R1979

Sub. Code
525101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 type questions by choosing the correct option.

1. The cap cells are found in (CO1, K1)

   (a) Spirogyra (b) Vaucheria

   (c) Chara (d) Oedogonium

2. Incipient nucleus is present in (CO1, K1)

   (a) Chlorophyceae (b) Charophyceae

   (c) Cyanophyceae (d) Bacillariophyceae

3. Agar agar is obtained from (CO2, K2)

   (a) *Gelidium* (b) *Polysiphonia*

   (c) *Chlorella* (d) *Ulva*

4. Unicellular and colonial forms are absent in the class (CO2, K2)

   (a) Chlorophyceae (b) Phaeophyceae

   (c) Cyanophyceae (d) Bacillariophyceae

5. The fungi which derive their food from dead organic matter are known as (CO3, K2)

(a) Parasitic fungi (b) Mutualists

(c) Predators (d) Decomposers

6. Amanita mushroom is an example for (CO3, K2)

(a) Poisonous mushroom

(b) Edible mushroom

(c) Pathogenic mushroom

(d) Oyster mushroom

7. Lichens are a symbiotic relationship between a fungi (CO4, K3)

(a) Cyanobacteria (b) bacteria

(c) red algae (d) brown algae

8. Majority of the lichens are pollution indicators of (CO4, K3)

(a) CO (b) Mercury

(c) No2 (d) SO2

9. Which among the following is also known as bog moss (CO5, K4)

(a) Riccia (b) Sphagnum

(c) Marchantia (d) Funaria

10. Annulus of mass capsule separates (CO5, K4)

(a) Operculum and columella

(b) Theca from Operculum

(c) Theca from columella

(d) None of the above

Part B (5 × 5 = 25)

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

11. (a) Outline the classification of algae by Fritch. (CO1, K1)

Or

(b) Summarise the algal distribution. (CO1, K1)

12. (a) List out the distinguishing character of charophyta. (CO2, K1)

Or

(b) Write the distinguishing features of the Bacillariophycophyta thallus. (CO2, K1)

13. (a) Outline the mode of nutrition of fungi. (CO3, K2)

Or

(b) Summarise the general character of zygomycotina. (CO3, K2)

14. (a) Classify lichens based on their habit. (CO4, K3)

Or

(b) Compare homomerous lichen and heteromerous lichen. (CO4, K3)

15. (a) Explain the structural organization of Jungermaniales. (CO5, K4)

Or

(b) Justify the truth or falsity of the statement "Gemmae of bryophytes are reproductive structure but not play a role in alternation of generation". (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Give an outline of origin and evolution of sex in algae. (CO1, K1)

Or

(b) Explain the range of thallus organization in chlorophyta. (CO1, K1)

17. (a) Describe the life cycle of brown algae and compare it with red algae. (CO2, K1)

Or

(b) Write the distinguish characters of Cyanophyta. (CO2, K1)

18. (a) Explain the life cycle of Basidiomycotina. (CO3, K2)

Or

(b) Summarise the importance of fungi in industries. (CO3, K2)

19. (a) Write the distinguishing character of Lichens. (CO4, K3)

Or

(b) Summarise the economic importance of lichnes. (CO4, K3)

20. (a) Compare the gametophyte of polytricales and funariales. (CO5, K4)

Or

(b) Explain the origin and Interrelationship of fossil bryophytes. (CO5, K4)

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R1980

Sub. Code
525102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 answer questions.

1. Three chambered sporangium present in (CO1, K1)
   (a) Pteris (b) Selaginella
   (c) Psilotum (d) Lycopodiun
2. In Pteridophytes the dominant generaction is (CO1, K1)
   (a) Gametophytic (b) Haploid
   (c) Diploid (d) Triploid
3. Which of the following is deemed to be vital in the development of Seed habit (CO2, K2)
   (a) Heterospory
   (b) Dependent sporophyte
   (c) Free living gametophyte
   (d) Haplontic life cycle
4. Spores of Pteridophytes are (CO2, K2)
   (a) Haploid (b) Diploid
   (c) Triploid (d) Tetraploid

