R0246	Sub. Code
	525101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Botany

PLANT DIVERSITY - I (PHYCOLOGY, MYCOLOGY, LICHENOLOGY AND BRYOLOGY)

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Important features in the classification of algae are (CO1, K1)

   (a) Chemical composition of cell wall

   (b) Types of Pigments

   (c) Nature of storage product

   (d) All of them

2. Which of the following does not apply to algal plants? (CO1, K1)

   (a) Their reproductive structure is multicellular

   (b) They are autotropic

   (c) Their cells generally store starch

   (d) Their cell wall has cellulose

3. Ulothrix and Spirogyra belongs to (CO2, K2)

(a) Rhodophyceae (b) Chlorophyceae

(c) Phaeophyceae (d) Cyanophyceae

4. Antibiotic Chlorellin is obtained from (CO2, K2)

(a) Vaucheria (b) Chlamydomonas

(c) Chlorella (d) None of these

5. Hyphae are septate in (CO3, K3)

(a) Ascomycetes

(b) Basidiomycetes

(c) Phycomycetes

(d) In Ascomycetes and Basidiomycetes both

6. Drug ergot is obtained from (CO3, K3)

(a) *Claviceps* (b) *Yeast*

(c) *Penicillium* (d) None of these

7. Which of the following is not a lichen? (CO4, K4)

(a) *Rinodina* (b) *Parmelia*

(c) *Cladonia* (d) *Mangifera*

8. Reindeer moss is an example of (CO4, K4)

(a) Lichen (b) Bryophyte

(c) Pteridophyte (d) Fungi In

9. Bryophytes, spores are formed by (CO5, K4)

(a) Mitosis (b) Meiosis

(c) Amitosis (d) None of these

10. Vegetative reproduction by gemmae is found in (CO5, K4)

(a) *Riccia* (b) *Marchantia*

(c) *Funaria* (d) None of these

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain the F.E. Fritsch classification of algae. (CO1, K1)

Or

(b) Outline the phylogeny of Algae. (CO1, K1)

12. (a) Explain about the life cycle of Bacillariophycophyta. (CO2, K2)

Or

(b) Distinguish life cycle of Rhodophycophyta. (CO2, K2)

13. (a) Explain briefly about the classification of Fungi (Alexopoulos and Mims). (CO3, K3)

Or

(b) Outline the economic importance of Fungi. (CO3, K3)

14. (a) Give an account the economic importance of Lichens. (CO4, K4)

Or

(b) Simplify the notes on thallus organization in Lichens with suitable diagram. (CO4, K4)

15. (a) Explain general characters of major group of Sphagnales. (CO5, K4)

Or

(b) Interpret the structure of sporophyte in Anthocerotales. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain the ultra-structure of Prokaryotic and Eukaryotic algal cells with suitable diagram. (CO1, K1)

Or

(b) Summaries the inter-relationship of Algae.(CO1, K1)

17. (a) Categorize the thallus organization and reproduction of Chlorophycophyta. (CO2, K2)

Or

(b) Write about the economic importance of Algae. (CO2, K2)

18. (a) Compare the thallus organization, cell structure and mode of nutrition of fungi. (CO3, K3)

Or

(b) Write about the reproduction and life cycle in Fungi with suitable diagram. (CO3, K3)

19. (a) Simplify the notes about inter-relationship of phycobiont and mycobiont. (CO4, K4)

Or

(b) Compare the vegetative and sexual reproduction of Lichen. (CO4, K4)

20. (a) Write a detailed note on classification of Bryophytes. (CO5, K4)

Or

(b) Write about the economic importance of Bryophytes. (CO5, K4)

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R0247	Sub. Code
	525102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Botany

PLANT DIVERSITY – II (PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY)

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Which of the following is not a Pteridophyte character. (CO1, K1)

