is first co2 acceptor in c4 cycle.
   a) OAA b) Glycolate
   c) PEP d) PGA

7) Photolysis occurs in _____.
   a) Photosystem I b) Photosystem II
   c) Photolysis III d) Photosystem IV

8) Alkaloids shows presence of _____.
   a) Phenol ring b) Benzene ring
   c) Both a & b d) Alcohol

B) Write True or False. **04**

1) Photosynthesis converts light energy into chemical energy.
2) Rubisco is one of the product of respiration.
3) Shikimic acid pathway used to regulate photosynthesis in plants.
4) Citrate is the first product formed in the TCA cycle.

Q.2 Answer the following. (Any Six) **12**

a) Define secondary metabolites.
b) Define Photorespiration.
c) Define aromatic amino acids.
d) Define sulphur metabolism.
e) Draw a well labeled ultra structure of chloroplast.
f) What is photosystem I?
g) Define Glycolysis.
h) Give the names of different metabolic pathways in plants.

Q.3 Answer the following. (Any Three) **12**

a) Describe in detail C4 pathway.
b) Write a note on photorespiration in plants.
c) Describe gluconeogenesis.
d) Describe electron transport chain in mitochondria.

Q.4 Answer the following. (Any Two). **12**

a) Describe in detail CAM pathway.
b) Describe shikimic acid pathway.
c) Write a note on ultra structure of chloroplast.

Q.5 Answer the following. (Any Two). **12**

a) Give the difference between c3 & c4 cycle.
b) Describe in detail TCA cycle.
c) Describe phosphorous metabolism in plants.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - III) (New) (NEP CBCS) Examination: October/November - 2025
Recent Trends in Angiosperm Taxonomy (2314307)

Day & Date: Monday, 03-11-2025 Max. Marks: 60
Time: 11:00 AM To 01:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Select the correct alternative and rewrite the sentence. 08

1) Cladogram shows _____.
   a) Feeding habits of species
   b) Evolutionary relationship between organism
   c) Geographical distribution between organism
   d) Phenotype of organism

2) Most important chromosomal feature for cytotaxonomy is _____.
   a) Color of chromosome
   b) Centromeric position and banding pattern
   c) RNA Content
   d) Protein Synthesis

3) We can understand general relationships of plants is by _____.
   a) Cytotaxonomy b) Experimental taxonomy
   c) Numerical taxonomy d) Chemotaxonomy

4) Phenetic classification is based on _____.
   a) Observable characteristics of existing entities
   b) The ancestral lineage of existing organisms
   c) Dendrograms based on DNA characteristics
   d) Sexual characteristics

5) The primary purpose of e-herbarium is to _____.
   a) Grow rare plants
   b) Store seeds
   c) Digitize and share plant specimen data
   d) Only documentation

6) APG strand for _____.
   a) Angiosperm Phylogeny Group
   b) Angiosperm Phenetic Group
   c) Angiosperm Pioneer Group
   d) Angiosperm Phanerogamic Group

7) Seed protein analysis is useful in taxonomy because _____.
   a) All plants have identical proteins
   b) It shows rate of photosynthesis
   c) It reveals fruit color
   d) Protein profile vary between species

8) Cytotaxonomy is connected with _____.
   a) Chemical composition of cytoplasm
   b) Cell organelles
   c) Cytochromes
   d) Shapes and size of cells

B) Fill in the blanks. **04**

1) _____ technique is commonly used in cytotaxonomy for analyzing chromosomes.
2) In _____ taxonomy every character should be given equal weightage in creating new taxa.
3) Ploidy refers to _____ of chromosome.
4) SEM uses _____ to form an image.

Q.2 Answer the following (Any Six) **12**

a) Define E- Herbarium.
b) Define numerical taxonomy.
c) Define nomenclature in plant taxonomy.
d) Write any two-biological significance of chemotaxonomy.
e) What type of microscopy essential in ultra structural analysis?
f) What is APG III?
g) Write any two limitations of cytotaxonomy.
h) What is Chemotaxonomy?