5. This serves as a connecting link between the gymnosperm and Angiosperm (CO3, K2)

(a) Gnetales (b) Cycadales

(c) Coniferales (d) Gingoales

6. Tallest known gymnosperm is (CO3, K2)

(a) Pinus (b) Ginkgo

(c) Sequoia (d) Ephedra

7. In gymnosperms the ovule typically (CO4, K3)

(a) Bitegmic and anatropous

(b) Bitegmic and orthotropous

(c) Unitegmic and orthotropous

(d) Unitegmic orthotropous

8. Though Cycas has an embryo with two cotyledons it is not grouped under dicotyledons (CO4, K3)

(a) Ovules are naked

(b) Possesses compound leaves

(c) Has megasporophyll

(d) Resembles palm tree

9. Radiocarbon dating can estimate the age of biological specimens up to (CO5, K4)

(a) 50000 years old (b) 150000 years old

(c) 500000 years old (d) 100000 years old

10. Late Palaeozoic era is considered to be the age of (CO5, K4)

(a) Pteridophytes (b) Bryophytes

(c) Conifers (d) Fishes

Part B (5 × 5 = 25)

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

11. (a) Classify the pteridophytic plants up to order level (CO1, K1)

Or

(b) Categorize the morphology and anatomy of Psilophytes (CO1, K1)

12. (a) Summarize the economic importance pteridophytes (CO2, K1)

Or

(b) Compare apogamy with Apospory (CO2, K1)

13. (a) Write the distinguishing character of Gnetales (CO3, K2)

Or

(b) Compare the wood anatomy of cycads and Coniferales (CO3, K2)

14. (a) Illustrate the ovule of Ephedra. (CO4, K3)

Or

(b) Explain the structure of Welwitschia (CO4, K3)

15. (a) Explain the role of fossil in oil exploration. (CO5, K4)

Or

(b) How do you assess the age of fossils? (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Write the distinguishing character of Sphenophytes (CO1, K1)

Or

(b) Compare the reproductive structure of Lycophytes (CO1, K1)

17. (a) Give an Illustrate account on Stelar evolution in pterodophytes (CO2, K1)

Or

(b) Explain the Telome concept. (CO2, K1)

18. (a) Write the classification of Gymnosperm by Sporne. (CO3, K2)

Or

(b) Explain the anatomical character of Pine needle. (CO3, K2)

19. (a) Summarize the economic importance of gymnosperms. (CO4, K3)

Or

(b) Explain the structure of ovule of Gnetum. and Compare it with the Cycas (CO4, K3)

20. (a) Geological time scale plays an important role in the History and evolution of biology. Justify. (CO5, K4)

Or

(b) Access the different ways that an organisms can turn into fossils. (CO5, K4)

R1981

Sub. Code
525103

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 type questions by choosing the correct option

1. According to Bergey's Manual of Systematic Bacteriology, prokaryotes that lack a cell wall belong to be group? (CO1, K1)

   (a) Gracilicutes (b) Firmicutes

   (c) Tenericutes (d) Mendosicutes

2. In bacteria, sporulation takes place in this growth phase (CO1, K1)

   (a) Phase of decline (b) Log phase

   (c) Lag phase (d) Stationary phase

3. Which of the following is a helical virus? (CO2, K2)

   (a) TMV (b) T4 phage

   (c) Poxvirus (d) Herpes virus

4. ———————— is a having partial with no detachable nucleic acid (CO2, K2)

   (a) Proteins (b) Viroid

   (c) Prions (d) Virion

5. In *Penicillium chrsogenum*, the maximum antibiotic production occurs during the ————————. (CO3, K3)

(a) Second phase (b) First phase

(c) Third phase (d) All the phase

6. Methylene Blue Reduction Test (MBRT) is conducted to know the efficacy of (CO3, K3)

(a) Toned milk (b) Skimmed milk

(c) Double toned milk (d) Pasteurized milk

7. Who of the following is not true regarding Chlorosis? (CO4, K4)

(a) Yellowing of leaves

(b) Death of plant tissues

(c) Non-formation of chlorophyll

(d) Destruction of chlorophyll

8. Quarantine regulations are enforced by ————————. (CO4, K4)

(a) A country

(b) A state

(c) A state or country through legislation

(d) None of any option

9. Red rot sugarcane is caused by (CO5, K5)

(a) Frusarium (b) Alternaria

(c) Dreschlera (d) Collectotrichum

10. Which of the given diseases is related to Groundnut ? (CO5, K5)

(a) Tikka (b) Phomopsis blight

(c) Leaf rust (d) Alternaria blight

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

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

11. (a) Discuss about microbial growth curve (CO1, K1)

Or

(b) List out the economic importance of bacteria (CO1, K1)

12. (a) Outline the classification of virus (CO2, K2)

Or

(b) Comment on prions and viroids (CO2, K2)

13. (a) Explain the role of metal recovery by microorganisms (CO3, K3)

Or

(b) Discuss the steps involved in sewage treatment (CO3, K3)

14. (a) Illustrate the defence mechanism by plants against pathogen (CO4, K4)

Or

(b) Write short note on the following (CO4, K4)