   (a) Presence of vascular tissue

   (b) Multicellular reproductive structures

   (c) Thalloid plant body

   (d) Presence of true stem, root, and leaves

2. Which of the following is not a Pteridophyte. (CO1, K1)

   (a) *Lycopodim* (b) *Selaginella*

   (c) *Dryopteris* (d) *Riccia*

3. Pteridophytes reproduce normally (CO2, K2)

   (a) Vegetatively (b) Sexually

   (c) Asexually (d) None

4. The sporangia in sorus are covered by a sheath known as (CO2, K2)

(a) Indusium (b) Endometrium

(c) Hypometrium (d) None

5. Which of the following is not a Gymnosperm (CO3, K2)

(a) *Cycas* (b) *Gnetum*

(c) *Pinus* (d) *Pteris*

6. Pollination in Gymnosperms is generally by (CO3, K2)

(a) Wind (b) Water

(c) Insect (d) Animals

7. Much-branched, small, club-shaped, negatively geotropic roots in *Cycas* are called (CO4, K3)

(a) Normal roots (b) Coralloid roots

(c) Aerial roots (d) None

8. The common name of the *Cycas* plant is (CO4, K3)

(a) Indian palm (b) Royal palm

(c) Sago palm (d) Fan palm

9. Who studies fossils? (CO5, K4)

(a) Zoologists (b) Phycologists

(c) Mycologist (d) Paleontologists

10. Which of the following is called a living fossil? (CO5, K4)

(a) *Pinus* (b) *Ephedra*

(c) *Ginkgo* (d) None

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Examine the salient features of Pteridophytes. (CO1, K1)

Or

(b) Compare the gametophytes of *Selaginella* and *Marsilea*. (CO1, K1)

12. (a) Explain the types of sporangia and sorus in Pteridophytes. (CO2, K2)

Or

(b) Give a comparative account of the Apogamy and Apospory. (CO2, K2)

13. (a) Discuss the general characteristics of Gymnosperms. (CO3, K2)

Or

(b) Examine the life cycle of *Gnetum*. (CO3, K2)

14. (a) Compare the ovules in Ginkgoales and Coniferales. (CO4, K3)

Or

(b) Write an explanatory note on *Mycorrhiza*. (CO4, K3)

15. (a) Explain the general account of the geological time scale. (CO5, K4)

Or

(b) Evaluate the age-determination methods in the study of fossils. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss in detail the origin and phylogeny of Pteridophytes. (CO1, K1)

Or

(b) Give a brief account of the life history of *Equisetum*. (CO1, K1)

17. (a) Write an essay on an essay on stelar evolution in Pteridophytes. (CO1, K2)

Or

(b) Give a detailed note on the economic importance of Pteridophytes. (CO1, K2)

18. (a) Explain the classification of gymnosperms. (Sporne, 1965). (CO1, K2)

Or

(b) Enumerate the stages in the development of the male gametophyte of *Gnetum*. (CO1, K2)

19. (a) Give a comparative account of *Cycas* male and female gametophytes. (CO1, K3)

Or

(b) Write detailed notes on the economic importance of Gymnosperms. (CO1, K3)

20. (a) What is a fossil? Discuss the different types of fossils studied by you. (CO1, K4)

Or

(b) Write a role of fossils in oil exploration and coal excavation. (CO1, K4)

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R0248	Sub. Code
	525103

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Botany

MICROBIOLOGY AND PLANT PATHOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. *Agrobacterium tumefaciens* causes a disease known as _____ (CO1, K1)

   (a) Necrosis (b) Wilt

   (c) Leaf spot (d) Crown gall

2. Which one of the following is a sulphur bacteria (CO1, K1)

   (a) Beggiatoa (b) Thiobacillus

   (c) Nitrosomonas (d) Nitrobacter

3. Extra chromosomal DNA found in a bacterial cell is called (CO2, K2)

   (a) Capsid (b) Cosmid

   (c) Plastid (d) Plasmid

4. Tobacco mosaic virus (TMV) was isolated as crystals by (CO2, K2)

(a) W.M. Stanley (b) A. Mayer

(c) Iwanowski (d) Beijerinck

5. Which one of the temperature is necessary for the production of vinegar? (CO3, K3)

(a) 43 degree C (b) 60 degree C

(c) 10–13 degree C (d) 15–34 degree C

6. Which one of the following is not RNA viruses (CO3, K3)

(a) Tobacco mosaic virus

(b) Cucumber mosaic virus

(c) Influenza virus

(d) Cauliflower mosaic virus

7. Tikka disease of groundnut is caused by (CO4, K5)

(a) *Colletotrichum falcatum*

(b) *Phytophthora infestans*

(c) *Spacelotheca cruenta*

(d) *Cercospora personata*

8. The yield of the antibiotic depends upon ————————. (CO4, K4)

(a) Age of the inoculum

(b) Only the pH of the medium

(c) Composition of medium

(d) All of the above

9. Which one of the following is the most common bacteria used for bioleaching (CO5, K5)

(a) Spirillum (b) Coccus

(c) Bacillus (d) Streptococcus

10. Red rot of sugarcane is caused by (CO5, K4)

(a) *Colletotrichum falcatum*

(b) *Puccinia graminis*

(c) *Peronospora*

(d) *Xanthomonas citri*

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss briefly about the Bergey's classification of bacteria. (CO1, K1)