Q.3 Answer the following (Any Three) **12**

a) Give the phenetic method in taxonomy.
b) Give the principles of numerical taxonomy.
c) What is chemotaxonomy and give its biological significance?
d) What is E-herbaria? Write down the its application.

Q.4 Answer the following (Any Two). **12**

a) Discuss the method and step involved in numerical taxonomy.
b) Give the brief account on preparation of E-Herbarium.
c) Explain the significance of ploidy in relation to taxonomy.

Q.5 Answer the following (Any Two). **12**

a) What is Karyotype? Explain its role in angiosperm systematics.
b) Write the advantages and limitations of numerical taxonomy.
c) Describe in detail the SEM and plant surface structure.

Seat No.		Set	P

M.Sc. (Botany) (Semester - IV) (New) (NEP CBCS) Examination: October/November - 2025
Phytogeography & Plant Ecology (2314401)

Day & Date: Tuesday, 28-10-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. **08**

1) The term _____means 'a particular taxon has very restricted distribution'.
   a) Endemic b) Low risk
   c) Threatened d) Critically Endangered

2) In _____ technique the plant material preserved in liquid nitrogen.
   a) Ediacaran b) Skeletonizing
   c) Cryopreservation d) Biotechnology

3) The term 'Age and Area' hypothesis was coined by _____.
   a) Alfred Wagner b) John Willis
   c) Charles Smith d) William Roxburgh

4) Biodiversity is conserves outside the natural habitat means _____ conservation.
   a) In-situ b) In-vivo
   c) Ex-vivo d) Ex-situ

5) Wildlife Protection Act was established on _____.
   a) 1972 b) 2010
   c) 1980 d) 2002

6) National Forest Policy aims at bringing _____ of geographical area under forest cover.
   a) 15% b) 33%
   c) 75% d) 90%

7) Padua Botanical Garden is located at _____.
   a) Washington b) Netherlands
   c) England d) Italy

8) The concept _____ is being evolved for sustainable agriculture.
   a) Agro-forestry b) Polyhouse
   c) Community seed bank d) Afforestation

B) Write True or False. **04**

1) Western Ghats is one of the most prevalent hotspots of biodiversity in India.
2) Seed bank is an example of an ex-situ conservation.
3) 2010 is declared as the international year of biodiversity.
4) Global warming can significantly be controlled by: Increasing solid waste.

Q.2 Answer the following. (Any Six) **12**

a) What are hotspots?
b) Define Biodiversity.
c) Define Ecology.
d) Define endemism.
e) Define greenbelt.
f) What is Phytogeography?
g) What is green credit programme?
h) Enlist any two endemic plant species.

Q.3 Answer the following. (Any Three) **12**

a) Explain in brief endemism.
b) Comment upon Endemism.
c) Comment upon local vegetation of Solapur district.
d) Comment upon green credit.

Q.4 Answer the following. (Any Two) **12**

a) Explain in brief Age and area hypothesis.
b) Explain in brief water and sustainable agriculture based green credit.
c) Explain in brief modelling of greenbelt and its plantation design.

Q.5 Answer the following. (Any Two) **12**

a) Explain in brief mangrove vegetation of India.
b) Comment upon Waste Management and Air Pollution Reduction based Green Credit.
c) Explain in brief Theory of tolerance.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - IV) (New) (NEP CBCS) Examination: October/November - 2025
Plant Tissue Culture, Greenhouse Technology & Hydroponics (2314402)

Day & Date: Thursday, 30-10-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicate full marks.

Q.1 A) Choose correct alternative. **08**

1) _____ media is generally preferred for embryo culture.
   a) B5 media b) N6 media
   c) Black media d) B10 media

2) _____ among the following is used as antifungal agent.
   a) Ethanol b) Methanol
   c) Tween 20 d) $HgCl_2$

3) _____ culture is used as haploid culture.
   a) Embryo b) Anther
   c) Protoplast d) Leaf

4) _____ method is used for embryo development through Plant tissue culture.
   a) In vitro fertilization b) In situ method
   c) Somatic embryogenesis d) All of these

5) _____ among following factor affects anther culture.
   a) Composition of media b) Aseptic conditions
   c) Both a & b d) Chemicals

6) _____ used as enzyme source in protoplast isolation.
   a) Cellulase b) Pepsine
   c) Lypase d) Glutan

7) _____ among following media used for hydroponics.
   a) Brick pieces b) Rock wool
   c) Peat d) Black soil

8) _____ among the following is major greenhouse gas.
   a) O_2 b) CO_2
   c) H_2 d) CFC

B) Write True or False. **04**

1) Sucrose acts as a carbon source in MS media.
2) Cocopeat is one of the best medium in hydroponics.
3) Filter paper method is used for single cell culture.
4) Agno3 is used as sterilizing agent in tissue culture.

