**SLR-HD-1**

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# M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Biology & diversity of Algae, Bryophytes, Pteridophytes and Fungi (2314101)

Day & Date: Friday, 10-05-2024 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) Multiple Choice Question:** **08**

1) _____ is one of the following is a colonial alga.
   a) Ulothrix b) Spirogyra
   c) Volvox d) Chlorella

2) _____ of the following contains chlorophyll a, d, phycoerythrin and phycocyanin.
   a) Chlorophyta b) Phaeophyta
   c) Rhodophyta d) Bacillariophyta

3) _____ among the following is also known as bog moss.
   a) Riccia b) Sphagnum
   c) Marchantia d) Funaria

4) All the plants like fern and mosses, which produce spores, are grouped under _____.
   a) bryophytes b) cryptogams
   c) thallophytes d) sporophytes

5) In Pteridophytes, the dominant generation is _____.
   a) gametophytic b) haploid
   c) diploid d) triploid

6) Reduction division in pteridophytes occurs in _____
   a) Prothallus is formed b) Gametes are formed
   c) spores are formed d) sex organs are formed

7) The fungi which derive their food directly from dead organic matter are known as _____.
   a) Predators b) Decomposers
   c) Mutualists d) Parasitic fungi

8) What does ‘Perfect stage’ of a fungus indicate?
   a) indicates that it can reproduce asexually
   b) indicates that it is perfectly healthy
   c) indicates that it is able to form perfect sexual spores
   d) All of the above

**B) Fill in the blanks OR write True/False.** **04**

1) Smuts, rusts and moulds group is used to represent pathological fungi.
   a) True b) False
2) 'Club moss' belongs to Pteridophytes.
   a) True b) False
3) Mannitol is a reserved food found in *Chara*.
   a) True b) False
4) In some of the liverworts, spore dispersal is aided by elaters.
   a) True b) False

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

**a)** Write down any two characters of class Cyanophyceae.
**b)** Write down any two characters of class Rhodophyceae.
**c)** Enlist the chlorophyll pigments present in algae.
**d)** Draw a neat labelled diagram of T.S. of *Selaginella* stem.
**e)** Enlist the types of spores present in fungi.
**f)** Define Bryophytes.
**g)** Define Fungi.
**h)** What is mean by saprobic fungi?

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

**a)** Comment upon interrelationship of class- Xanthophyceae.
**b)** Comment upon phylogeny of class- Sphenopsida.
**c)** Comment upon lifecycle pattern of Melioles.
**d)** Comment upon reproduction in Sphaeropsidales.

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

**a)** Explain in brief stem anatomy of *Equisetum.*
**b)** Explain in detail stelar evolution in pteridophytes.
**c)** Explain in brief phylogeny of Rhodophyceae.

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

**a)** Explain in brief economic importance of Pteridophytes.
**b)** Explain in brief morphological features of *Isoetes*.
**c)** Explain in brief life cycle pattern of *Nidullariales*.

**SLR-HD-2**

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# M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Taxonomy of Angiosperms (2314102)

Day & Date: Monday, 13-05-2024 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 right indicate full marks.

**Q.1 A) Multiple Choice Question:** **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) Presence of three anthers is a distinguishing feature of family _____.
   a) Orchidaceae b) Ranunculacea
   c) Rosale d) Plumbagenaceae

5) The species which are restricted to particular region are called as _____.
   a) Rare b) Endemic
   c) Varnuable d) Extinct

6) _____ among the following is one of the advance character.
   a) actinomorphic flower b) Presence of perianth
   c) Numerous anthers d) none

7) Holotype is _____.
   a) Plant material with its description
   b) Plant material along with its citation
   c) Plant material collected by the author
   d) Plant material with flower

8) Cythium type of inflorescence is a character of family.
   a) Sapotaceae b) Euphorbiaceae
   c) Ranunculaceae d) Poaceae

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

1) Collection of dried plant specimens called as _____.
2) Isotype is a _____.
3) _____ proposed natural system of classification.
4) Arrangement of leaves on stem called as _____.

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

**a)** Natural system of classification.
**b)** Write a note on vegetative characters use for identification of plants.
**c)** Describe types of taxonomy.
**d)** Write a note on chemotaxonomy.
**e)** Write a note on types of inflorescence.
**f)** Write a note on types of placentation.
**g)** Write a note on causes of loss of biodiversity.
**h)** What are different biotechnological methods for conservation of plants?

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

**a)** Define taxonomy and add a note on aims & principles of taxonomy.
**b)** Describe Cronquist system of classification.
**c)** Describe in detail numerical taxonomy.
**d)** Write vegetative & reproductive characters of family polygonaceae.

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

**a)** Write a note on morphological characters of family Meliaceae.
**b)** Write a note on priority of publication.
**c)** Describe in brief any 4 branches of taxonomy.

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

**a)** Write a note on morphological characters of family Bignonacceae.
**b)** Write a note on chemotaxonomy.
**c)** Describe the process of herbarium preparation.

**SLR-HD-3**

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# M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Plant Growth and Development (2314107)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

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

**Q.1 A) Choose correct alternative 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) Photoinactive
   c) Degenerative d) All

4) During fruit ripening _____ increases.
   a) Carbohydrates b) Proteins
   c) Polyamines d) All

5) _____ shows auxins are present in apical regions.
   a) Bending of root towards sky
   b) Bending of leaves towards sky
   c) Bending of leaves towards light
   d) Bending of hypocotyls towards light

6) Salicylic acids are _____.
   a) Plant hormone regulating immunity
   b) Plant hormone causing growth
   c) Growth retardants
   d) Growth retardant which reduces growth

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) _____ are forms of auxin.
2) Fruit size increases after application 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 Cytochrome.
**g)** Give any 4 physiological roles of Ethylene.
**h)** Give any 4 physiological roles of ABA.

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

**a)** Define plant growth & describe role of phytochrome.
**b)** Describe post-harvest technology for leafy vegetables.
**c)** Describe mechanism of action of Maleic hydrazide.
**d)** Write a note on signaling in plants.

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

**a)** Write a note on signalling mechanism of cytokinine.
**b)** Write a note on biochemical changes during fruit ripening.
**c)** Describe role of morphactins.

**Q.5 Answer 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 TIBA.

**SLR-HD-4**

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# M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Herbal & Drug Technology (2314108)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

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

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

1) *Stevia* is an example of _____.
   a) Colorant b) Binder
   c) Sweetener d) Thickening agent

2) Which of the following is property of antioxidants _____?
   a) Scavenge free radicals b) Provide energy
   c) Promote growth d) Metabolism

3) Schedule Z Refers for _____.
   a) Drug and cosmetic act b) Homeopathy act
   c) Labor act d) Medicine act

4) GMP is the part of _____.
   a) Quantity control b) Quality assurance
   c) Manufacturing d) None

5) Organoleptic evaluation includes _____.
   a) Impression on organs of senses
   b) Histological characters
   c) Chemical Nature
   d) All of above

6) Which of the following is polyunsaturated Fatty acid (PUFA)?
   a) Omega - 3- Fatty acid b) Myristic acid
   c) Palmatic acid d) Oxalic acid

7) Vati is another name of _____.
   a) Resins b) Oils
   c) Powder d) Tablet

8) The sale and distribution record should be maintained up to how many years?
   a) 2 Years b) 1 Year
   c) 3 Years d) 5 Years

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

1) The word herb derived from _____.
2) NDDS Stands for _____.
3) Azadirachtin is a chief constituent of _____.
4) GMP helps to ensure _____.

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

**a)** Define Phytosomes.
**b)** Write the advantages of biopesticides.
**c)** Write down the standardization parameters of Leha.
**d)** Define Nutraceuticles.
**e)** Define the term Patent.
**f)** Explain Stevia as sweetening agent.
**g)** Enlist the general requirement of GMP.
**h)** Give the application of Alfa-Alfa as health food.

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

**a)** Add a note on plant based industries in India.
**b)** Write down the methods of preparation and standardization parameters of Asavas.
**c)** Give the health benefit of Nutraceuticles for diabetes.
**d)** Add a note on Biopiracy.

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

**a)** Describe in detail structure and method of preparation of Phytosomes.
**b)** Write down the basic principle and diagnosis of sidhha system of medicine.
**c)** Describe in detail requirement for sterile product.

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

**a)** Describe in detail about,
1) *Ginko biloba* and 2) *Allium sativum* as a herbal drug.
**b)** Write down the about case study of ***Curcuma***.
**c)** Define herbal excipient. Write its significance as colorant and perfumery agent.

**SLR-HD-6**

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# M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Research Methodology (2314103)

Day & Date: Friday, 17-05-2024 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

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

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

1) Which of the following could be considered a trade secret so long as reasonable steps had been taken to prevent its disclosure.
   a) Sales information b) Customer list
   c) Formula and Pattern d) books

2) Books, Novels, Music, Magazines are protected by _____.
   a) Patent b) Copyright
   c) Trademark d) Trade secret

3) Coorg's green cardamom is the example of _____.
   a) Geographical Indication
   b) Copyright
   c) Patent
   d) none of these

4) What is the name of the conceptual framework in which the research is carried out?
   a) Research hypothesis b) Synopsis of Research
   c) Research paradigm d) Research design

5) How is random sampling helpful?
   a) Reasonably accurate.
   b) An economical method of data collection.
   c) Free from personal biases.
   d) All of the above.