Or

(b) Explain the economic importance of bacteria. (CO1, K1)

12. (a) Discuss about the structure and characteristic features of TMV. (CO2, K2)

Or

(b) Write in detail about the prions. (CO2, K2)

13. (a) Give on account on the source and mode of action of penicillin. (CO3, K3)

Or

(b) Explain the bioleaching process of microbes. (CO3, K3)

14. (a) Illustrate the role of host nutrition on disease development. (CO4, K4)

Or

(b) Classify the sanitary and phytosanitary measures. (CO4, K4)

15. (a) Write about the Tikka disease of groundnut. (CO5, K5)

Or

(b) Give on account on pathogenicity of mycoplasma. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain about the physical and chemical methods of sterilization. (CO1, K1)

Or

(b) Illustrate the microbial growth assessment. (CO1, K1)

17. (a) Explain about the replication of virus. (CO2, K2)

Or

(b) Explain about the classification of virus. (CO2, K2)

18. (a) Explain how microbes are involved in the production of vinegar and ethanol. Highlight the key microbial species and processes involved. (CO3, K3)

Or

(b) Explore the relationship between microbes and food spoilage. Identify common methods used to preserve food products and briefly explain their mechanisms. (CO3, K3)

19. (a) Explain the principles of disease and epidemiology in the context of plant pathology. How do these principles aid in understanding and managing plant diseases? (CO4, K4)

Or

(b) Discuss the history of quarantine legislations related to plant diseases. Explain the objectives and key provisions of plant quarantine measures, both domestically and internationally. (CO4, K4)

20. (a) Explain the typical symptoms and host-pathogen interactions associated with diseases caused by Mycoplasma and Phytoplasma. (CO5, K5)

Or

(b) Write causal organism, symptoms, disease cycle and control measures of Red rot of Sugarcane? (CO5, K5)

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R0249	Sub. Code
	525104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Botany

CELL BIOLOGY, GENETICS & PLANT BREEDING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer the following objective question by choosing the correct option

1. The Membrane around the Vacuole is known as (CO1, K1)
   (a) Tonoplast (b) Elaioplast
   (c) Cytoplast (d) Amyloplast
2. Microfilaments are composed of a Protein called (CO1, K1)
   (a) Tubulin (b) Actin
   (c) Myosin (d) Chitin
3. Which cell organelle is involved in apotosis (CO2, K1)
   (a) Lysosome (b) Endoplasmic reticulum
   (c) Golgi (d) Mitochondria
4. The Function of the Centrosome is (CO2, K1)
   (a) Formation of Spindle fibres
   (b) Osmoregulation
   (c) Secretion
   (d) Protein Synthesis

5. An exception to Mendel's Law is (CO3, K1)

(a) Independent assortment

(b) Linkage

(c) Dominance

(d) Purity of gamete

6. The Term genetics was given by _____? (CO3, K1)

(a) Bovery (b) Y.L.Ping

(c) Suttan (d) Beston

7. Does nucleosome contain? (CO4, K2)

(a) Only histones

(b) Only DNA

(c) Both DNA and histones

(d) Both DNA & RNA

8. What is the haploid Chromosome number of a man

(CO4, K1)

(a) 24 (b) 23

(c) 46 (d) Indefinite number

9. PolyPloidy is induced through (CO5, K1)

(a) Irradiation (b) Mutagenic Chemicals

(c) Ethylene (d) Colchicine

10. Breeding for disease Resistance Requires (CO5, K1)

(a) A good source of resistance

(b) Planned hybridization

(c) Disease Test

(d) All of these

Part B $(5 \times 5 = 25)$

Answer **all** questions not more than 500 words each

11. (a) Describe the details of structure and function Chloroplast? write a note on biogenesis Chloroplast. (CO1, K1)

Or

(b) Enlist the function of Golgi apparatus and Lysosomes with Examples. (CO1, K1)

12. (a) Write a Short note on auditory hairy cells. (CO2, K2)

Or

(b) Write a brief account on ion enzyme link receptor elements. (CO2, K2)

13. (a) Write the Incomplete dominance with suitable Examples. (CO3, K3)

Or

(b) What is Phenotype? With suitable example discuss about Polygenic inheritance. (CO3, K3)

14. (a) What are Chromosomal aberration? Describe the process of duplication and Translocation with suitable diagram. (CO4, K3)

Or

(b) Justify the Role of crossing over and Importance. (CO4, K4)

15. (a) What is mass selection and Procedure? (CO5, K4)