Q.2 Answer the following. (Any Six) **12**

a) Sterilization conditions in Plant tissue culture.
b) Enlist media used in hydroponics.
c) Define callus.
d) Draw a well labelled diagram of green house.
e) Define hydroponics.
f) Define plant tissue culture.
g) Enlist factors affecting embryo culture.
h) Define hardening.

Q.3 Answer the following. (Any Three) **12**

a) Somatic embryogenesis.
b) Advantages of anther culture.
c) Types of media used in tissue culture.
d) Objectives of tissue culture.

Q.4 Answer the following. (Any Two). **12**

a) Describe the process of protoplast culture.
b) Write a note on single cell culture.
c) Describe process of micropropagation.

Q.5 Answer the following (Any Two). **12**

a) Describe in detail process of embryo culture & add a note on its advantages.
b) Describe any 4 types of green houses.
c) Describe in detail infrastructure of plant tissue culture laboratory.

SLR-HD-19

Seat No.	

Set P

M.Sc. (Botany) (Semester - IV) (New) (NEP CBCS) Examination: October/November - 2025
Environmental Plant Physiology (2314405)

Day & Date: Saturday, 01-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) Following is the main target of chilling stress _____.
   a) Starch b) Phospholipids
   c) Proteins d) Chlorophylls

2) Elevated CO_2, concentration causes _____.
   a) Increase in photosynthesis
   b) Decrease in photorespiration
   c) Increase in WUE
   d) All of these

3) Hydroxyl (OH*) ions are harmful because they cause _____.
   a) Decrease in chlorophyll content
   b) Increase in RNAase
   c) Increase in DNAase
   d) Increase in cholerestol

4) Slat glands are present in halophytes showing _____ Phenomenon.
   a) Salt evasion b) Salt tolerant
   c) Salt insensitive d) All of these

5) Depletion of ozone increases the amount of _____ radiations reaching the globe.
   a) Visible b) UV
   c) IR d) Gamma

6) Chilling injury occurs when warm region plants are exposed to a temperature of _____.
   a) 0-10^{0}C b) 10-15^{0}C
   c) 25-35^{0}C d) less than 0^{0}C

7) Accumulation of glycine betaine is observed in some crops in response to _____.
   a) Water stress b) Flooding
   c) Pollution stress d) All of these

8) An exposure to UV radiations stimulates synthesis of _____ in plants.
   a) Phenols b) Proline
   c) Anthocyanins d) Chlorophylls

B) Write true/false. **04**

1) Jasmonic acid biosynthesis takes place in cytoplasm.
2) Antifreeze proteins do not have ability to inhibit the ice crystal growth during chilling stress.
3) Peroxidase enzyme plays an important role in the development ofarenchyma in wetland species.
4) Proline is a compatible solute.

Q.2 Answer the following (Any Six) **12**

a) Define free radicals.
b) Which gas in the atmosphere hold up the UV rays.
c) Define stress.
d) What are the causes soil salinization?
e) Define Acclimation.
f) Morphological changes in drought tolerant plants.
g) Anatomical changes in plants during chilling injury.
h) Causes of pollution stress.

Q.3 Answer the following (Any Three) **12**

a) Causes of water logging.
b) Reclamation of saline soils.
c) Types of stress.
d) Allelopathy.

Q.4 Answer the following (Any Two). **12**

a) Effect of abiotic stress on plant morphology.
b) Effect of Water stress on plant metabolism.
c) Explain the effects of UV rays on plants.