6) How to judge the depth of any research?
   a) By research title
   b) By research duration
   c) By research objectives
   d) By total Expenditure on research

7) How can we enhance the research objective?
   a) By making it more valid
   b) By making it more reliable
   c) By making it more impartial
   d) All of the above

8) On the basis of information there are _____types of research.
   a) 2 b) 3
   c) 4 d) none of these

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

1) Participatory research is sole purpose is the production of knowledge.
2) The main aim of the scientific method in the research field is to Eliminate spurious relations.
3) Applied research refers to scientific study and research that seeks to solve practical problem.
4) The appropriation of another person's ideas, processes, results or words without giving appropriate credit is called Plagiarism.

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

**a)** Characteristics of a good research report;
**b)** Describe types of research.
**c)** What is WIPO.
**d)** What is secondary data.
**e)** Rights of copyright owner.
**f)** What is ANOVA.
**g)** Write objectives of research.

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

**a)** Modes of paper communication
**b)** What is the necessity of defining a research problem? Explain
**c)** Data collection
**d)** Write application of computer in research.

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

**a)** What is ISSN? Write note on it.
**b)** What is i-10 index? Write note on determination of i10-index.
**c)** Concept of plagiarism.

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

**a)** What is impact factor? Discuss in details calculation of impact factor.
**b)** What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.
**c)** Explain the meaning of analysis of variance. Describe briefly the technique of analysis of variance for one-way and two-way classifications.

**SLR-HD-7**

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# M.Sc. (Semester - I) (New/Old) (CBCS) Examination: March/April-2024
## BOTANY
## Biology and Diversity of Fungi, Bacteria, Viruses and Lichens (MSC24101)

Day & Date: Friday, 10-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

**Q.1 A) Multiple Choice Question:** **10**

1) _____ fungi division includes 'Club fungi'.
   a) Zygomycota b) Deuteromycota
   c) Basidiomycota d) Ascomycota

2) _____ group is used to represent pathological fungi.
   a) Penicillium
   b) Truffles, mushrooms and morels
   c) Smuts, rusts and moulds
   d) All of the above

3) The fungi which derive their food directly from dead organic matter are known as _____.
   a) Predators b) Decomposers
   c) Mutualists d) Parasitic fungi

4) _____ is the name of the special hyphal tips through which parasitic fungi absorb nutrients directly from the cytoplasm of the living host.
   a) Haustoria b) Mildew
   c) Constricting ring d) All of the above

5) Viruses do not contain: _____.
   a) DNA b) RNA
   c) Enzyme d) Cell wall

6) Prokaryotic cell lacks: _____.
   a) DNA b) Ribosomes
   c) Mitochondria d) Plasma membrane

7) A typical bacterial cell has only _____ volume of a typical eukaryotic cell.
   a) 1/10 b) 1/100
   c) 1/1000 d) 1/10000

8) The fungi which do not a sexual stage are called: _____.
   a) Phycomycetes b) Ascomycetes
   c) Basidiomycetes d) Fungi imperfecti

9) In structure and classification of viruses, find out the WRONG statement: _____
   a) Icosahedral symmetry has 12 vertices
   b) Helical symmetry such as Othomyxo virus
   c) Transcription is the formation of protein
   d) Translation is the formation of protein

10) Viruses are _____.
   a) Obligate intracellular parasites
   b) Have their own metabolism
   c) Divide by binary fission
   d) Have both DNA and RNA

**B) Fill in the blanks OR write true/false.** **06**

1) A common phycobiont in lichens are _____.
2) The symbiotic association of algae and fungi is known as _____.
3) Lichen are best indicators of _____ pollution.
4) Crustose lichen is pioneer in xerosere
   a) True b) False
5) Lichens are slowest growing plants
   a) True b) False
6) Usually Lichens show commensalism
   a) True b) False

**Q.2 Answer the followings.** **16**

**a)** Enlist the economic importance of lichens.
**b)** Enlist the important characteristic of viruses.
**c)** Write short note on human pathogenic fungi.
**d)** Write short note on ultrastructure of bacterial cell.

**Q.3 Answer the followings.** **16**

**a)** Explain the cell structure and cell wall composition of fungi.
**b)** Explain in detail lifecycle pattern of Myxomycota.

**Q.4 Answer the followings.** **16**

**a)** Explain in detail reproduction pattern in Zygomycetes.
**b)** Explain in detail phylogeny of class Hemiascomycetes.

**Q.5 Answer the followings.** **16**

**a)** Explain the role of fungi in medicine and as food.
**b)** Explain in brief stages of mushroom cultivation.

**Q.6 Answer the followings.** **16**

**a)** Explain in brief management/control measures of Bacterial blight & Leaf spot disease of pomegranate.
**b)** Explain in brief economic importance of Lichens.

**Q.7 Answer the followings.** **16**

**a)** Explain in detail methods of vegetative reproduction in bacteria.

**b)** Explain the phylogeny of class Teliomycetes.

**SLR-HD-8**

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# M.Sc. (Semester - I) (New/Old) (CBCS) Examination: March/April-2024
## BOTANY
## Biology and Diversity of Algae, Bryophytes and Pteridophytes (MSC24102)

Day & Date: Monday, 13-05-2024 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) Draw neat and labelled diagrams wherever necessary.
4) Figures to right indicate full marks.

**Q.1 A) Multiple Choice Question:** **10**

1) Red algae is different from green & brown algae in having _____.
   a) Presence of chlorophyll a
   b) Differentiated cells absent
   c) Flagella Stage is absent in their life cycle
   d) Hemoglobin within their cells

2) _____ phase in bryophytes is long lived.
   a) Sporophytic b) Gametophytic
   c) Monophasic d) Diphasic

3) _____ among the following is known as stonewort.
   a) Chara b) Vaucheria
   c) Volvox d) Nostoc

4) Discoid multicellular gemmae is observed in _____.
   a) Chlorophyta b) Phaeophyta
   c) Hepaticopsida d) Cyanophyta

5) The arrangement of xylem & phloem is called as _____.
   a) Phyllotaxy b) Aestivation
   c) Stele d) Cambium

6) A culture obtained from strain of algal species is called as _____.
   a) Clonal b) Axenic
   c) Unialgal d) Enrichment

7) Selaginella is a _____ pteridophyte.
   a) Homosporous b) Heterosporous
   c) Multisporous d) none of above

8) Gas vacuoles are found in _____.
   a) Chlorophyta b) Phaeophyta
   c) Rhodophyta d) Cyanophyta

9) _____ among the following is green algae.
   a) Euglenophyta b) Chrysophyta
   c) Pyrrhophyta d) Chlorophyta

10) In Spirogyra asexual reproduction takes place by special structure called as _____.
   a) Sporangia b) Fragmentation
   c) Zoospore d) Gametophyte

**B) Fill in the blanks.** **06**

1) _____ shows presence of fertile spike.
2) _____ are known as plant amphibians.
3) The algae grows on animals skin is known as _____.
4) _____members of algae used to produce biofertilizers.
5) _____ father of Indian Bryology.
6) Red algae belongs to division _____.

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

**a)** General characters of algae.
**b)** Outline of classification system of Pteridophytes.
**c)** Characters of order Anthocerotales.
**d)** Describe unusual habitats of algae.

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

**a)** Describe modes of reproduction in pteridophytes.
**b)** Write similarities & differences in class Psilopsida & Lycopsida.

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

**a)** Write a note on general characters of pteridophytes.
**b)** Write a note on reproduction in bryophytes.

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

**a)** Describe silent features of division chlorophyceae.
**b)** Write a note on silent features of pteropsida.

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

**a)** Write a note on interrelationship between class polytrichales & funariales.
**b)** Describe telome theory.

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

**a)** Write a note on stealer evolution in pteridophytes.
**b)** Describe classification system of algae proposed by G.M. Smith.