(i) Trade-Related Investment Measures(TRIMS)

(ii) Agreement on Sanitary and Phyto-sanitary measures (SPM)

15. (a) Briefly explain about host-pathogen interaction (CO5, K5)

Or

(b) Comment on mycoplasma and phytoplasma (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Write an essay the classification of bacteria (CO1, K1)

Or

(b) What is sterilization? and explain the chemical methods of sterilization (CO1, K1)

17. (a) Discuss the structure and life cycle patterns of TMV virus (CO2, K2)

Or

(b) Explain in detail about lytic and lysogenic cycle of viral replication (CO2, K2)

18. (a) Elaborate in detail about the role of microbes in ethanol production (CO3, K3)

Or

(b) What is SCP? Explain the steps involved in the production of SCP (CO3, K3)

19. (a) Describe in detail about the classification of plant disease (CO4, K4)

Or

(b) Write an essay on the symptoms and control measures of plant disease (CO4, K4)

20. (a) Explain in detail about the symptoms, causal organism and control measures of tikka disease of groundnut (CO5, K5)

Or

(b) Discuss in detail about the symptoms, causal organism and control measure of red rot disease of sugar cane (CO5, K5)

R1982

Sub. Code
525104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Botany

CELL BIOLOGY, GENETICS AND PLANT BREEDING

(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. Which of the following organelle is called the "suicidal bags" of the cell? (CO1, K1)

   (a) Cytoplasm (b) Lysosomes

   (c) Mitochondria (d) Endoplasmic reticulum

2. This is the site where detoxification of xenobiotic compounds occurs (CO1, K1)

   (a) Rough endoplasmic reticulum

   (b) Ribosomes

   (c) Cytosol

   (d) Smooth endoplasmic reticulum

3. Which of the following G-protein takes part in the regulation of vision? (CO2, K2)

   (a) Golf (b) Gi family

   (c) Gs family (d) Gq family

4. This is an active cell death process (CO2, K2)

   (a) Necrosis (b) Lysis

   (c) Apoptosis (d) Senescence

5. Mendel took ———————— contrasting characteristics of pea plants. (CO3, K3)

(a) Eight (b) Seven

(c) Six (d) Five

6. Colour blindness is an ———————— linked recessive trait (CO3, K3)

(a) Z chromosome (b) Y chromosome

(c) X chromosome (d) X and Y chromosome

7. Crossing over takes place in the (CO4, K4)

(a) Diakinesis stage (b) Anaphase stage

(c) Pachytene stage (d) Leptotene stage

8. Polyploidy can be produced by ————————. (CO4, K4)

(a) X Rays (b) Colchicines

(c) Gamma Rays (d) Beta Rays

9. Mass selection is more commonly used in (CO5, K5)

(a) Self-pollinated crops

(b) Cross-pollinated crops

(c) Vegetatively propagated crop

(d) Seed propagation crops

10. Heterosis is desirable in vegetatively propagated plants because (CO5, K5)

(a) Heterosis is maintained for a longer duration

(b) These plants are easy to cultivate

(c) Vegetative reproduction hepls to multiply fast

(d) It is due to homozygosity

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

Answer **ALL** the questions not more than 500 words

11. (a) Explain the structure and function of ribosomes (CO1, K1)

Or

(b) Comment on the role of peroxisomes (CO1, K1)

12. (a) Outline the structure and function of G-protein receptors (CO2, K2)

Or

(b) Explain about the stages of cell cycle (CO2, K2)

13. (a) What are complementary genes? Explain. (CO3, K3)

Or

(b) Write short notes on incomplete dominance and codominance inheritance (CO3, K3)

14. (a) Differentiate between linkage and crossing over (CO4, K4)

Or

(b) Explain about various types of mutations (CO4, K4)

15. (a) Discuss about how pure line selection is better method for crop improvement? (CO5, K5)

Or

(b) Comment on heterosis and inbreeding depression (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Illustrate the structure and function of mitochondria (CO1, K1)

Or

(b) Discuss about the types of plastids and their functions in plants cell (CO1, K1)

17. (a) What is giant chromosome? Explain its types (CO2, K2)

Or

(b) Explain the pathways regulate apoptosis (CO2, K2)

18. (a) What is epistasis? Explain various types of epistasis (CO3, K3)

Or

(b) Write an essay on Mendel laws with an example (CO3, K3)

19. (a) What is crossing over? Explain the mechanism and its significance (CO4, K4)

Or

(b) Write an essay on the structural changes in chromosomes (CO4, K4)

20. (a) Discuss in detail about various plant breeding methods (CO5, K5)

Or

(b) What Is Polyploidy? Explain its types with an example (CO5, K5)

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R1983

Sub. Code
525501

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

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 type questions by choosing the correct option.

