



GOVERNMENT DEGREE COLLEGE

NARASANNAPETA, SRIKAKULAM DIST. - 532421

(Affiliated to Dr. B. R. AMBEDKAR UNIVERSITY, Etcherla, Srikakulam Dist.) (Accredited with NAAC "B" Grade)



DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY

SEMESTER: V

MID - I EXAMINATION

GROUP: III B.Sc (CBZ)

Paper: 6C

(Paper Title 6C: Plant Tissue Culture)

Max. Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Explain the preparation of M.S. Medium?
2. What are the important aspects in tissue culture?
3. Describe different methods of sterilization?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Totipotency
2. Autoclave
3. Hot Air Oven
4. Objectives of Plant Tissue Culture
5. De-differentiation
6. Invitro Sterilization
7. Single Cell Culture
8. Explant

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. Which of the following chemicals are most widely used for protoplast fusion ?
a) Mannitol b) Polyethylene glycol c) Sorbitol d) Mannol
2. Which of the following growth hormones produces apical dominance
a) Ethylene b) Cytokinin c) Gibberellins d) Auxin
3. Which of the following medium is composed of chemically defined compounds _____
a) Natural media b) Artificial media c) Synthetic media d) None of the above
4. Which of the following plant cell shows totipotency?
a) Cork cells b) Meristems c) Sieve tube d) Xylem vessels
5. Which of the following vectors is used in crop improvement and crop management?
a) Agrobacterium b) plasmid c) Cosmid d) Phasmid
6. Haploid plants can be obtained from _____.
7. The pair of hormones required for a callus to differentiate are _____.
8. Plant tissue culture is also called as micropropagation.....(A) True (B) False
9. Match the Columns

List I

- 1) Dry Air type sterilizer
- 2) Sterilize noncarbohydrate media and agar media

List II

- (A) Autoclave
- (B) Laminar Airflow
- (C) Hot Air Oven



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY

SEMESTER: V

MID - I EXAMINATION

GROUP: III B.Sc (CBZ)

Paper: 7C

(Paper Title 7C: Mushroom Cultivation)

Max. Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Write an essay on Nutraceutical and Medicinal values of Mushrooms?
2. Explain the life cycle of Mushroom?
3. Write an essay on methods in Compost Preparation?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Poisonous mushrooms
2. Pasteurization tunnels
3. Button mushroom
4. Milky mushroom
5. Mushroom structure
6. Ganoderma lucidum
7. Mushroom Layout Form
8. Advantages of Compost

III. Answer **All** the following Objective Questions.

5 x 1/2 = 10 Marks

1. Which of the following is not a characteristic of mushrooms?
a) They are a type of fungus b) They have a stem and a cap c) They reproduce through spores
d) They are a type of vegetable
2. What is the primary role of mushrooms in the ecosystem?
a) Decomposition and nutrient recycling b) Pollination and seed dispersal c) Photosynthesis and oxygen production
d) Pest control and crop protection
3. Which of the following statements best describes the nutritional value of mushrooms?
a) Mushrooms are high in protein and low in carbohydrates b) Mushrooms are high in carbohydrates and low in protein
c) Mushrooms are high in fiber and low in vitamins and minerals
d) Mushrooms are low in fiber and high in vitamins and minerals
4. Which of the following cultural values is associated with mushrooms in many societies?
a) Wealth and prosperity b) Longevity and immortality c) Beauty and aesthetics d) Wisdom and knowledge
5. What is the term used to describe the symbiotic relationship between certain mushrooms and tree roots?
a) Mycorrhiza b) Lichen c) Hyphae d) Fruiting body
6. Mushroom cultivation typically involves growing mushrooms in not composted materials. (True / False)
7. The layout of mushroom forms refers to the arrangement of growing containers or beds for cultivating mushrooms. (True / False)
8. Match the compost ingredient with its role in the composting process:
A. Straw (i) Enhances aeration and drainage in the compost
B. Nitrogen source (ii) Provides carbon and structure to the compost
C. Gypsum (iii) Adds moisture and nutrients to support microbial activity



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY

SEMESTER: V

MID - II EXAMINATION

GROUP: III B.Sc (CBZ)

Paper: 6C

(Paper Title 6C: Plant Tissue Culture)

Max.Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Give an account of Germ Plasm Conservation and its significance?
2. Give an account of Transgenic plants?
3. Explain Protoplast Culture?