**SLR-HD-9**

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# M.Sc. (Semester - I) (New/Old) (CBCS) Examination: Oct/Nov-2023
## BOTANY
## Plant Ecology (MSC24103)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) EIA is _____.
   a) Environmental impact assessment
   b) Ecological impact assessment
   c) Environmental intact assessment
   d) None of theses

2) If pollution comes from a single location then it is known as _____ pollution
   a) Point-source b) Nonpoint-source
   c) Pickpoint d) Midpoint

3) _____ is non-green house gas.
   a) Methane b) Nitrous oxide
   c) Oxygen d) Chlorofluorocarbons

4) The final stable community in ecological succession is _____.
   a) Climax b) Sere
   c) Pioneers d) Carnivores

5) Absorption and accumulation of contaminant through roots is called as _____.
   a) Phytovolatization b) Phytoextraction
   c) Rhizofiltration d) Phytostabilization

6) _____ is the ratio of number of births to the size of that population.
   a) Natality b) Mortality
   c) Dispersal d) Dispersion

7) In each community, one or few species dominate in number and in physical characteristics such species are called as _____.
   a) Ecological Dominants
   b) Ecological Recessive
   c) Ecological Successions
   d) Flagship spcies

8) _____ is a calendar of events in the life history of the plant.
   a) Physiognomy b) Phenology
   c) Abundance d) Vitality

9) _____ succession starts on a well developed soil already formed at a site.
   a) Primary  b) Secondary
   c) Tertiary  d) Quaternary

10) _____ is a water hyacinth.
   a) *Eichhornia*  b) *Chara*
   c) *Hydrilla*  d) *Nymphea*

**B) Write true or false** **06**

1) Aquisition of information about object without making physical contact with that object is known as Remote sensing.
2) The earth would be a lifeless and frozen in absence of natural greenhouse effect.
3) Mangroves shows pneumatophores.
4) The flow of energy from producer to top consumers is bidirectional.
5) MAB is Man and the Biome
6) Biomagnification is the accumulation of substances, such as pesticides, or other chemicals in an organism.

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

**a)** Write a note on Biosphere Reserve
**b)** Explain Wetlands
**c)** What is $CO_2$ Fertilization
**d)** Define Phytoextraction and explain the mechanism.

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

**a)** Explain the Qualitative characters of community.
**b)** Give the characteristics of Wetland.

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

**a)** Write a note on Techniques in Remote Sensing.
**b)** Explain Phytostabilization and Rhizofiltration.

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

**a)** Describe the Greenhouse gases.
**b)** Explain the characteristics of Population.

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

**a)** Give the applications of remote sensing in vegetative analysis.
**b)** Write a note on effect of air and water pollution on vegetation.

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

**a)** Explain the structural components of ecosystem.
**b)** Explain the Synthetic characters of community.

**SLR-HD-10**

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**Set P**

# M.Sc. (Semester - I) (New/Old) (CBCS) Examination: March/April-2024
## BOTANY
## Taxonomy of Angiosperms (MSC24108)

Day & Date: Friday, 17-05-2024 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.** **10**

1) _____ among the following is not an example of family Rutaceae.
   a) *Aegle marmelos* b) *Feronia limonia*
   c) *Citrus medica* d) *Clematis trilobata*

2) Conservation of plants out of 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 endangered is called as _____.
   a) Endangered b) Varnuable
   b) Threatened d) Endemic

4) Presence of three anthers is a distinguishing feature of family _____
   a) Orchidaceae b) Ranunculacea
   c) Rosale d) Plumbagenaceae

5) The species which are restricted to particular region are called as _____.
   a) Rare b) Endemic
   c) Varnuable d) Extinct

6) _____ among the following is one of the primitive character.
   a) Zygomorphic flower b) Presence of perianth
   c) Numerous anthers d) Gamopetalous nature

7) Neotype is _____.
   a) Plant material with its description
   b) Plant material along with its citation
   c) Plant material with its di scription
   d) Plant material with flower

8) Presence of milky latex is characteristic feature of family.
   a) Sapotaceae b) Orchidaceae
   c) Ranunculaceae d) Poaceae

9) _____ number of genera are found in family Sapotaceae.
   a) 58 b) 70
   c) 113 d) 94

10) Inventory of plants in particular region called as _____.
   a) Revision b) Flora
   c) Monogram d) Dictionary

**B) Fill in the blanks** **06**

1) The place where collection of dried plant specimans are stored called as _____.
2) Duplicate copy of holotype called as _____.
3) _____ system based on few arbitory characters.
4) small leaf like structure present at the base of leaf called as _____.
5) Spike type of inflorescence is character of family _____.
6) The type of placentaion in which placenta attach towords center called as _____.

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

**a)** Phylogenetic system of classification.
**b)** write a note on reproductive characters use for identification of plants.
**c)** Describe types of taxonomy.
**d)** Write a note on numerical taxonomy.

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

**a)** Define taxonomy and add a note on aims & principles of taxonomy.
**b)** Describe Conquirst system of classification.

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

**a)** Write a note on morphological characters of family Amarantahceae.
**b)** Write a note on principles of ICBN.

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

**a)** Write a note on morphological of family-poaceae.
**b)** Write a note on gene banking.

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

**a)** Describe the process of herbarium preparation.
**b)** Write a note on floristic diversity in Maharashtra.

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

**a)** What is biodiversity? Describe in situ methods of conservation.

**b)** Describe morphological characters of family Rutaceae.

**SLR-HD-12**

| Seat No. | | Set | P |
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# M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Biology and Diversity of Gymnosperm and Paleobotany (2314201)

Day & Date: Thursday, 09-05-2024 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

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

**Q.1 A) Multiple Choice Question:** **08**

1) The petiole of Cycas shows _____ shaped disposition of the vascular bundles.
   a) Sigma b) Omega
   c) Triangular d) Alpha

2) Himalayan cedar oil is obtained from _____.
   a) *Juniperus virginiana* b) *Cedrus deodara*
   c) *Abies balsamea* d) *Ginkgo biloba*

3) An aril is present in the ovule of _____.
   a) Cycas b) Taxus
   c) Ephedra d) Gnetum

4) Mesozoic era is called _____.
   a) ages of ferns b) ages of cycads
   c) ages of Angiosperms d) ages of bryophytes

5) Arnold (1948) classified ____ into two families namely Williamsoniaceae and Cycadeoideace.
   a) Bennettitales b) Filicales
   c) Psilophytales d) Coniferales

6) _____ represents only an imprint of plant part in which original organic matter is lost.
   a) Compression b) Petrification
   c) Mold d) Impression

7) ____ is also called as a Whisk fern.
   a) Rhynia b) Taxus
   c) Psilotum d) Ephedra

8) The leathery and fan shaped leaves with dichotomous venation is found in _____.
   a) Araucaria b) Abies
   c) Astroxylon d) Ginkgo

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

1) Gymnosperms lacks vessel in xylem.
2) The pinnate leaves of Cycas shows circinate venation.
3) The seeds in gymnosperms are not naked.
4) *Taxus baccata* yields alkaloids known as taxine.

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

**a)** Explain the distinguishing characters of Cordaitales.
**b)** Explain Rhynia.
**c)** Write salient features of Coniferales.
**d)** Describe Petrification.
**e)** Give the morphological characters of gymnospermic leaves with examples.
**f)** Explain Annularia.
**g)** What are corolloid roots?
**h)** Describe Lygenopteris.

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

**a)** Explain the Impression and Compression fossils.
**b)** Describe Enigmocarpon and palmoxvlon.
**c)** Explain the classification of Gymnosperm according to Chamberlain (1934).
**d)** Explain the external features of Cycadeoidea with diagram.

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

**a)** Give economic importance of Gymnosperms.
**b)** Give the affinities of Gnetum and Welwitschia.
**c)** Explain the techniques used in fossil studies.

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

**a)** Give the outline of classification of Gymnosperms according to D.D Pant (1957).
**b)** Write a note on Indian Fossil Flora.
**c)** Explain the morphological characters of Psilotum.

**SLR-HD-13**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Advances in Pathology (2314202)

Day & Date: Saturday, 11-05-2024 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

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

**Q.1 A) Choose the correct alternatives from the options.** **08**

1) The 'Irish famine' was due to _____.
   a) late blight of potato b) blast of rice
   c) early blight of potato d) wart of potato

2) Effects of pathogen on photosynthesis _____.
   a) Toxins may inhibit photosynthesis enzyme
   b) Decrease in chlorophyll contents or chlorosis
   c) Closed stomata
   d) All the above

3) Fungi are always _____.
   a) Parasitic b) saprophytic
   c) Autotrophic d) heterotrophic

4) Heterothallism was discovered by _____.
   a) Bessey b) Blakeslee
   c) Alexopoulos d) Leuwenhoek

5) White rust of crucifer is caused by _____.
   a) Puccinia b) Utilago
   c) Cystopus d) Peziza

6) Loose smut of wheat is caused by _____.
   a) Ustilagotritici b) Cystopus
   c) Puccinia d) Aspergillusass

7) What is colour code of highly hazardous pesticides?
   a) Blue b) Red
   c) Yellow d) Green

8) Bacteria mostly enter the host through _____.
   a) cuticle b) directly
   c) stomata d) epidermal hair

**B) Fill in the blanks/write True or False:** **04**

1) Club roof of crucifer is caused by Plasmodiophora sp. of a fungus.
2) Seed treatment is very effective fungicides is Carbendazin.
3) Agar-agar is produced from Nostoc.
4) Grassy shoot of sugarcane is incited by MLO.

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

**a)** Disease forecasting.
**b)** What is exclusion?
**c)** Concepts of fruit rots.
**d)** Concepts of Seed borne pathogens.
**e)** Enlist the abiotic diseases.
**f)** Describe the structured of Banana Mosaic Virus (BMV).
**g)** Control measures of stem parasites.
**h)** Assessment methods of disease incidence.