Q.5 Answer the following (Any Two). **12**

a) Explain in brief heavy metal stress tolerance in plants.
b) Describe frost injury and frost resistance in plants.
c) Describe salt stress in plants.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - IV) (New) (NEP CBCS) Examination: October/November - 2025
Industrial Botany (23144046)

Day & Date: Saturday, 01-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **08**

1) For agar production _____ Algae used.
   a) *Chlorella* b) *Porphyra*
   c) *Gelidium* d) *Spirulina*

2) Microalgae used for biofuel production due to _____.
   a) Low lipid content
   b) Requires arable land
   c) High photosynthetic efficiency
   d) Low CO_2 uptake

3) Ferric chloride test is commonly used to detect _____.
   a) Alkaloids b) Phenolic compounds
   c) Saponins d) Flavonoids

4) Nutritionally valuable protein _____ found in grain amaranthus.
   a) AMA b) AMA-I
   c) AMA-II d) AMD

5) Botanical name of amla is _____.
   a) *Phyllanthus imblica* b) *Zingiber officinale*
   c) *Allium cepa* d) *Azadirachta indica*

6) Which of the following is not a commonly used method for harvesting microalgae _____.
   a) Centrifugation b) Flocculation
   c) Sonication d) Filtration

7) Spirulina is a biomass of _____.
   a) Cynobacteria b) Blue green algae
   c) a) and b) d) None of these

8) Which of the following is Not a method of drug evaluation?
   a) Analytical evaluation b) Biological evaluation
   c) Geographical evaluation d) Physical evaluation

B) Fill in blanks. **04**

1) Morphine isolated from the plant _____.
2) LSD stands for _____.
3) Garlic belongs to the family _____.
4) SFE stands for _____.

Q.2 Answer the following (Any Six) **12**

a) Give the applications of single cell protein.
b) Enlist the sources of crude drugs.
c) Write the taxonomical classification of crude drugs.
d) How basil is identified.
e) Define maceration.
f) Give the medicinal properties of terpenoids.
g) What is aspirin?
h) Define decoction?

Q.3 Answer the following (Any Three) **12**

a) Write a note on algal culture system.
b) Describe in brief Pharmacognosy and modern medicine.
c) Explain in brief about the method of percolation.
d) Write the source and medicinal properties of morphine.

Q.4 Answer the following (Any Two). **12**

a) Write a note on fungal technology.
b) Classify drugs.
c) What is natural product? Give the source, chemical and medicinal properties of caffeine.

Q.5 Answer the following (Any Two). **12**

a) Describe in detail about microwave assisted extraction.
b) Give the identification and utilization of turmeric powder.
c) Write down in detail about terpenoids and flavonoids.

Seat No.	

Set P

M.Sc. (Botany) (Semester - IV) (New/Old) (CBCS) Examination: October/November - 2025
Phytogeography and Conservation Biology (MSC24401)

Day & Date: Tuesday, 28-10-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.1 and 2 are compulsory.
2) Attempt any three question from Q.No.3 to Q.No.7
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. **10**

1) _____ of the following is not an important tree of tropical rain forest.
   a) Ebony b) Rosewood
   c) Mahogany d) Sandal wood

2) Trees in thorn forest are _____.
   a) Tall b) Dense
   c) Scattered d) Climbing

3) _____ of the following type of natural vegetation have originally come to India from abroad.
   a) Rare species b) Endemic species
   c) Endangered species d) Exotic Species

4) Ebony, Mahogany, Rosewood, Rubber and Cinchona are the important trees of _____.
   a) Tropical Deciduous Forests
   b) Mangrove Forests
   c) Tropical Evergreen Forests
   d) Montane Forests

5) Most widespread vegetation in India is: _____.
   a) Coniferous forests
   b) Tropical Rain forests
   c) Tropical Deciduous forests
   d) Mangrove forests

6) _____ of the following part of India evergreen forests are found.
   a) Assam b) Rajasthan
   c) Odisha d) Uttar Pradesh

7) _____ of the following forest is found in heavy rainfall areas of the Western Ghats, island groups and upper parts of Assam.
   a) Tropical evergreen b) Tropical deciduous
   c) Mountain forests d) Tidal forests