Or

(b) Describe the Principal and Technique of Resistance breeding. (CO5, K1)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each

16. (a) Explain the structure and Function of endoplasmic reticulum with a neat Labelled diagram. (CO1, K4)

Or

(b) What are mitochondria? What is the basic morphology of these orgenelles and in which cells can they be found? (CO1, K2)

17. (a) Describe the Receptor kinase and note one cellular messanger. (CO2, K2)

Or

(b) Write a note on cell signaling and enzyme linked receptor. (CO2, K3)

18. (a) How does Linkage differ from mendel's Law of Independent assortment? with neat sketches explain Lytological basis of crossing over. (CO3, K3)

Or

(b) Discuss about an incomplete and Codominance with a example. (CO3, K3)

19. (a) Briefly explain the Spontaneous and induced Chromosomal Variation. (CO4, K3)

Or

(b) Describe the coupling and Repulsion hypothesis

(CO4, K3)

20. (a) Describe the Role of biotechnology in Crop improvement. write short note on Polyploidy.

(CO5, K4)

Or

(b) Why hybridization is required in Plant breeding? Write down general technique for hybridization Program. (CO5, K4)

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R0250	Sub. Code
	525501

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Botany

Elective — ECONOMIC BOTANY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Botanical name of finger millet is (CO1, K1)

   (a) *Paspalum scorbiculatum*

   (b) *Poinsettum americanum*

   (c) *Eleucine coracana*

   (d) *Setaria italica*

2. Which one of the following crops are grown to increase soil fertility? (CO1, K1)

   (a) Black Gram (b) Rice

   (c) Cotton (d) Wheat

3. Tomato is rich in (CO2, K2)

   (a) Vitamin A (b) Vitamin B

   (c) Vitamin C (d) Vitamin D

4. Heterosis breeding is commonly used in the following crops? (CO2, K2)

(a) Tomato (b) Brinjal

(c) Chilli (d) Cucumber

5. The ———— is the source of rubber. (CO3, K3)

(a) *Hevea brasilensis* (b) *Rosa petals*

(c) *Hibiscus stamens* (d) *Crous style and stigma*

6. A fibre of greatest commercial importance is derived from epidermis of seeds or outside the seed coat is (CO3, K3)

(a) Flax (b) Cotton

(c) Hemp (d) Coir

7. Rose wood belongs to the family (CO4, K4)

(a) Leguminosae (b) Verbanaceae

(c) Cruciferae (d) Liliaceae

8. The plant with rich variety of timber is (CO4, K4)

(a) *Acacia arabica* (b) *Tectona grandis*

(c) *Morus alba* (d) *Cassia fistula*

9. The plant with great medicinal value is (CO5, K5)

(a) *Coffea robusta*

(b) *Cryptostegia grandiflora*

(c) *Rauwolfia serpentine*

(d) *Brassia oleraceae*

10. The flax fibre is obtained from (CO5, K5)

(a) *Cannabis sativa* (b) *Crotolaria juncea*

(c) *Cocos nucifera* (d) *Linum usitatissimum*

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss in detail about the Origin and History of cultivated plants. (CO1, K1)

Or

(b) Describe the World centers of primary diversity of domesticated plants. (CO1, K1)

12. (a) Briefly explain the origin and history of vegetables, leafy vegetables and fruits. (CO2, K2)

Or

(b) Give a detailed note on botanical description of potato, onion, brinjal and tomato. (CO2, K2)

13. (a) Write a detailed note on economic importance of Spices. (CO3, K3)

Or

(b) Give a botanical description of beverage plants are tea, coffee and cocoa. (CO3, K3)

14. (a) Discuss about the morphology and useful parts of cotton and jute. (CO4, K4)

Or

(b) Write about the economic importance of fiber. (CO4, K4)

15. (a) Describe the process of extraction of peanut and state its uses. (CO5, K5)

Or

(b) Briefly discuss about the medicinal importance of *Rauwolfia*. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Write a botanical description of rice, maize, sorghum and black grant. (CO1, K1)

Or

(b) Write an elaborate account on economic importance of cereals millets and Legumes. (CO1, K1)

17. (a) Explain botanical description and uses of Malabar spinach, grapes and Mango. (CO2, K2)

Or

(b) Give a detailed note on economic importance of Vegetables, leafy vegetables and fruits. (CO2, K2)

18. (a) Explain botanical description and uses of Ginger, Pepper, cardamom and Turmeric. (CO3, K3)

Or

(b) Write a botanical description and economic importance of Sugarcane and Cassava. (CO3, K3)