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

**a)** Write the symptoms, cause of 'Tikka disease of groundnut'.
**b)** Describe the seed borne pathogens.
**c)** Describe in details of mechanism of infection.

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

**a)** Describe in details on 'white rust of crucifer'.
**b)** Describe algal 'red rust of rice'.
**c)** Different control methods of seed borne pathogens.

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

**a)** Explain the defence mechanism of host plant against pathogens.
**b)** Write the symptoms, cause and control measures of 'citrus canker'.
**c)** Describe in details of methods of diagnosis of plant diseases.

**SLR-HD-14**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Crop Physiology (2314207)

Day & Date: Tuesday, 14-05-2024 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

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

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

1) Loss of water in the form of water vapor is known as _____.
   a) Antitranspirants b) Antitrianspiration
   c) Transpiration d) All of these

2) NAR is nothing but _____.
   a) Hanest index b) National Agriculture ratio
   c) Net assimilation rate d) Whole biological yield

3) Biologically originated substances used to kill weed are known as _____.
   a) Organic weedicides b) Chemical weedicides
   c) Organic pesticides d) Organic fertilizer

4) CIMAP research institute is located in the following state of India
   a) Bihar b) Uttar Pradesh
   c) Maharashtra d) Gujarat

5) Changes in structure and composition of fruits during its ripening which make fruit edible such changes occur during _____.
   a) Early stage of senescence
   b) Maturation of fruit
   c) Abscission of fruit
   d) None of above

6) The term vernalization was coined by _____.
   a) Lysenko b) J.C. Bose
   c) W.F. Gericke d) None of these

7) Which of the following group of elements are called minor elements
   a) Fe, C & H b) Zn, N & P
   c) Ca, S & Mg d) Cu, Zn & Mo

8) Nodulation is an example of _____.
   a) Asymbiotic association b) Symbiotic association
   c) Parasitic association d) None of these

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

1) CIMAP used to conserve cereals.
2) CIMAP has the headquarter at Pune.
3) Central Soil Salinity Research Institute is working under ICAR.
4) Herbisides working on large number of weeds are called as Broad spectrum.

**Q.2 Answer the following. (any 6)** **12**

**a)** Types of antitranspirant.
**b)** Write a note on growth curve.
**c)** Write a note on Weed sides.
**d)** Write a note on Phloem transport.
**e)** Describe source & sink relationship.
**f)** What are florigen?
**g)** Any four functions of GA.
**h)** Write a note on Physiological yield of sugarcane.

**Q.3 Answer the following. (any 3)** **12**

**a)** Write advantages & disadvantages of chemical & organic farming.
**b)** Write a note on any two growth regulators used in agriculture.
**c)** Write a note on physiological yield of wheat.
**d)** Define vernalization? Describe the process of vernalization.

**Q.4 Answer the following. (any 2)** **12**

**a)** Define Photoperiodism? Describe the process of photoperiodism.
**b)** Write post harvest technology for pomegranate.
**c)** Write a note on BARC.

**Q.5 Answer the following. (any 2)** **12**

**a)** Write a note on physiological parameters for growth of plant.
**b)** Define growth regulators & add a note on GA.
**c)** Research Institute ICRISAT.

**SLR-HD-15**

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**Set P**

# M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024
## BOTANY
## Angiosperm Systematics (2314208)

Day & Date: Tuesday, 14-05-2024 Max. Marks: 60
Time: 11:00 AM To 01:30 PM

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

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

1) In which of the following Kingdom are there and nitrogen fixing organism classified?
   a) Animalia b) Plantae
   c) Monera d) Fungi

2) _____ include DNA sequence that can change its position within a genome.
   a) Gene mutation b) Gene sequence
   c) Gene recombination d) None of these

3) Species which have diverged after origin common ancestor giving rise to new species adapted to new habitats and ways of life is called as _____.
   a) Adaptive radiation b) Divergent evolution
   c) Convergent evolution d) Mutation

4) GIS strand for _____.
   a) Geographic information system
   b) Geographic Internal System
   c) Global Information System
   d) None of these

5) In herbarium sheets are arranged according to the _____.
   a) Waste of animals b) Help of camphor
   c) System of classification d) Oxygen consumption

6) Botanical gardens or parts of botanic gardens where the main collection of woody species are called _____.
   a) Arboreta b) Pinetum
   c) Bambusetum d) Orchidarium

7) In _____ variation it include relation between size of organism and aspects of its physiology, morphology and life history mainly studies.
   a) Neurogenic b) Allomatric
   c) Traumatic d) Habitat

8) Which of the family belongs to order Ebenales in Bentham and Hooker system of classification?
   a) Celastraceae b) Rosaceae
   c) Sapotaceae d) Lamiaceae

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

1) A system of classification in which a large number of traits are considered is _____.
2) _____ being one of the largest herbarium in the world.
3) Galopagos fishes are a good example of _____.
4) A _____ is a systematic enumeration of plant species occurring in a given region and ideally provides key, description and often illustration.

**Q.2 Answer the following. (any 6)** **12**

**a)** What is two kingdom system of classification?
**b)** List out the GIS application.
**c)** Define embryology.
**d)** Name any two important Botanical gardens of India.
**e)** What do you mean by monograph?
**f)** What are Arboreta?
**g)** What are the three components of GPS?
**h)** Write down any two characters of order malvales.

**Q.3 Answer the following. (any 3)** **12**

**a)** Write a short note on three kingdom system of classification.
**b)** What is GPS? Explain the components of a GPS system.
**c)** Give the functions of botanical gardens.
**d)** Write a short note on Revisions.

**Q.4 Answer the following. (any 2)** **12**

**a)** Give the brief account on empires of three kingdom system.
**b)** Explain in details websites used in plant identification.
**c)** Define evolution. Explain the types of evolution.

**Q.5 Answer the following. (any 2)** **12**

**a)** Give the brief account on phase of classification.
**b)** Add a note on following websites:
1) JSTOR
2) BHL
**c)** Describe in detail the order Rosales as per Bentham and Hooker system of classification.

**SLR-HD-17**

| Seat No. | | Set | P |
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# M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
## BOTANY
## Biology and Diversity of Gymnosperms and Paleobotany (MSC24201)

Day & Date: Thursday, 09-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) Lens shaped and obliquely placed pit pore are present in _____.
   a) *Cupressus* b) *Podocarpus*
   c) *Araucaria* d) *Agathis*

2) Presence of the hump is the characteristics of the male cone of _____.
   a) *Taxus* b) *Ginkgo*
   c) *Ephedra* d) *Pinus*

3) The order Coniferales does not include the following family.
   a) Taxaceae b) Pinaceace
   c) Cupressaceae d) Podocarpaceae

4) In the _____, tracheids are characterized by tertiary spiral thickenings.
   a) *Welwitschia* b) *Ephedra*
   c) *Cycas* d) *Taxus*

5) In Zamia the arrangement of megasporophylls along the central axis is _____.
   a) Axillary b) Velvet
   c) Papilaceous d) Overlapping

6) The medullary rays containing starch are known as _____ medullary rays.
   a) Linear b) Pitted
   c) Fusiform d) All of the above

7) The stem and seed of _____ yield starch known as ‘Sago’.
   a) *Ginkgo* b) *Araucaria*
   c) *Cycas* d) *Agathis*

8) In the nodal region of *Medullosa heterostelica* _____ steles are present.
   a) 2 b) 3
   c) 70 d) 23

9) *Thamnopteris* belongs to the family _____.
   a) Gleicheniaceae b) Osmundaceae
   c) Schizaceae d) Marsileaceae

10) *Nilssonia* is_____ genus of Cycadales.
a) Stem b) Leaf
c) Seed d) Flower

**B) Fill in the blanks.** **06**

1) _____ is an open umbrella like structure having hundreds of sporangia.
2) _____ is a stem genus.
3) Rhipidopsis is _____ genus of fossilized Ginkgoales.
4) *Sahnianthus parijai* is _____.
5) Largest leaf is found in _____.
6) RLS stands for _____.

**Q.2 Answer the followings.** **16**

**a)** Describe compression.
**b)** Describe Rhynia.
**c)** Describe Lepidodendron.
**d)** Draw male cone of Araucaria.

**Q.3 Answer the followings.**

**a)** Describe diversity of gymnosperms with respect to morphology. **08**
**b)** Write the process of fossilization. **08**

**Q.4 Answer the followings.**

**a)** Give any four modern trends of classification of gymnosperms. **10**
**b)** Describe reproductive structures of Benettitales. **06**

**Q.5 Answer the followings.**

**a)** *'Ginkgo'* as a living fossil justify. **08**
**b)** Describe family Osmundaceae. **08**

**Q.6 Answer the followings.**

**a)** Economic importance of Gymnosperms **10**
**b)** Lyginopteris oldhamia **06**

**Q.7 Answer the followings.**

**a)** Male flower of *Welwitschia* **08**
**b)** *Rhynia* **08**

**SLR-HD-18**

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# M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
## BOTANY
## Tools &Techniques in Botany. (MSC24202)

Day & Date: Saturday, 11-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 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 right indicate full marks.