1. Name of maize protein is (CO1, K1)

   (a) Zein (b) Lectin

   (c) Zea (d) Lysine

2. Black gram belongs to _____ family. (CO1, K1)

   (a) Poaceae (b) Malvaceae

   (c) Leguminosae (d) Bignoniaceae

3. Which one of the following plants is called "Egg plant"? (CO2, K2)

   (a) Tomato (b) Onion

   (c) Potato (d) Brinjal

4. Which one of the following plant is called *Artocarpus heterophyllus*? (CO2, K2)

   (a) Grapes (b) Jackfruit

   (c) Mango (d) Citrus

5. "Cardamom" belongs to _____ family. (CO3, K3)

(a) Malvaceae (b) Cucurbitaceae

(c) Zingiperaceae (d) Poaceae

6. The binomial name of cassava is (CO3, K3)

(a) *Manihot esculents*

(b) *Saccharum officinarum*

(c) *Capsicum frutescens*

(d) *Curcuma longa*

7. Binomial name of Indian Rosewood (CO4, K4)

(a) *Dalbergia latifolia* (b) *Guibourtia goleosperma*

(c) *Shorea robusta* (d) *Tectona grandis*

8. "Coir" obtained from (CO4, K4)

(a) *Swietenia mahogany*

(b) *Gossypium hirsutum*

(c) *Corchorus aestuans*

(d) *Cocos nucifera*

9. Scientific name of "Guduchi" (CO5, K4)

(a) *Tinospora cordifolia*

(b) *Asparagus racemosus*

(c) *Commiphora wightii*

(d) *Rauvolfia serpentina*

10. The extract of gum guggul collected from (CO5, K4)

(a) *Swietenia mahogany*

(b) *Tinospora cordifolia*

(c) *Gossypium arboretum*

(d) *Commiphora wightii*

Part B (5 × 5 = 25)

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

11. (a) Explain the botanical description and uses of Maize. (CO1, K1)

Or

(b) Write note on economic values of Rice. (CO1, K1)

12. (a) Write note on economic importance of Potato. (CO2, K2)

Or

(b) Explain about origin and economic importance of Tomato. (CO2, K2)

13. (a) Explain the botanical description and uses of Turmeric. (CO3, K3)

Or

(b) Briefly explain about uses of Ginger. (CO3, K3)

14. (a) State the morphology, extraction and uses of Cotton. (CO4, K4)

Or

(b) Explain the process of retting and uses of Jute. (CO4, K4)

15. (a) Explain the uses of Rauvolfia. (CO5, K4)

Or

(b) Write the botanical description and uses of Sathavari. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Describe the uses of Millets. (CO1, K1)

Or

(b) Write an essay on botanical description and uses of Black gram (CO1, K1)

17. (a) Discuss the economic importance of Banana and Mango. (CO2, K2)

Or

(b) Describe about origin, botanical description and economic importance of Malabar Spinach. (CO2, K2)

18. (a) Describe the cultivation methods and uses of Coffee. (CO3, K3)

Or

(b) Discuss the cultivation methods and uses of Sugarcane. (CO3, K3)

19. (a) Describe the morphology, useful part and uses of Teak. (CO4, K4)

Or

(b) Discuss the morphology and uses of Sal and Mahogany. (CO4 K4)

20. (a) Discuss the botanical description and uses of Coconut. (CO5, K4)

Or

(b) Describe the extraction methods and uses of Peanut. (CO5, K4)

R1984

Sub. Code
525301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

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 idea of use and disuse of organs was given by (CO1, K1)
   (a) Lamarck (b) Morgan
   (c) Darwin (d) Hugo de Vries

2. The earliest geological time period among the following is (CO1, K1)
   (a) Permian (b) Jurassic
   (c) Quaternary (d) Cambrian

3. Which of the following is known as an edaphic abiotic factor? (CO2, K2)
   (a) Light (b) Soil
   (c) Air (d) Water

4. Lithosphere serves as a reservoir for (CO2, K2)
   (a) Nitrogen cycle (b) Carbon cycle
   (c) Oxygen cycle (d) Phosphorus cycle