19. (a) Discuss in detail about economic importance of timber yielding plants Teak and Mahogany. (CO4, K4)

Or

(b) Write about the detailed note on Morphology of Coir, rosewood and Sal. (CO4, K4)

20. (a) Discuss the scientific name, family, parts used, extraction and uses of gingelly oil. (CO5, K5)

Or

(b) Describe the different methods of extraction of Essential oil. State the uses of Essential oil. (CO5, K5)

R0251	Sub. Code
	525301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Botany

EVOLUTION, ECOLOGY AND PHYTOGEOGRAPHY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. The earliest geological time period among the following is (CO1, K1)

   (a) Permian (b) Cambrian

   (c) Quaternary (d) Jurassic

2. Which condition can be explained by Lamarckism? (CO1, K1)

   (a) How giraffes got their long neck

   (b) How humans lost their tail

   (c) How humans became bipedal

   (d) All of the above

3. The natural place of an organism or community is known as (CO2, K1)

   (a) Habit (b) Habitat

   (c) Niche (d) Biome

4. Energy flow in ecosystem is (CO2, K1)

(a) Bidirectional (b) Unidirectional

(c) Multidirectional (d) None of the above

5. The pyramid of energy in any ecosystem is (CO3, K2)

(a) Always upright (b) May be upright or invented

(c) Always inverted (d) None of the above

6. Which is not the characteristic of a population? (CO3, K2)

(a) Mortality (b) Natality

(c) Sex ratio (d) Stratification

7. Which one is a 'K' selected species? (CO4, K3)

(a) *Aspergillus* (b) Human

(c) Grass (d) Taraxacum

8. Lincoln index measures (CO4, K3)

(a) Population mortality rate

(b) Population size

(c) Population natality

(d) Population density

9. How many phytogeographical regions are in India? (CO5, K2)

(a) Eight (b) Nine

(c) Ten (d) Eleven

10. What is phytogeography? (CO5, K2)

(a) Study of the structure of plants

(b) Study of the classification of plants

(c) Study of the geographic distribution of plants

(d) Study of the genetics of plants

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss about the types of evolution. (CO1, K1)

Or

(b) What is speciation? And its types and mechanism of speciation. CO1, K1)

12. (a) Discuss in detail about biotic and abiotic components. (CO2, K1)

Or

(b) What is energy flow? and explain ecological pyramids. (CO2, K1)

13. (a) Write a detailed note on positive interaction. (CO3, K2)

Or

(b) Classify the predator — prey relationship. (CO3, K2)

14. (a) Write a short note on forest types and dynamics of forest ecology. (CO4, K3)

Or

(b) Compare the structure and composition of forest ecology. (CO4, K3)

15. (a) Distinguish the major division and principles of phytogeography. (CO5, K2)

Or

(b) Give an elaborate account on phytogeographical regions of India. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Discuss in detail about geological time scale. (CO1, K1)

Or

(b) Write an elaborate account on theories of evolution. (CO1, K1)

17. (a) Write an essay on ecological succession. (CO2, K1)

Or

(b) Give a detailed note on niche concept, types and importance. (CO2, K1)

18. (a) Explain population regulation and life history strategies. (CO3, K2)

Or

(b) Write a detailed note on negative interaction. (CO3, K2)

19. (a) Discuss in detail about species richness and diversity. (CO4, K3)

Or

(b) Write about the detailed note on quantification of vegetation. (CO4, K3)

20. (a) Explain detailed note on theories of discontinuous distribution. (CO5, K2)

Or

(b) What is endemism? And its types. (CO5, K2)

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R0252	Sub. Code
	525302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Botany

PLANT MOLECULAR BIOLOGY, PLANT BIOTECHNOLOGY AND IPR

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the following objective questions by Choose the correct option

1. A plant cell contains DNA in (CO1, K3)

   (a) One organelle (b) Two organelles

   (c) Three organelles (d) Four organelles

2. PCR was invented by (CO1, K4)

   (a) Kary B. Mullis (b) F. Miescher

   (c) C. Darwin (d) J. D. Watson

3. Transfer DNA from a Ti plasmid is maintained in a transgenic plant as (CO2, K2)

   (a) An independent linear replicon

   (b) An independent circular replicon

   (c) Integrated DNA in the chromosome

   (d) Autonomously replicating DNA

4. What is the 'lacZ gene' function in plasmid cloning vectors? (CO2, K2)

(a) It allows bacteria to grow on a selection medium

(b) It allows identification of bacteria containing recombinant plasmid

(c) It allows the shuttling of vectors in two hosts

(d) It allows bacteria to grow at high temperatures

5. *Agrobacterium tumefaciens* is a (CO3, K2)