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

1) _____ is used for preservation of root tips.
   a) Alcohol b) Acetoalcohol
   c) Cotton blue d) Chloroform

2) _____ is the third step in herbarium preparation.
   a) Pressing b) Poisioning
   c) Collection d) Pasting

3) Centrifugation is dependent upon _____.
   a) Density of partical b) Volume
   c) Both a & b d) Colour

4) Horizontal electrophoresis is used for _____.
   a) Detection of DNA b) Detection of RNA
   c) Detection of proteins d) Detection of enzymes

5) _____ actual size of herbarium sheet.
   a) 27×20 cm b) 29×42 cm
   c) 16×32 cm d) 22×22 cm

6) In TLC _____ is used for preparation of stationary phase.
   a) Glass b) Silica gel
   c) Both a & b d) Mercury

7) Centrifugation shows presence of _____.
   a) Centrifugal force b) Gravitational force
   c) Centripetal force d) Both a & b

8) _____ is used for detection of DNA.
   a) Bromophenol blue b) Alcohol
   c) Mnso4 d) Both a & c

9) _____ gas is commonly used in affinity chromatography.
   a) He b) N2
   c) H d) All

10) _____ is used to detect the radiations.
   a) Dosimeter b) Calorimeter
   c) HPLC d) Refractometer

**B) Fill in the blanks.** **06**

1) HPLC stands for _____.
2) Object scanning takes place by using _____ microscope.
3) Formula for centrifugation _____.
4) _____ size of herbarium sheet
5) Type of centrifuge used to separate blood & plasma is _____.
6) liquid phase in chromatography is called as _____.

**Q.2 Answer the followings.** **16**

**a)** Write a note on fixatives.
**b)** Write a note on working of gas chromatography.
**c)** Write a note on applications of flame spectrophotometry.
**d)** Write a note on application of HPLC.

**Q.3 Answer the followings.** **16**

**a)** Describe methods used for viewualization of DNA.
**b)** Write a note on working of gel electrophoresis.

**Q.4 Answer the followings.** **16**

**a)** Describe methodology of herbarium preparation.
**b)** Write principle, working & applications of ultracentrifuge.

**Q.5 Answer the followings.** **16**

**a)** Write a principle & types of chromatography.
**b)** Write a note on principle & working of transmission electron microscopy.

**Q.6 Answer the followings.** **16**

**a)** Write a note on BLAST.
**b)** Write principle, working & applications of HPLC.

**Q.7 Answer the followings.** **16**

**a)** Write working & applications of gas chromatography.
**b)** Write a note on NCBI & its applications.

**SLR-HD-19**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - II) (Old) (CBCS) Examination: March/April-2024
## BOTANY
## Cell and Molecular Biology (MSC24203)

Day & Date: Tuesday, 14-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 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 right indicate full marks.

**Q.1 A) Fill in the blanks by choosing correct alternatives given below. 10**

1) The major interaction responsible for stabilizing plasma membrane
   a) hydrophobic interactions
   b) hydrophilic interactions
   c) covalent bonds
   d) ionic bonds

2) Semipermeable membrane allows _____
   a) Solute to pass b) Solution to pass
   c) Solvent to pass d) Proteins to pass

3) Gap junctions are absent in _____
   a) Sperm cells b) Reproductive cells
   c) Cardiac cells d) Brain cells

4) _____ type of plasmodesmata allows for the movement of large molecules?
   a) Simple plasmodesmata b) Branched Plasmodesmata
   c) Tubular plasmodesmata d) Sieve plasmodesmata

5) In chloroplasts, where do light reactions occur
   a) Outer membrane b) Inner membrane
   c) Thylakoid membrane d) Stroma

6) _____ is the size of plant mitochondrial DNA.
   a) 16kb b) 200-2500kb
   c) 100-2550kb d) 100-2500kb

7) _____ forms a chromatin fiber.
   a) Nucleosome +H1 histone
   b) DNA complex + associated protein
   c) Wrapping of DNA in double helix
   d) DNA +H1 histone

8) ____ of the following is used in DNA replication studies.
   a) Neurospora crassa  b) Drosophila melanogaster
   c) Escherichia coli  d) Pneumococcus

9) The enzyme photolyase is used in _____ method of repair.
   a) Base excision  b) Photo reactivation
   c) Nucleotide excision  d) SOS

10) _____ is a technique that allows distinguishing the genomes in a cell.
   a) Electrophoresis  b) GLC
   c) Immuno  d) GISH

**B) Fill in the blanks.** **06**

1) A _____ is short tandem repeats (STRs) that has a length of 1 to 6 base pair.
2) Number of stop codons present in genetic code _____
3) Microfilaments arc composed of the contractile proteins called as _____
4) _____ Endoplasmic reticulum contains ribosomes.
5) The process of programmed cell death is called _____

**Q.2 Answer the followings.** **16**

**a)** Write a note on ion carriers and channels.
**b)** Write a note on RNA editing.
**c)** Describe the models of DNA replications.
**d)** Describe the role of cyclins and cyclin dependent kinases.

**Q.3 Answer the followings.** **16**

**a)** Explain the composition of plasma membrane and add a note on receptors.
**b)** Explain the structure of plasmodesmata and give comparison with gap junctions.

**Q.4 Answer the followings.** **16**

**a)** Explain in detail the ultrastructure of mitochondria.
**b)** Describe in details the genome organization in chloroplast.

**Q.5 Answer the followings.** **16**

**a)** Explain in detail the satellite DNA.
**b)** Explain different causes of DNA damage.

**Q.6 Answer the followings.** **16**

**a)** Explain in detail mechanism of apoptosis.
**b)** Describe the structure and function of endoplasmic reticulum.

**Q.7 Answer the followings.** **16**

**a)** Explain FISH in situ hybridization.
**b)** Write a note on Enzymes kinetics.

**SLR-HD-20**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Plant Embryology and Palynology (MSC24301)

Day & Date: Friday, 10-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 PM

**Instructions:** 1) Q. Nos. 1 and 2 are compulsory
2) Attempt any three questions from Q. No. 3 to Q. No. 7
3) Draw a neat, well labelled, complete diagrams wherever necessary.
4) Figures to right indicate full marks.

**Q.1 A) Choose correct Alternative from the following.** **10**

1) _____ represents female gametophyte of angiosperms.
   a) Ovule b) Embryo sac
   c) Megaspore mother cell d) Nucellus

2) The outer wall of pollen grain is composed of pectinous substance called _____.
   a) Pollenin b) Chitin 1
   c) Cellulose d) Calcium

3) _____ is ornamented in pollen grain.
   a) Nexine b) Exine
   c) Intine d) All of them

4) Intine of pollen grains is made up of _____.
   a) Lipid and protein b) Pectin and lignin
   c) Lignin and cutin d) Cellulose and pectin

5) Pollen grains are stored by _____ methods.
   a) Organic solvents b) Freezing temperatures
   c) Cryopreservation d) All a, b & c

6) The development of male gametophyte starts from _____.
   a) Pollen grain b) Megaspore
   c) Nucleus d) Pollen sac

7) Vegetative nucleus acts as the _____ for the male nuclei for their entry in the pollen tube.
   a) Director b) Supported
   c) Pusher d) None of the above

8) The first polyembryony was reported by _____.
   a) Maheshwari b) Antoni van Leeuwenhoek
   c) Johari d) Anton de Bary

9) A person engaged in the study of Hay-fever or pollinosis is known as _____.
   a) Palynologist b) Petrologist
   c) Allergologist d) Taxonomist

10) The term palynology was suggested by _____.
   a) Grew b) Malpighi
   c) P. K. K. Nair d) Hyde and Williams

**B) Write True or False.** **06**

1) When apertures are present in equatorial plane, it is described as panto.
2) Honey is truly An insect product.
3) Filiform apparatus is present in the synergid.
4) Compound pollen grains are found in Ipomoea.
5) *Ricinus communis* pollengrains are allergic.
6) Liquid nitrogen is having minus 196°C temperature.

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

**a)** What is double fertilization in angiosperm?
**b)** Causes of polyembryony
**c)** Give the causes of apomixis.
**d)** What is Palaeopalynology?

**Q.3 Answer the following.**

**a)** Describe types and causes of polyembryony. **08**
**b)** Palynology: Scope and branches. **08**

**Q.4 Answer the following.**

**a)** Describe abnormal male gametophyte and their features. **08**
**b)** Write significance of pollen pistil interaction. **08**

**Q.5 Answer the following.**

**a)** Apospory **06**
**b)** Melittopalynology **10**

**Q.6 Answer the following.**

**a)** Describe in brief embryo culture. **08**
**b)** Give an account on pollen and spore allergy. **08**

**Q.7 Answer the following.**

**a)** Describe the techniques of palaeopalynology. **08**
**b)** Describe brief outline of ultra structure of male gametophyte. **08**

**SLR-HD-21**

| Seat No. | | Set | P |
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# M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Cytogenetics and Crop Improvement (MSC24302)

Day & Date: Monday, 13-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 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 right indicate full marks.