8) Ebony and Rosewood trees are found in the areas of rainfall _____.
   a) More than 200 cm b) More than 100 cm
   c) More than 70 cm d) Less than 50 cm

9) _____ of the following trees is used for treating blood pressure.
   a) Jamun b) Kachnar
   c) Neem d) Sarpagandha

10) _____ one of the following types of vegetation does rubber belong to?
   a) Tundra b) Tidal
   c) Himalayan d) Tropical evergreen

B) Fill in the blanks <u>OR</u> True or False. **06**

1) Tropical Rain forests grow well in area receiving rainfall ____ mm.
2) One of the most prevalent hotspots of biodiversity in India is ____.
3) Most widespread vegetation in India is ____.
4) About 47,000 types of plants species are found in India. (True / False)
5) Mahogany trees is found in tropical rainforests. (True / False)
6) Trees in thorn forest are: Tall. (True / False)

Q.2 Answer the following. **16**

a) Comment upon Biosphere Reserves.
b) What is meant by gene banks?
c) Comment upon biodiversity hotspots.
d) What is meant by Endemism?

Q.3 Answer the following. **16**

a) Explain the local vegetation (concern to Solapur district).
b) Explain temperate terrestrial biome.

Q.4 Answer the following. **16**

a) Explain in detail about Western Ghats vegetation.
b) Explain in detail Mangrove vegetation of India.

Q.5 Answer the following. **16**

a) Explain the concept of polyhouse.
b) Explain in brief Seed Banks.

Q.6 Answer the following. **16**

a) Comment up on the concept of National Parks.
b) Comment up on the concept of social forestry.

Q.7 Answer the following. **16**

a) Explain in detail Washington convention on trade of flora and fauna (1933).
b) Explain in detail Wildlife Protection Act with recent amendments.

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - IV) (New/Old) (CBCS) Examination: October/November – 2025
Environmental Plant Physiology (MSC24405)

Day & Date: Saturday, 01-11-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.1 and 2 are compulsory.
2) Attempt any three questions from Q.No.3 to Q.No.7
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) **10**

1) Pathogen associated molecular pattern generally consist of _____.
   a) Plant harmone b) microbial structure
   c) Floral activating agents d) Photosysnthetic enzymes

2) _____ is the proposed role of reactive oxygen species in plant defense.
   a) H2O2 directly toxin to pathogen
   b) H2O2 give rise to extremely active free radical
   c) H2O2 leads to formation of salicylic acid
   d) All the above

3) Which of the following is stress hormone in plants?
   a) GA b) ABA
   c) Cytokinines d) Ethylene

4) Caso4 is used in reclamation of _____ soil.
   a) Alkaline b) Neutral
   c) Acidic d) Marshy

5) Salt glands are present in halophytes showing _____ phenomenon.
   a) Salt evasion b) Salt tolarence
   c) Salt insensitive d) All the above

6) Tissue water potential is measured in _____ units.
   a) Calories b) Ampere
   c) Volts d) MegaPascal

7) _____ is the main target of chilling stress.
   a) Starch b) Phospholipid
   c) Protein d) Chlorophyll

8) _____ is compatible solute.
   a) Proline b) Glycine
   c) Sorbitol d) Fructans

9) Accumulation of Glycine is observed in _____ stress.
   a) Drought b) Flooding
   c) Pollution d) Radiation

10) Potassium plays important role in _____.
   a) Stomatal moments b) Cell signaling
   c) Protein synthesis d) Cellular divisions

B) Write true/false. **06**

1) Stress physiology is how the plants respond to environmental factor.
2) Copper comes under heavy metal.
3) Fungal infection comes under abiotic stress.
4) Plastic & Elastic are types of stress.
5) Plants does not have the capacity to tolerate the stress.
6) Phytoremedation is a type to control the pollution.

Q.2 Answer the following.

a) Describe Antioxidant system in plants. **08**
b) Explain types of salinity. **08**
c) Write a note on cold tolerance.
d) Write a note on Causes of Soil salinization.