(a) Gram (+) bacteria

(b) Gram (–) bacteria

(c) A fungi

(d) A yeast

6. Which of the following is true about *Agrobacterium tumefaciens*? (CO3, K4)

(a) It causes crown gall disease in plants

(b) It infects gymnosperms

(c) It infects dicotyledonous angiosperms

(d) All of the above

7. Transgenic plants (CO4, K2)

(a) Contain foreign genes in their cells

(b) Used to produce human antibodies

(c) Both (a) and (b)

(d) Plants that differ in geographical locations

8. The first genetically modified plant was produced in 1982 (CO4, K5)

(a) Transgenic tobacco

(b) Transgenic maize

(c) Transgenic cotton

(d) Transgenic tomato

9. Intellectual Property Rights (IPRs) protects the use of information and ideas that are of (CO5, K2)

(a) Ethical value (b) Monetary value

(c) Social value (d) Commercial value

10. Intellectual Property Rights (IPRs) in India covers (CO5, K4)

(a) Patents (b) Copyrights

(c) Trademarks (d) All of the above

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each

11. (a) Distinguish the chloroplast DNA (cpDNA) and mitochondrial DNA (mtDNA). (CO1, K3)

Or

(b) Define molecular markets. Discuss their applications in biotechnology. (CO1, K4)

12. (a) Explain the types of tools used for genetic engineering. (CO2, K2)

Or

(b) Write a note on the structure and advantages of the PBR-322 vector. (CO2, K2)

13. (a) Describe the microprojectile bombardment method of gene transfer. (CO3, K2)

Or

(b) Examine the structure and advantages of Ti-Plasmid. (CO3, K4)

14. (a) Explain the general account of germplasm conservation. (CO4, K2)

Or

(b) Evaluate the benefits and risks of transgenic plants. (CO4, K5)

15. (a) Discuss the case studies on patent in Neem, "Turmeric, and Basmati. (CO5, K2)

Or

(b) Define the Geographical Indication and Trademarks. (CO5, K4)

Part C (5× 8 = 40)

Answer **all** the questions not more than 1000 words each

16. (a) Give a brief account of the genetic engineering of the plastid genome in higher plants. (CO1, K3)

Or

(b) Discuss in detail the expression of cloned genes. (CO1, K4)

17. (a) Give a detailed note on recombinant DNA technology and scope. (CO2, K2)

Or

(b) Write an essay on the principles and techniques of gene cloning. (CO2, K2)

18. (a) Write detailed notes on the agrobacterium-mediated transformation. (CO3, K2)

Or

(b) Briefly discuss enzymes used in genetic engineering. (CO3, K4)

19. (a) Give a comparative account of transgenic plants. (CO4, K2)

Or

(b) Enumerate the applications of plant biotechnology. (CO4, K5)

20. (a) What is IPR? Discuss the different types of IPR and patenting methods. (CO5, K2)

Or

(b) Write a role of plant breeders rights and farmers rights in agriculture. (CO5, K4)

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R0253	Sub. Code
	525303

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Botany

PLANT TISSUE CULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Plant tissue culture is technique of (CO1, K1)

   (a) Invivo growing cells

   (b) Invitro maintaining and growing cells

   (c) Growing plants in a green house

   (d) Cutting plants

2. Tissue culture technique was first practised by? (CO1, K1)

   (a) White (b) Haberlandt

   (c) Halperin (d) Skoog

3. Which of following is the Ist trangenic crop (CO2, K1)

   (a) Flax (b) Tabacco

   (c) Plastic (d) Cotton

4. What is dimethyl sulfoxide used for ? (CO2, K1)

(a) Gelling agent (b) Cryoprotectant

(c) Chelating agent (d) An Alkylating agent

5. The formation of embryoids from the pollen grains in the tissue culture medium is due to (CO3, K2)

(a) Organogenesis

(b) Test tube culture

(c) Double Fertilization

(d) Cellular totipotency

6. Synthetic seeds are produced by the encapsulation of somatic embryos with _____. (CO3, K2)

(a) Sodium acetate (b) Sodium nitrate

(c) Sodium chloride (d) Sodium alginate

7. Which of the following chemicals are most widely used for protoplast fusion _____. (CO4, K2)

(a) Mannitol

(b) Polyethylene glycol

(c) Sorbitol

(d) Mannol

8. In tissue culture of Parenchyma, mitosis is accelerated in the presence of _____. (CO4, K3)

(a) Auxin (b) Cytokinin

(c) Gibberllin (d) Both auxin and cytokinin

9. In which of the following conditions do the somaclonal variations appear? (CO5, K2)

(a) Plants raised in tissue culture

(b) Plant exposed to gamma rays

(c) Plants growing in polluted soil or water

(d) Plants transferred by a recombinant DNA technology

10. Haploid plants can be obtained from _____.

(CO5, K2)

(a) Anther culture (b) Bud culture

(c) Leaf culture (d) Root culture

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words.