**Q.1 A) Choose correct Alternative from the following.** **10**

1) _____ model is accounted for heteroduplex formation and gene conversion during recombination.
   a) Watson b) Crick
   c) Holliday d) Louis

2) Linkage map and genetic map are constructed on the basis of _____.
   a) Protoplasmic fusion b) Crossing over
   c) Hybridization d) Cybridization

3) Variation in invitro culture is called as _____.
   a) Invitro variation b) Mutation
   c) Somaclonal variation d) Hybridization

4) _____ is used to search the similar sequence against a variety of different sequence.
   a) Basic Local Alignment Tool
   b) PubMed
   c) Protein Data Bank
   d) GenBank

5) Duration of Patent is for _____ years.
   a) 15 b) 25
   c) 10 d) 20

6) The genetic material of viruses consists of either _____.
   a) DNA b) RNA
   c) DNA or RNA d) ssDNA or ssRNA

7) Hybridomas are made by _____.
   a) Fusing T cells with myeloma cells
   b) Fusing B cells with myeloma cells
   c) Fusing T helper cells with myeloma cells
   d) Fusing B memory cells with myeloma cells

8) Intellectual Property Rights include _____.
   a) Patent b) Copyright
   c) Trademark d) All of the above

9) _____ is a Graphic analysis tool to detect a portion of a DNA molecule that when translated into amino acid contains no stop codon.
   a) Entrez b) Sequin
   c) Bankit d) ORF finder

10) Proteins responsible for compact packing and winding chromosomal DNA are _____.
   a) Histone b) Nonhistones
   c) Trypsin d) Serein

**B) Fill in the blanks.** **06**

1) The variation observed in the plants regenerated from gametic cultures is known as _____.
2) If centromere is located at terminal end of chromosome then it is called _____.
3) In _____ process the two DNA molecules exchange genetic information, resulting in the production of a new combination of alleles.
4) Literacy work is the example of _____of IPR.
5) The eukaryotic chromosomes has packaging proteins called as _____ to condense the DNA molecule to maintain its integrity.
6) _____ is used to submit and update the new multiple genomic sequences to NCBI.

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

**a)** Write a note on Gene families.
**b)** Give the importance of IPR.
**c)** Write a note on sequence submission tools.
**d)** Explain methods of protoplast fusion.

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

**a)** Explain gene conversion.
**b)** Write a note on site specific recombination.

**Q.4 Answer the followings.** **16**

**a)** Explain in detail somaclonal variation.
**b)** Explain the procedure of Patent.

**Q.5 Answer the followings.** **16**

**a)** Explain with example the law of Independent Assortment.
**b)** What is BLAST and give its type.

**Q.6 Answer the followings.** **16**

**a)** Explain the size and structure of genome of bacteria.
**b)** What is gene mapping and explain with diagram.

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

**a)** Write a note on NCBI.
**b)** Explain the domains of IPR.

**SLR-HD-22**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Advances in Plant Metabolism and Biochemistry (MSC24306)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 PM

**Instructions:** 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7
3) Draw neat and labelled diagrams wherever necessary.
4) Figures to right indicate full marks.

**Q.1 A) Choose correct alternative from the following.** **10**

1) C3 cycle is also known as _____.
   a) Krebs cycle b) CAM pathway
   c) Glycolysis d) Calvin

2) _____ is called as non-cyclic photophosphorylation.
   a) PSI I b) PSI II
   c) Cytochrome d) Plastoquinone

3) Secondary metabolites derived from _____.
   a) Tryptophan b) Alanine
   c) Cytocine d) None

4) Pentose phosphate pathway shows presence of _____ complex.
   a) 1 complex b) 2 complex
   c) 3 complex d) 4 complex

5) _____ is first co2 acceptor in c3 cycle.
   a) OAA b) Glycolate
   c) PEP d) RuBP

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

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

8) Secondary metabolites follow _____ pathway.
   a) ASA b) Shikimic acid
   c) Glycolate d) Phosphate

9) _____ is primary acceptor of co2.
   a) RuBP b) Phenol
   c) Benzoate d) All

10) Sunflower is _____.
   a) C3 plant b) C4 plant
   c) CAM plant d) SDP

**B) True or False.** **06**

1) ETS is Electron transport chain.
2) C4 plants shows Kranz anatomy.
3) PGA is first stable product in c3 cycle.
4) Secondary metabolites are derived from primary metabolites.
5) Cysteine is Sulphur containing amino acid.
6) Phosphate is Macronutrient.

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

**a)** What is photosynthesis?
**b)** Give outline of C4 cycle.
**c)** Describe Pentose phosphate pathway.
**d)** Define secondary metabolites & enlist its types.

**Q.3 Answer the following.**

**a)** What is photorespiration? **08**
**b)** Describe regulation of Rubisco. **08**

**Q.4 Answer the following.**

**a)** Describe role of oxalic acid. **08**
**b)** Describe Sulphur metabolism. **08**

**Q.5 Answer the following.**

**a)** Describe biosynthesis of aromatic amino acids. **08**
**b)** Describe VAM and phosphate nutrition. **08**

**Q.6 Answer the following.**

**a)** Describe process of glycolysis. **08**
**b)** Describe TCA cycle. **08**

**Q.7 Answer the following.**

**a)** Describe electron transport chain. **08**
**b)** Describe ultra-structure of chloroplast. **08**

**SLR-HD-23**

| Seat No. | | Set | P |
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# M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Angiosperm Systematics (MSC24307)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 80
Time: 11:00 AM To 02:00 PM

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

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

1) Systematics deals with _____.
   a) identification of organism
   b) classification of organism
   c) the kind and diversity of all organisms and the existing relationships amongst themselves
   d) identification, naming and classification of both plants and animals

2) 'Systema Nature' written by Linnaeus contains a list of _____.
   a) 4000 species of plants b) 2000 species of plants
   c) 4200 species of plants d) 4000 species of animals

3) Linnaeus is credited with introducing _____.
   a) The concept of inheritance b) Law of limiting factor
   c) Binomial nomenclature d) Theory of heredity

4) Out of the 4 widely known system of classification one remains less phylogenetic and more natural and that is of _____.
   a) Engler and Prantl b) Bentham and Hooker
   c) Hutchinson d) Rendle

5) A document containing a comprehensive account of a specific taxonomic group generally a genus or family is _____.
   a) Manual b) Flora
   c) Monograph d) Revision

6) Which of the following is a taxonomical aid for identification of plants and animals based on similarities and dissimilarities?
   a) Flora b) Keys
   c) Monograph d) Catalogus

7) How many biogeographic zones are there in India?
   a) Five b) Twenty
   c) Ten d) Fifteen

8) Among the ten biogeographic zones in India, which zone is the largest biogeographic region?
   a) Himalaya b) Desert
   c) Semi-arid d) Deccan plateau

9) The class monocotyledons include _____ number of series in Bentham and Hooker classification system.
   a) 7 b) 8
   c) 9 d) 6

10) The _____ placed as a primitive family is the chief demerit of Bentham and Hooker system of classification.
   a) Piperaceae b) Rananunculace
   c) Alismataceae d) Araceae

**B) Fill in the blanks.** **06**

1) Any stable change in time and space is known as _____.
2) In the hierarchical arrangement of taxonomic categories, the category of 'family' comes after _____.
3) Threatened animals and plants are placed in a separate care unit for protection it is called _____.
4) Artificial dichotomous key has mainly how many types?
5) Which biogeographic zone is considered as one of the 25 biodiversity hot-spots globally?
6) Euphorbiaceae is classified under the series _____.

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

**a)** Write a short note on sustainable utilization of bio- resource.
**b)** Mention the merits and demerits of Bentham and Hooker system of classification.
**c)** Add a short note on botanical survey of India.
**d)** Define evolution. Explain the types of evolution.