5. The predator-prey relationship is based primarily on the quest for (CO3, K3)

(a) Space (b) Symbiosis

(c) Energy (d) Help

6. The Kills/hunts the other for energy : (CO3, K3)

(a) Predator (b) Prey

(c) Apex Species (d) Herbivore

7. Study of a single species and the environmental factors in its habitat is called (CO4, K4)

(a) Genecology (b) Synecology

(c) Autecology (d) Ethology

8. Forest is found in the area where it rains throughout the year. (CO4, K4)

(a) Evergreen (b) Deciduous

(c) Thorny (d) Mangroves

9. The animals found in a particular region are known as (CO5, K4)

(a) Endemic species (b) Endangered species

(c) Flora (d) Fauna

10. Endemism is (CO5, K4)

(a) Species is confined to particular region and not confined to somewhere else

(b) Species is found more in particular region and confined to somewhere else

(c) Species is found more in particular regions and cosmopolitan in occurrence

(d) Both (a) and (c)

Part B (5 × 5 = 25)

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

11. (a) Classify about Geological time scale. (CO1, K1)

Or

(b) Explain about types of speciation. (CO1, K1)

12. (a) Distinguish between Food chain and food web. (CO2, K2)

Or

(b) Explain the primary and secondary production in ecosystems. (CO2, K2)

13. (a) Write the basic concepts in population biology. (CO3, K3)

Or

(b) Compare the relation between pre and predator populations. (CO3, K3)

14. (a) Difference between Autecology and synecology. (CO4, K4)

Or

(b) Give an account on pollution ecology. CO4, K4)

15. (a) Briefly explain about continental drift. (CO5, K4)

Or

(b) Write note on theory of island biogeography. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Write an essay on Neo-Darwinism. (CO1, K1)

Or

(b) Difference between Darwin and Lamarck theory of Evolution. (CO1, K1)

17. (a) Given an account on ecological succession. (CO2, K2)

Or

(b) Distinguish between biotic and abiotic components of ecosystem. (CO2, K2)

18. (a) Discuss the role of population regulation in life history evolution. (CO3, K3)

Or

(b) Compare the various types of positive and negative interaction between species. (CO3, K3)

19. (a) Describe the different types of forest in India. (CO4, K4)

Or

(b) Discuss human impacts in forest ecology. (CO4, K4)

20. (a) Write an essay on phytogeographical region of India. (CO5, K4)

Or

(b) Describe about endemism and its types. (CO5, K4)

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R1985	Sub. Code
	525302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Botany

PLANT MOLECULAR BIOLOGY, PLANT BIOTECHNOLOGY AND IPR

(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 true about Nucleotides? (CO1, K1)

   (a) Energy rich Molecules

   (b) Ubiquitous substances

   (c) Monomeric Units

   (d) Non enzymatic Molecules

2. What is the size of Human mitochondrial DNA? (CO1, K2)

   (a) 200-2,500 kb

   (b) 100- 500 kb

   (c) 100-1,000 kb

   (d) 500-1,000 kb

3. During DNA cloning which of the following is not a crucial requirement? (CO2, K2)

(a) Vector

(b) Restriction Enzymes

(c) Protein expression

(d) DNA Inserts

4. Enzymes that remove nucleotides one at time from the end of DNA molecules called (CO2, K2)

(a) Ligases (b) Exonucleases

(c) Endonucleases (d) Modifying enzymes

5. Which of the Plant growth regulators are produced by TDNA? (CO3, K1)

(a) Cytokinin and Auxin

(b) Cytokinin and Gibberllins

(c) Jasmonic Acid

(d) Salicylic acid

6. A gene whose expression helps to identify transformed cells is known as (CO3, K2)

(a) Plasmid (b) Selectable marker

(c) Structural gene (d) Vector

7. *Bacillus thuringiensis* is used for the production of toxins which can be used as ———————— (CO4, K3)

(a) Pesticides (b) Insecticides

(c) Germicides (d) Fungicides

8. Name the first transgenic virus resistant plant (CO4, K2)

(a) Rice (b) Cotton

(c) Tobacco (d) Tomato

9. Copy rights protect ———————— (CO5, K2)

(a) An idea with an expression

(b) Expression

(c) Idea

(d) None of the above

10. Which of the following is not essential element for patent? (CO5, K2)

(a) Novelty (b) Utility

(c) Fixation (d) Obviousness

Part B (5 × 5 = 25)

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

11. (a) Explain about Mitochondrial genome. (CO1, K2)

Or

(b) Illustrate the application of DNA Markers. (CO1, K4)

12. (a) Short note on DNA modifying enzymes. (CO2, K1)

Or

(b) Brief note on Yeast vector. (CO2, K2)

13. (a) Enumerate the Application of Transposons. (CO3, K2)

Or

(b) Explain the Role of Reverse transcriptase in Genetic Engineering. (CO3, K4)

14. (a) How to produce Virus resistance plant? (CO4, K5)

Or

(b) Application of Germplasm Conservation. (CO4, K5)

15. (a) Interpret the Patenting of Higher plants. (CO5, K1)