11. (a) Define plant tissue culture and point out lab maintenance procedure. (CO1, K2)

Or

(b) Explain the working principle of autoclave and Laminar air flow. (CO1, K2)

12. (a) Give an short notes on different type of medium culture. (CO2, K3)

Or

(b) What are they factors affecting secondary metabolites product? (CO2, K3)

13. (a) What is propagation and its types? Explain. (CO3, K3)

Or

(b) Briefly explain the somoclonal and gametoclonal variations. (CO3, K3)

14. (a) What are the steps involved in artificial seed production? (CO4, K3)

Or

(b) Briefly explain steps involved in protoplast purification. (CO4, K3)

15. (a) Explain the factor affecting androgenesis. (CO5, K3)

Or

(b) What are steps involved in germ plasm storage? (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words.

16. (a) Briefly explain the sterilization techniques any two. Justify. (CO1, K4)

Or

(b) Explain types of Microscopes and its application. (CO1, K3)

17. (a) What is totipotency? Give the detail about types of totipotency. (CO2, K3)

Or

(b) What is secondary metabolites in plants and explain method of production. (CO2, K2)

18. (a) What is the different between micropropagation of medicinal plants and tree? (CO3, K3)

Or

(b) What are technique involved in somaclonal isolation? (CO3, K3)

19. (a) Discuss about somatic embryogenesis, types and applications. (CO4, K3)

Or

(b) Define protoplast fusion and its method. (CO4, K3)

20. (a) Briefly explain the factors of gynogenesis and uses. (CO5, K3)

Or

(b) What are the technique involved in cryopreservation. (CO5, K2)

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R0254	Sub. Code
	525304

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Botany

RESEARCH METHODOLOGY, BIOTECHNIQUES AND BIOSTATISTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Research journals with a high ———————— are commonly considered to more important than those with lower ones. (CO1, K1)

   (a) Eigen factor (b) h-index

   (c) Impact factor (d) i 10 score

2. The researchers sometime use the abbreviation 'fn' which implies (CO1, K1)

   (a) Figure number (b) Following number

   (c) Final note (d) Foot note

3. Which one of the following is a graphical representation of data? (CO2, K2)

   (a) Multiple Bar Chart

   (b) Pie Chart

   (c) Pictogram

   (d) Histogram

4. Ampholytes are used in (CO2, K2)

(a) Agarose gels (b) Polyacrylamide gels

(c) Isoelectro focusing (d) SDS gels

5. Match the following (CO3, K3)

(a)	Frequency distribution	(i)	Published data
(b)	Secondary data	(ii)	Frequency distribution of data
(c)	Primary data	(iii)	Pictorial representation of data
(d)	Graph	(iv)	Questionnaire

6. Which one of the following is measure of dispersion? (CO3, K3)

(a) Mean (b) Range

(c) Mode (d) Median

7. Hypothesis, that is alternative to null hypothesis is represented as (CO4, K5)

(a) Ho (b) H_1

(c) H_{alt} (d) $H \neq_0$

8. TEM uses ———— to focus on the specimen to produce are image. (CO4, K4)

(a) Beam of proton (b) Beam of neutrons

(c) Light rays (d) Beam of electron

9. In gas-liquid phase chromatography the stationary phase is composed of ———— and the mobile phase is made of ————. (CO5, K5)

(a) Solid, Liquid (b) Liquid, Liquid

(c) Liquid, Gas (d) Solid, Gas

10. Micro probe analyser cannot be used on in homogenous material. (CO5, K4)

(a) True (b) False

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Explain the experimental design of research work. (CO1, K1)

Or

(b) Outline the various steps of applied research. (CO1, K1)

12. (a) Generate the interpretation of data and paper writing. (CO2, K2)

Or

(b) Operate the ethical issues of related to plagiarism. (CO2, K2)

13. (a) Examine the principle and application of SEM. (CO3, K3)

Or

(b) Examine the principle of TEM. (CO3, K3)

14. (a) Simplify the principles of application of HPLC. (CO4, K4)

Or

(b) Summarize the application of SDS-PAGE. (CO4, K4)