**Q.3 Answer the following.**

**a)** Give the brief account on non-genetic variation w.r.t. individual variation in time and social variation. **08**
**b)** Explain in detail criteria used for the classification of the plants. **08**

**Q.4 Answer the following.**

**a)** Add a short note on major and minor categories. **08**
**b)** Explain in detail botanical gardens of the world. **08**

**Q.5 Answer the following.**

**a)** Give the brief account on phases of classification. **08**
**b)** What is monograph? Describe in detail. **08**

**Q.6 Answer the following.**

**a)** Add a short note on following two websites: **08**
   i) IPNI
   ii) BHL
**b)** Explain in detail the phytogeographical regions of India. **08**

**Q.7 Answer the following.**

**a)** Describe in detail the subclass Gamopetalae as per Bentham and Hooker system of classification. **08**
**b)** Define biodiversity. Give the importance of biodiversity. **08**

**SLR-HD-26**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Phytogeography and Conservation Biology (MSC24401)

Day & Date: Thursday, 09-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) Continuous distribution is _____.
   a) Plants divided by barrier
   b) Plants with continuous distribution without any barrier
   c) Rare
   d) Endemic

2) Indus plain includes _____.
   a) Punjab b) Baluchistan
   c) Sind d) All the above

3) Xerophytic plants are present in _____ types of soil.
   a) Arid zone b) Black soil
   c) Lomy soil d) All above

4) Mostly in tropical region _____ habit of the species is dominant.
   a) Trees b) Climber
   c) Linna d) Herb

5) Biological diversity act _____.
   a) Conservation of plants
   b) Conservation of RET plants
   c) Conservation of land
   d) Conservation

6) World divided in to 25 regions by _____.
   a) Schouw b) Prain
   c) Burkill d) Chatargii

7) _____ biotechnological method used for conservation of plants.
   a) Micropropagation b) Anther culture
   c) Meristem culture d) All the above

8) In gene banking _____.
   a) Storage of seeds b) Storage of chromosome
   c) Coiling of plants d) Harvesting fruits

9) Mangroves shows_____ important feature.
   a) Presence of pneumatophores
   b) Presence of roots
   c) Presence of leaves
   d) Presence of stem

10) If plants are on the verge of becoming endangered, they are called as _____.
   a) Exitint  b) Endangered
   c) Varnuable  d) Rare

**B) Fill in the blanks.** **06**

1) C In tropical forest region trees of shrubs shows presence of _____ character.
2) In Western Himalayan region _____ family is dominant.
3) Washington convention of trade was made for _____.
4) Phytogeography defines as _____.
5) Prain & Burkill divide India in to _____ phytogeographic regions.
6) Interpretative phytogeography describes _____.

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

**a)** Hot spots in Maharashtra.
**b)** Describe any three types of endemism.
**c)** Write a note on loss of biodiversity.
**d)** Describe Phytogeography and its types.

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

**a)** Floristic diversity of Malabar region.
**b)** Write a note on biosphere reserve.

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

**a)** Describe Flora of eastern Himalaya.
**b)** Describe process of cryopreservation.

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

**a)** Describe rules & mandates of NBPGR.
**b)** Describe wildlife conservation act.

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

**a)** Describe botanical garden with its applications.
**b)** Describe phytogeographical regions of India.

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

**a)** Describe flora of Indus plain.
**b)** Write a note on Biodiversity act.

**SLR-HD-27**

| Seat No. | |
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**Set P**

# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Plant tissue culture Greenhouse technology and hydroponics (MSC24402)

Day & Date: Saturday, 11-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

**Q.1 A) Choose correct answer from given alternatives.** **10**

1) Transfer of a part of old culture to new culture vessel is known as ____.
   a) Subculture b) Inoculation
   c) Reculture d) None of these

2) Differentiation of callus into plant parts is known as _____.
   a) Embryogenesis b) Morphogenesis
   c) Embryoid formation d) Totipotency

3) Pollen embryoids were discovered by _____.
   a) Konal and Natraja b) Guha and Maheshwari
   c) Skoog and Miller d) Helperin and Wetherell

4) Hardening is induced by keeping plantlets under _____.
   a) High light intensity and low humidity
   b) Low light intensity and low humidity
   c) Low light intensity and high humidity
   d) High light intensity and high humidity

5) For maximum illumination, the direction of greenhouse should be _____.
   a) North to south
   b) East to West
   c) South east to North east
   d) Both a and b

6) Tissue culture technique can produce indefinite number of new plants from a small parental tissue. The economic importance of this technique is in raising _____.
   a) Variants through picking up somaclonal variation
   b) Genetically uniform population of an elite species.
   c) Homozygous diploid plants
   d) Development of new species

7) Rock wool is the most probably widely used medium in hydroponics, which is obtained from _____.
   a) Fossil remains b) Basalt rock
   c) Volcanic rock d) All of these

8) Development of shoot and root in tissue culture is determined by _____.
   a) Cytokinin to auxin ratio  b) Enzymes
   c) Plant nutrients  d) Temperature

9) Which country has developed advanced hydroponics technology due to its arid climate?
   a) Sri Lanka  b) UAE
   c) USA  d) Israel

10) Who discovered that morphogenesis in tissue culture is controlled by hormones?
   a) Muir *et. al.*  b) Vasil and Hilderbrandt
   c) Skoog and Miller  d) Helperin and Wetherell

**B) Fill in the blanks / Write True or False.** **06**

1) Cell suspension culture is agitated at 120 rpm of _____.
2) The concept of cellular totipotency was given by Steward.
3) In greenhouse, the heat treatment is given to soil to remove used seeds at the temperature 90°C.
4) Agar agar hydro gels have been used for encapsulation of hydrated somatic embryos.
5) Rock wool used in hydroponics.
6) MS medium is not used in tissue culture.

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

**a)** Applications of Genetically modified plants.
**b)** Methods of sterilization.
**c)** Role of enzyme ligase.
**d)** Enlist methods of hydroponics

**Q.3 Answer the following.**

**a)** Write a note on somatic hybridization **08**
**b)** Write a note on Micropropagation **08**

**Q.4 Answer the following.**

**a)** Write a note on factors affecting anther culture. **10**
**b)** Describe in detail process of tissue culture. **06**

**Q.5 Answer the following.**

**a)** Describe somatic hybridization. **08**
**b)** Write a note on steps involved for production of golden rice. **08**

**Q.6 Answer the following.**

**a)** Write a note on enzymatic method of protoplast isolation. **10**
**b)** Factors influencing morphogenesis. **06**

**Q.7 Answer the following.**

**a)** Describe the steps for micropropagation its types and add a note on its application. **08**
**b)** Describe factors affecting protoplast isolation. **08**

**SLR-HD-28**

| Seat No. | | Set | P |
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# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Environmental Plant Physiology (MSC24405)

Day & Date: Tuesday, 14-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) Creosote bush (*Larrea tridentata*) is a _____.
   a) Drought tolerant plant b) Salt tolerant plant
   c) Cold resistant plant d) Drought sensitive plant

2) _____ is the main target of chilling stress.
   a) Starch b) Phospholipids
   c) Proteins d) Chlorophyll

3) Potassium ions play an important role in _____
   a) Stomatal movements b) Proteins synthesis
   c) Cell signaling d) None of the above

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

5) Chilling injury occurs when warm region plants are exposed to temperature of degree Celsius.
   a) 0-10°C b) 10-15°C
   c) 25-35°C d) Less than 0°C

6) Cell membranes of plants resistant to chilling injury contain _____ fatty acids in their lipid bilayer.
   a) Saturated b) Long chain
   c) Unsaturated d) Short chain

7) SOD catalyzes the reduction of _____ into hydrogen peroxide.
   a) Molecular oxygen b) Singlet oxygen
   c) Ozone d) Superoxide

8) Manganese toxicity in plants is identified by _____.
   a) Chlorosis b) Necrosis
   c) Brown spots surrounded by chlorotic zones d) All of these

9) $CaSO_4$ is used for reclamation of _____ soil.
   a) Acidic  b) Alkaline
   c) Saline  d) Marshy

10) _____ substance acts as a volatile air borne SAR inducing signal.
   a) Salicylic acid  b) Methyl salicylate
   c) Jasmonate  d) Malate

**B) True or False** **06**

1) Hypersensitive response in plants occurs within 24 hrs. on pathogen infection to plants.
2) Jasmonic acid biosynthesis takes place in cytoplasm.
3) Heat Shock proteins were first discovered in Drosophila melanogaster.
4) Biotic stress in plants is caused by bacterial, nematode and fungal pathogen.
5) Antioxidants are enzymes that scavenge toxic ROS species in plants
6) Antifreeze proteins do not have ability to inhibit the ice crystal growth during chilling stress.

**Q.2 Answer the followings.** **16**

**a)** Causes of soil salinization.
**b)** Causes of water logging.
**c)** Chilling injury.
**d)** Compatible solutes.

**Q.3 Answer the followings.** **16**

**a)** Describe effects UV on plant metabolism and mechanism of UV tolerance.
**b)** Write a note on mechanism of salt tolerance in higher plants.

**Q.4 Answer the followings.** **16**

**a)** Effects and resistance of heavy metal toxicity in plants.
**b)** Effects of flood and tolerance mechanism in plants.

**Q.5 Answer the followings.** **16**

**a)** Drought resistance in plants in response to water stress.
**b)** Give an account of effect of salt stress on plant metabolism.