Or

(b) Describe the Case study of Basmati. (CO5, K2)

Part C ($5 \times 8 = 40$)

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

16. (a) Explain the Chloroplast transformation. (CO1, K1)

Or

(b) Describe the DNA sequencing Method. (CO1, K2)

17. (a) Explain the Nomenclature and characteristics Restriction enzymes. (CO2, K2)

Or

(b) Describe the Construction of cDNA Libraries. (CO2, K3)

18. (a) Summarize the Mechanism of Agrobacterium mediated gene transfer. (CO3, K4)

Or

(b) Describe the Role of T_4 kinase and Terminal transferase. (CO3, K3)

19. (a) Write essay on Bt Cotton. (CO4, K2)

Or

(b) Describe the of Fungal resistant plants. (CO4, K2)

20. (a) Write an essay on Patenting Methods. (CO5, K1)

Or

(b) Write an essay on Social and ethical considerations of Patent Rights. (CO5, K2)

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R1986

Sub. Code
525303

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

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. The ability of the plant cell to develop into an entire organism is called (CO1, K1)

   (a) Sterilization (b) Totipotency

   (c) Inoculation (d) Incubation

2. Name the chemical sterilant used for the sterilization of plant material in plant tissue culture (CO1, K1)

   (a) Sodium chloride

   (b) Calcium chloride

   (c) Mercuric chloride

   (d) Sodium alginate

3. Haploid plants are produced through (CO2, K2)

   (a) Embryo culture

   (b) Somatic embryogenesis

   (c) Anther culture

   (d) Micropropagation

4. Cryopreservation technique is used to preserve substances in liquid nitrogen at temperature (CO2, K2)

(a) -196°C (b) -70°C

(c) -80°C (d) -100°C

5. A research team commercially produce disease free plants through tissue culture and used to give them to farmer at a feasible cost. Find the name of the explant from the following she used to produce pathogen free plants (CO3, K3)

(a) Leaves (b) Meristems

(c) Petioles (d) Internodes

6. A plant tissue culturist is regularly used to prepare culture medium for plant regeneration from callus. For sterilization of culture medium, he used a big cooker like instrument. Find the name of the instrument from the following (CO3, K3)

(a) Hot air oven (b) pH meter

(c) Balance (d) Autoclave

7. A research team is evaluating the effectiveness of synthetic seeds for the conservation of a rare plant species. Which of the following criteria would be most important in determining the success of synthetic seed technology for this purpose? (CO4, K4)

(a) The ability to produce synthetic seeds at a low cost.

(b) The uniformity of synthetic seed germination under controlled conditions

(c) The long-term viability and genetic stability of plants regenerated from synthetic seeds after storage

(d) The simplicity of the encapsulation process in synthetic seed production

8. A horticulturalist wants to produce hybrid varieties of fruits in his field. For that, he selects two different plant species and isolate protoplast of each species and fuse together with the help of a chemical. Find the name of the chemical that induce fusion of protoplast from the following (CO4, K4)

(a) Alginate

(b) Calcium chloride

(c) Polyethylene glycol

(d) Agar-agar

9. When assessing the vigor and productivity of a cell suspension culture, what parameter would be most critical to analyze to determine cell viability and overall culture performance? (CO5, K4)

(a) The color of the culture medium

(b) The cell density and growth rate

(c) The type of culture vessel used

(d) The frequency of media changes

10. When comparing different strains of *Agrobacterium rhizogenes* for hairy root induction, which factor would be most relevant in evaluating the potential for successful genetic transformation and root development? (CO5, K4)

(a) The growth temperature of the Agrobacterium strains

(b) The plasmid size used for transformation

(c) The level of root hair development and integration efficiency of the T-DNA

(d) The pH of the culture medium

Part B (5 × 5 = 25)

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

11. (a) Give an account on sterilization techniques in plant tissue culture. (CO1, K1)

Or

(b) Write short notes on plant growth regulators. (CO1, K1)

12. (a) Describe the uses of haploid in plant breeding. (CO2, K2)

Or

(b) Explain the green pod culture of orchids. (CO2, K2)

13. (a) Analyze the factors influencing organogenesis in plant tissue culture, such as the type of explant, hormonal balance and culture conditions. How do these factors interact to determine the efficiency and direction of organ formation? (CO3, K3)

Or

(b) Design a screening method that integrates both phenotypic and genotypic analyses to identify and isolate somaclonal variants with enhanced drought resistance in a tissue culture system. (CO3, K3)

14. (a) How would you apply somatic embryogenesis techniques to develop a rapid clonal propagation system for a commercially important but slow-growing plant species? (CO4, K4)