15. (a) Determine the mean, medium and mode of dispersion. (CO5, K5)

Or

(b) Assess the research data to analyze the standard deviation. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Distinguish the web source for thesis and paper writing. (CO1, K1)

Or

(b) Express the steps and methods of research process. (CO1, K1)

17. (a) Categorize the Journals of biological science. (CO2, K2)

Or

(b) Distinguish the impact factor of Journals. (CO2, K2)

18. (a) Simplify the structure and application of centrifugation. (CO3, K3)

Or

(b) Generate the techniques and application of UV spectroscopy. (CO3, K3)

19. (a) Outline of the principal and mechanism of two dimensional (2D) gel electrophoresis. (CO4, K4)

Or

(b) Summarize the southern blotting and northern blotting techniques. (CO4, K4)

20. (a) Choose the interpretation of research data to analysis of chi-square test. (CO5, K5)

Or

(b) Explain the analysis of variance. (CO5, K5)

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R0255	Sub. Code
	525505

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Botany

Elective — BIODIVERSITY CONSERVATION

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. What is an important reason for natural resource conservation? (CO1, K1)

   (a) Disturb the ecological balance

   (b) Preserve the biological diversity

   (c) Disruption of the quality of the environment

   (d) Hampering the biological species

2. Alpha diversity is present (CO1, K2)

   (a) Within community

   (b) Outside community

   (c) In ranges of communities

   (d) All of the above

3. What is the conservation within the natural habitat known as? (CO2, K2)

(a) In-situ conservation

(b) Ex-situ conservation

(c) Ex-vivo conservation

(d) In-vivo conservation

4. An ex-situ conservation method for endangered species is (CO2, K4)

(a) Wildlife Sanctuaries

(b) Cryopreservation

(c) National Parks

(d) Biosphere reserves

5. What is the correct abbreviation for IUCN? (CO3, K2)

(a) International Union for Conservation of Nation

(b) International Union for Conservation of Nature

(c) International Union for Conservation of Natural Habitats

(d) All of the above

6. Which one of the following regions is regarded as an ecological hotspot in India? (CO3, K4)

(a) Sunderbans

(b) The Thar desart

(c) The Eastern Ghats

(d) None

7. Where was the first International Earth Summit held? (CO4, K2)

(a) Kyoto

(b) Rio de Janeiro

(c) New Delhi

(d) New York

8. The Secretariat of the Convention on Biodiversity (CBD) is based in (CO4, K2)

(a) Montreal, Canada

(b) Rio de Janeiro, Brazil

(c) Geneva, Switzerland

(d) New York, United States

9. The term ethnobotany was first coined by (CO5, K2)

(a) Sir Alexander Fleming

(b) John W. Harshberger

(c) C. J. Alexopolous

(d) J. W. Webster

10. "Jeevani" was made by using ethnobotanical lead from the tribe (CO5, K3)

(a) Kani

(b) Kurumar

(c) Naikkan

(d) Vellan

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) What is biodiversity and its significance? (CO1, K1)

Or

(b) Define the importance of sustaining ecosystems in biodiversity conservation. (CO1, K2)

12. (a) Write notes on tissue culture for conservation. (CO2, K2)

Or

(b) Write a note on the germplasm/gene bank. (CO2, K4)

13. (a) Describe the plant genetic resources. (CO3, K2)

Or

(b) Define the biodiversity of Hot Spots. (CO3, K4)

14. (a) Discuss the general account of the Indian Forest Act. (CO4, K2)

Or

(b) Enumerate the role of WWF. (CO4, K2)

15. (a) Write a short note on ethano botany. (CO5, K2)

Or

(b) Define the ethnomedicine. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1,000 words each.

16. (a) Give a brief account of the levels and types of biodiversity. (CO1, K1)

Or

(b) Discuss in detail the values of biodiversity. (CO1, K2)

17. (a) Give a detailed note on In situ conservation. (CO1, K2)

Or

(b) Write an essay on the Ex situ conservation. (CO1, K4)

18. (a) Write detailed notes on endangered and threatened plants in India. (CO1, K2)

Or

(b) Briefly discuss IUCN threat categories. (CO1, K4)

19. (a) Enumerate the Rio Earth Summit. (CO1, K2)

Or

(b) Give a comparative account of the India Biodiversity Act (2004). (CO1, K2)

20. (a) Explain the ethnic communities of Tamil Nadu and their distribution. (CO1, K2)

Or

(b) Write a role of traditional knowledge and therapeutic uses of ethnomedicine. (CO1, K3)

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