**Q.6 Answer the followings.** **16**

**a)** Effect of $SO_2$ and $NO_2$ on plant metabolism.
**b)** Describe the effects of heat stress on plant metabolism.

**Q.7 Answer the followings.** **16**

**a)** Explain in detail SAR response in plants.
**b)** Describe frost injury and frost resistance in plants.

**SLR-HD-29**

| Seat No. | | Set | P |
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# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Modern trends in Angiosperm Taxonomy (MSC24406)

Day & Date: Tuesday, 14-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) In TEM the tissue is stained by floating on drops of _____.
   a) Hydrocarbons b) Slow molecular weight stain
   c) Heavy metal solution d) Oil immersion

2) GPS is operated by _____.
   a) Russian space force b) China space force
   c) United states space force d) French air and space force

3) The lowest ranking taxa in numerical taxonomy is _____.
   a) Species b) OTUs
   c) NTUs d) Variety

4) Study of pollen grains in honey is called as _____.
   a) Latropalynology
   b) Aeropalynology
   c) Pharmacopalynology
   d) Melissopalynology

5) In red data book color division, ‘orange’ color used for _____ Category.
   a) Rare species b) Extinct species
   c) Endangered d) Endemic

6) What does QR code stands for _____.
   a) Quick reading b) Quick response
   c) Quick rite d) Quiet response

7) The order Caryophyllales divided into Caryophyllaceae and chenopodineae on the basis of presence and absence of _____ compound.
   a) Betalains b) Glycosinolates
   c) Sesquiterpenes d) Raphides

8) Cytological information like chromosome number, structure, behavior, is related with _____.
   a) Numerical taxonomy b) Chemotaxonomy
   c) Cytotaxonomy d) Alpha- taxonomy

9) Presence of bulliform cells is the characteristic feature of _____ family.
   a) Nymphaeaceae  b) Piperaceae
   c) Orchidaceae  d) Poaceae

10) _____ which register receives legal protection against misuse of and appropriation by outside agencies and individual?
   a) PCR  b) PBR
   c) PGR  d) PSR

**B) Fill in the blanks.** **06**

1) GIS represent X- Coordinate in _____ direction.
2) PCR first time discovered by _____.
3) In chemotaxonomy _____ includes information regarding carrying molecules such as DNA, RNA, and Proteins.
4) The lowest number of chromosomes recorded in angiosperms _____.
5) _____ prevent nature from being used as an inexhaustible source of resource and ensure its protection and rational use.
6) AFLP stands for _____.

**Q.2 Answer the followings.** **16**

**a)** Add a short note on trichomes.
**b)** What is chemotaxonomy? Enlist the stages in chemotaxonomic investigation.
**c)** Explain the working of TEM?
**d)** What are the Alien plants? Enlist the any four names of Alien plants.

**Q.3 Answer the followings.**

**a)** Discuss in brief role of floral anatomy in relation to taxonomy. **08**
**b)** What is QR coding? How it is useful for the plant taxonomy. **08**

**Q.4 Answer the followings.**

**a)** What is cladistics? Explain the principle of parsimony. And write the definition of analogy and homology **08**
**b)** What is DNA polymorphism? Give the brief account on Restriction Fragment Length Polymorphism (RFLPs). **08**

**Q.5 Answer the followings.**

**a)** What is embryology? Give the taxonomic importance of embryological characters. **08**
**b)** What is sustainable development? Explain the principle and rules of sustainable development. **08**

**Q.6 Answer the followings.**

**a)** Give the principle of numerical taxonomy and constructions of taxonomic group. **08**
**b)** What is endemism? Describe the types of endemism. **08**

**Q.7 Answer the followings.**

**a)** Give the objective and advantages of Red data book. **08**

**b)** Explain in detail classes of compounds and their significance in chemotaxonomy. **08**

**SLR-HD-30**

| Seat No. | | Set | P |
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# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Crop Physiology (MSC24407)

Day & Date: Thursday, 16-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) _____ among following are Phosphate fertilizers.
   a) Water solable b) Citric acid solable
   c) Both a & b d) None of these

2) What is the critical period of DNP Plants?
   a) 8 hrs dark period b) 14-16 hrs dark period
   c) 8 hrs Light period d) 14-16 hrs light period

3) _____ hormone is present in leaves for flowering in photoperiodism.
   a) Vernalin b) Phytochrome
   c) Florigen d) Phylogen

4) Range of Pr is _____.
   a) 630 nm b) 750 nm
   c) 1000 nm d) 250 nm

5) Chilling treatment to seeds is called as _____.
   a) Phytochrome b) Physiology
   c) Vernilization d) None of these

6) Depending upon mode of action the herbicides are divided in to _____.
   a) Selective b) Non selective
   c) Foliage d) All the above

7) _____ are the basic forms of fertilizers.
   a) *Granule* b) *Powder*
   c) *Liquid* d) All the above

8) _____ among the following is nitrogen fertilizer.
   a) Sodium nitrate b) Ammonium sulphate
   c) Both a & b d) None

9) LAI means _____.
   a) Leaf area index b) Number of leaves
   c) Hight of leaves d) None of these

10) Crop productivity should be check for _____.
   a) Hybridization b) Breeding experiments
   c) Both a & b d) None of these

**B) Fill in the blanks.** **06**

1) _____ hormone enhances flowering in plants.
2) The plants which require maximum light period for growth are called as _____.
3) The herbicides which are effective against large number of weeds are called as _____.
4) _____ hormone is responsible for flowering in vernalization.
5) Manganese sulphate is a type of _____ fertilizer.
6) Macronutrients fused with special type of glass is called as _____.

**Q.2 Answer the followings.** **16**

**a)** Write a note on photoperiodism.
**b)** Describe vernalization.
**c)** Write a note on Post Harvest Technology of Pomogranate.
**d)** Mineral nutrition of groundnut.

**Q.3 Answer the followings.**

**a)** Write a note on IARIT. **08**
**b)** Write a note on fruit physiology of Mango. **08**

**Q.4 Answer the followings.**

**a)** Write a note on types of fertilizers. **08**
**b)** Write a note on weedicides. **08**

**Q.5 Answer the followings.**

**a)** Write a note on nitrogen fixation in Chickpea. **08**
**b)** Write a note on organic farming. **08**

**Q.6 Answer the followings.**

**a)** Write a note on any two growth regulators in agriculture. **08**
**b)** Write a note on foliar applications of fertilizers. **08**

**Q.7 Answer the followings.**

**a)** Physiology of Cotton. **08**
**b)** Write a note on CAZRI Jodhpur. **08**

**SLR-HD-31**

| Seat No. | | Set | P |
|---|---|---|---|

# M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024
## BOTANY
## Industrial Botany (MSC24408)

Day & Date: Thursday, 16-05-2024 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

**Q.1 A) Multiple choice question.** **10**

1) Main component of biogas is _____.
   a) Propane b) Butane
   c) Methane d) Ethane

2) A biocontrol agent against plant diseases _____.
   a) *Trichoderma* b) *Glomus*
   c) *Bacillus thuringiensis* d) *Baculovirus*

3) Management and administration are _____.
   a) Same
   b) Different
   c) Partly same and partly different
   d) Same and different

4) The word marketing standing is concerned with _____.
   a) Position of an enterprise b) Supply of the product
   c) Customers d) Competitors

5) Which bank gives long term loan to farmer?
   a) NABARD b) Loan development bank
   c) SBI d) rural bank

6) The first step in starting a new business venture is _____.
   a) Idea generation
   b) Scanning of ideas
   c) Preparing a business plan
   d) Project implementation

7) Formaldehyde is used are _____ in mushroom cultivation.
   a) Disinfectant b) fertilizer
   c) insect repellent d) food material

8) The word entrepreneur derived from _____.
   a) Entreprena b) Enereprise
   c) Entaprena d) Entreprendre

9) The batch fermentation can be used to produce _____.
   a) Organic acids b) Amino acids
   c) Single cell protein d) Antibiotics

10) How do you get *Bacillus thuringiensis* to spray on plants?
   a) In the form of powder
   b) In the form of log
   c) In the form of dried spores
   d) In the form of wet spores

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

1) SIDBI was set up as a subsidiary of ICICI.
2) A clear beginning and end is a characteristic of a project.
3) Accountant should be involved in preparing a firm's business plan.
4) After the fermentation process, penicillin is recovered as Potassium penicillin.
5) Fed-batch culture was used in the production of baker's yeast.
6) Paddy straw mushroom is Agaricus *bisporous*.

**Q.2 Answer the followings.** **16**

**a)** What are the applications of *spirulina* cultivation?
**b)** How we can use seaweeds extracts as bio fertilizers?
**c)** Give the applications of Bio hydrogen.
**d)** Write a short note on Batch fermentation.

**Q.3 Answer the followings.**

**a)** Explain the commercial utility of algae as food and feed. **08**
**b)** Define bio- pesticide and add a note on types of bio pesticides. **08**

**Q.4 Answer the followings.**

**a)** Explain spark ignition engines with well labelled diagram. **08**
**b)** Define fermentation and explain continuous fermentation in detail. **08**

**Q.5 Answer the followings.**

**a)** Explain the sources and method of citric acid production. **08**
**b)** Explain the advantages and disadvantages of SCP. **08**

**Q.6 Answer the followings.**

**a)** Define entrepreneur concept and types of entrepreneurs? **08**
**b)** Define project report and add a note on project report contents. **08**

**Q.7 Answer the followings.**

**a)** What is the difference between entrepreneur and a manager? **08**
**b)** Explain the isolation, mass multiplication and applications of *Trichoderma*. **08**