Or

(b) Design a new approach using protoplast fusion to produce plants with enhanced tolerance to abiotic stresses such as salinity or drought. How would you ensure that the fused protoplasts express the desired traits? (CO4, K4)

15. (a) Design an experiment using callus culture to regenerate plants from an explant source that is difficult to propagate by conventional methods. What factors would you consider to ensure successful regeneration? (CO5, K4)

Or

(b) Evaluate the role of bioreactor systems in scaling up the production of secondary metabolites through plant tissue culture. How do different types of bioreactors contribute to optimizing metabolite yields? (CO5, K4)

Part C ($5 \times 8 = 40$)

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

16. (a) Explain the laboratory requirements of plant tissue culture. (CO1, K1)

Or

(b) Outline the different types of plant tissue culture media components you have studied. (CO1, K1)

17. (a) Give a detailed account on androgenesis. Add a note on its significance. (CO2, K2)

Or

(b) Describe the steps involved in cryopreservation. List its application. (CO2, K2)

18. (a) Red sandalwood, is an endangered plant due to habitat destruction, excessive deforestation and over utilization due to its industrial application by humans. What kind of strategy could you adopt to produce large number of pathogen free plants from being extinction? (CO3, K3)

Or

(b) Analyze how somaclonal variation be used as a source of novel genetic diversity in plant tissue culture. How does this approach compare to traditional methods of induced mutation or hybridization in creating new plant varieties? (CO3, K3)

19. (a) Evaluate the effectiveness of artificial seeds in preserving the genetic integrity of endangered plant species compared to traditional seed preservation methods. How do you prepare seeds using somatic embryos? (CO4, K4)

Or

(b) Critically evaluate the methods used for protoplast isolation in terms of cell viability and yield. Which method do you consider most effective for maintaining the integrity of protoplasts, and why? Relate, how this method involved in the regeneration of whole plants. (CO4, K4)

20. (a) Evaluate the impact of nutrient medium composition on the growth and differentiation of plant tissues in batch and continuous culture systems. How does the stability of the medium influence long-term culture viability and productivity in each system? (CO5, K4)

Or

(b) An herbal scientist used to treat people illness with herbal medicine. But he funds the collection of drugs from the plant roots ultimately leads to disappearance of the plant species from the land. He finds an alternate plant tissue culture technique through which he produces large amount of drugs without destroying the natural plant species.

Find and summarize the plant tissue culture technique he used to produce secondary metabolites production. (CO5, K4)

R1987	Sub. Code
	525304

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

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 type questions by choosing the correct option.

1. The first step of research is _____. (CO1, K2)
   (a) Selecting a problem
   (b) Identifying a problem
   (c) Finding a problem
   (d) Searching a problem

2. The main characteristic of Scientific research is _____. (CO1, K1)
   (a) Empirical (b) Theoretical
   (c) Experimental (d) All the above

3. The depth of any research can be judged by (CO2, K3)
   (a) Title of the research
   (b) Duration of research
   (c) Objectives of the research
   (d) Total Expenditure of the research

4. Bibliography given in a research report (CO2, K2)

(a) Helps those interested in further research

(b) Shows vast knowledge of the research

(c) Has no relevance to research

(d) All the above

5. Which of the following is used in Electron Microscopes? (CO3, K2)

(a) Electron beams

(b) Light waves

(c) Magnetic fields

(d) Electron beams and Magnetic fields

6. What is the position of the band of Alkanes? (CO3, K3)

(a) 150 nm (b) 185 nm

(c) 217 nm (d) 190 nm

7. Which of the following is not used an absorbent in Column absorbent chromatography? (CO4, K1)

(a) Magnesium Oxide

(b) Activated Alumina

(c) Potassium Permanganate

(d) Silica Gel

8. The tracking dye used in SDS-PAGE will be _____. (CO4, K2)

(a) Anionic (b) Cationic

(c) Non-ionic (d) Amphoteric

9. Pulse rate of a patient are known as (CO5, K2)

(a) Nominal Data

(b) Discrete data

(c) Continuous data

(d) Random Variable

10. In testing of Hypothesis in order to test the quality of more than two population means at a time _____ method is used. (CO5, K2)

(a) ANOVA (b) Chi-square Test

(c) Student t-Test (d) Correlation

Part B (5 × 5 = 25)

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

11. (a) Describe the Experimental Design. (CO 1, K2)

Or

(b) Write briefly on Experimental Research. (CO1, K1)

12. (a) Enumerate the Web resources. (CO2, K1)

Or

(b) Short note on Self Plagiarism. (CO2, K2)