Q.3 Answer the following.

a) Describe effects of heavy metals on plants. **08**
b) What is Oxidative stress? Explain in short. **08**

Q.4 Answer the following.

a) Describe in short hypersensitive response. **08**
b) Write a note on causes of water logging. **08**

Q.5 Answer the following.

a) Write a note on effect of low temperature on plant metabolism. **08**
b) Write in detail mechanism of flooding tolerance in plants. **08**

Q.6 Answer the following.

a) Describe in detail Role of Proline & other osmolytes during stress. **08**
b) Explain effect of SO_2 & NO_2 on plant metabolism. **08**

Q.7 Answer the following.

a) Write a note on Increased CO_2 conc. on plant metabolism & productivity. **08**
b) Describe frost injury and frost resistance in plants. **08**

Seat No.	

Set **P**

M.Sc. (Botany) (Semester - IV) (New/Old) (CBCS) Examination: October/November - 2025
Crop Physiology (MSC24407)

Day & Date: Tuesday, 04-11-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.1 and 2 are compulsory.
2) Attempt any three from Q.No.3 to Q.No.7
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. **10**

1) _____ regulates the ripening process in fruits.
   a) Auxin b) Ethylene
   c) Cytokinin d) Brassinosteroid

2) The range of phytochrome P fr is _____ nm.
   a) 660 b) 500
   c) 730 d) 400

3) The induction of plants flowering process by exposure to prolonged cold temperature is known as _____.
   a) Photoperiodism b) Phototropism
   c) Photosynthesis d) Vernalization

4) _____ is the region of photoassimilate production.
   a) Source b) Sink
   c) Both (a) and (b) d) Root

5) 2,4 Dichlorophenoxy acetic Acid is an example of _____.
   a) Weedicide b) Fungicide
   c) Insecticide d) Pesticide

6) ICRISAT stands for _____.
   a) International Crops Research Institute for Semi - Arid Tropics
   b) Indian Crops Research Institute for Semi - Arid Tropics
   c) International Cultivated Research Institute for Semi - Arid Tropics
   d) International Crops Research Institute for Semi - Tropical Tropics

7) _____ forms root nodules which help in fixation of nitrogen.
   a) Mango b) Pomegranate
   c) Grapes d) Chickpea

8) Ammonium chloride, Ammonium Sulphate, Urea are ____ type of fertilizers _____.
   a) Phosphorous b) Nitrogenous
   c) Potash d) Mixed

9) The amount of sucrose in _____ is calculated in form of Brix.
   a) Sugarcane b) Cotton
   c) Wheat d) Groundnut

10) CAZRI is located in _____.
   a) Mumbai b) Solapur
   c) Nagpur d) Jodhpur

B) Write true/false. **06**

1) Antitranspirants are applied to the leaves of plant to reduce transpiration.
2) Cytokinin promotes the cell division and cell proliferation in plant cell.
3) The translocation of sugar from source to sink takes place through xylem.
4) Phytochrome red absorbs 260 nm light.
5) The science and technique applied to agricultural produce after harvest for its preservation, processing and packaging is known as Post Harvest Technology
6) Weedicide is a chemical compound used to kill the growth of unwanted plants.

Q.2 Answer the following. **16**

a) Describe Mineral nutrition in Groundnut.
b) What is Vernalization.
c) Give any two examples of each source and sink of a plant.
d) Explain Harvest Index.

Q.3 Answer the following. **16**

a) Describe any two Plant Growth Regulators in agriculture.
b) Write a note on Weedicide and explain any one weedicide with their mode of action.

Q.4 Answer the following. **16**

a) What is Phloem transport? Add a note on factors affecting source-sink relationship.
b) Describe Organic farming and give its importance.

Q.5 Answer the following. **16**

a) Write a note on ICRISAT and Central Soil Salinity Research Laboratory.
b) Explain the physiological basis of yield in cotton.

Q.6 Answer the following. **16**

a) Write a note on nitrogen fixation in Chickpea.
b) Write a note on Central Institute of Medicinal and Aromatic Plants.

Q.7 Answer the following. **16**

a) Explain the different types of fertilizers. Add a note on Foliar application of fertilizers.

b) Explain Post Harvest Technology of Pomegranate with respect to market strategy.