13. (a) Write the Principle and techniques in Light Microscope. (CO3, K3)

Or

(b) Explain about the UV-Spectrophotometer. (CO3, K2)

14. (a) Short note on Principle and Mechanism in TLC. (CO4, K2)

Or

(b) Note on Western Blotting. (CO4, K2)

15. (a) How to Utilize Graphs as Research Tool. (CO5, K3)

Or

(b) Prove Null hypothesis with an example. (CO5, K1)

Part C (5 × 8 = 40)

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

16. (a) Explain about the of Applied Research. (CO1, K4)

Or

(b) Describe the Steps and Methods of Research. (CO1, K3)

17. (a) Lay out of a Research Paper. (CO2, K4)

Or

(b) Ethical issues related to Publishing Manuscript. (CO2, K2)

18. (a) Write the Principle, techniques and applications of SEM. (CO3, K1)

Or

(b) Write an essay about FT-IR. (CO3, K2)

19. (a) Describe the Principle, techniques and applications of GLC. (CO4, K2)

Or

(b) Utilize Agarose Electrophoresis helpful for your research work. (CO4, K2)

20. (a) Enumerate Standard Deviation with suitable example (CO5, K4)

Or

(b) Describe the ANOVA with Example (CO5, K4)

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R1988

Sub. Code
525505

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

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 questions by choosing the correct option

1. The term Inherent value coined by _____. (CO1, K2)

   (a) Mac Arthur (b) Meffe and Carroll

   (c) Pearce (d) Norton

2. What are called for the value of nature's products that are consumed directly? (CO1, K2)

   (a) Productive value

   (b) Indirect value

   (c) Consumptive value

   (d) Non Consumptive value

3. What is the Name of the species whose number are few and live small Geographical area? (CO2, K1)

   (a) Endangered (b) Vulnerable

   (c) Intermediate (d) Rare

4. An *Ex - situ* conservation method for Endangered species is (CO2, K2)

(a) Cryopreservation
(b) National Parks
(c) Wildlife Sanctuaries
(d) Biosphere Reserves

5. Red Data Book contains data of (CO3, K1)

(a) All plant species
(b) All animal species
(c) Economically important species
(d) Threatened species

6. Dodo is _____. (CO3, K2)

(a) Endangered
(b) Critically Endangered
(c) Rare
(d) Extinct

7. Which of the following country have the highest Biodiversity? (CO4, K2)

(a) India (b) Russia
(c) Brazil (d) Kenya

8. Hot spot areas have _____. (CO4, K1)

(a) Only endangered plants
(b) Low density of Biodiversity
(c) High density of hot Springs
(d) High density of Biodiversity

9. The word "Etho" in Ethnobotany refers to _____. (CO5, K1)

(a) Religion, locality and people
(b) Culture
(c) Civilization
(d) All of the above

10. The substance's which are used for chewing purposes are called (CO5, K2)

(a) Masticatories (b) Spices

(c) Condiments (d) Fumitories

Part B (5 × 5 = 25)

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

11. (a) Describe the Ethical and Aesthetic values of biodiversity (C01, K2)

Or

(b) Write briefly on Indirect use of biodiversity. (CO1, K1)

12. (a) Enumerate the National parks in India (CO2, K1)

Or

(b) Short note on Gene Bank. (CO2, K4)

13. (a) Write short note on Threatened plant Species. (CO3, K1)

Or

(b) Explain about the importance Red Data Book. (CO3, K2)

14. (a) Justify the Indian Forest act helpful to Conservation. (CO4, K2)

Or

(b) Explain the Role of UNDP. (CO4, K2)

15. (a) Classify the Ethnic Communities in Tamil Nadu. (CO5, K1)

Or

(b) Explain role of Traditional Knowledge. (CO5, K2)

Part C (5 × 8 = 40)

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

16. (a) Explain the Levels of Biodiversity. (CO1, K2)

Or

(b) Describe the Values of Biodiversity. (CO1, K2)

17. (a) Enumerate the *In situ* Conservation Strategies. (CO2, K3)

Or

(b) Role of Tissue culture Technique in Biodiversity Conservation. (CO2, K2)

18. (a) Write the Endangered Plant species in India. (CO3, K2)

Or

(b) Write an essay about Biodiversity Hot Spots. (CO3, K2)

19. (a) Describe the WWF and its contributions to the Global Community. (CO4, K1)

Or

(b) Justify Biodiversity Act (2004) protects Indian Floras (CO4, K4)

20. (a) Enumerate the Ethnic communities and their distribution in India. (CO5, K3)

Or

(b) Describe the role of Traditional knowledge for Therapeutic purpose. (CO5, K2)

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