II. Short answer questions answer any **Four** of the following questions.

5 x 2 = 10 Marks

1. Ex-plant
2. Single Cell Culture
3. Embryo Culture
- 4) Cybrids
5. Artificial Seeds
6. Electroporation
7. Cryopreservation
8. Stress Tolerant Plants

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. Which part of the plant can be used as an explant?
a) Root b) Stem c) Leaf d) All of the above
2. What is the first step in preparing an explant for tissue culture?
a) Sterilization b) Cutting the plant c) Adding growth hormones d) Placing in a growth chamber
3. Explants are commonly taken from which part of a plant for micropropagation?
a) Flowers b) Meristem c) Fruit d) Seeds
4. Which is a potential cause of somaclonal variation?
a) Stable climate b) Regular watering c) Genetic mutations d) Constant light
5. Soma clonal variations are observed during the _____ of callus tissue in plant tissue culture
- 6) Soma clonal variations are genetic changes that occur during _____ culture.
- 7) Somatic embryogenesis is the process of forming embryos from somatic cells. (True / False)
- 8) Somatic embryogenesis does not require a growth medium. (True / False)

Match the Following

- | | |
|-------------------|--|
| 9) Herbicide | A) one method for creating transgenic plants |
| 10) Agrobacterium | B) Resistance |
| | C) Yield |



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Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY

SEMESTER: V

MID - II EXAMINATION

GROUP: III B.Sc (CBZ)

Paper: 7C

(Paper Title 7C: Mushroom Cultivation)

Max.Marks:20Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Give an account of common problems associated with Mushroom Cultivation?
2. Write an essay on the production of Button (Agaricus) mushroom?
3. Give an account of Freeze Preservation of mushrooms?

II. Short answer questions answer any **Four** of the following questions. **5 x 2 = 10 Marks**

1. Preparation of Pure Culture
2. Casing Material
3. Good Spawn
4. Milky Mushroom
5. Oyster Mushroom
6. Mushroom Curry recipe
7. Entrepreneurship
8. Crop management in Mushroom cultivation

III. Answer **All** the following Objective Questions. **10 x 1/2 = 5 Marks**

1. Which substrate is commonly used for mushroom spawn?
a) Sand b) Straw c) Water d) Clay
2. What is a common method of preparing spawn?
a) Boiling b) Pasteurization c) Freezing d) Drying
3. Which material is commonly used in casing mixtures?
a) Sawdust b) Sand c) Grain d) Peat moss
4. What is the primary purpose of casing?
a) To increase yield b) To provide nutrients c) To retain moisture d) To reduce pests
5. One common method for preserving mushrooms is _____, which involves heating them to eliminate spoilage organisms.
6. _____ is a technique used to store mushrooms at low temperatures to slow down decay.
7. Mushroom preservation methods have no impact on their nutritional value. (True / False)
8. Waste from mushroom cultivation can be used as a fertilizer. (True / False)

Match the Following

- | | |
|---------------------|--------------|
| 9) Button Mushroom | A) Pleurotus |
| 10) Oyster Mushroom | B) Calocybe |
| | C) Agaricus |



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DEPARTMENT OF BOTANY & ZOOLOGY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY/ZOOLOGY Major

SEMESTER: I

MID-I EXAMINATION

GROUP: I B.Sc Honours (Botany/Zoology Major)

Paper: I (Paper Title: Introduction to Classical Biology)

Max. Marks: 20 Marks

I. Multiple Choice Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

1. Site of Photosynthesis?

a) Chloroplast b) Mitochondrion c) Nucleus d) Vacuole

2. The net gain of ATP formed in Aerobic Respiration is?

a) 42 ATP b) 36 ATP c) 2 ATP d) 24 ATP

3. Sponges come under the Phylum?

a) Protozoa b) Porifera c) Cnidaria d) Ctenophora

4. Environmental Chemistry is the study of?

a) Human Behavior b) Inorganic Compounds c) Atmosphere and Water pollution d) Nuclear Reactions

II. Fill in the Blank Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

5. Dipole moments are measured in the units _____.

6. The bond between metal and non-metal is _____.

7. Underwater agriculture is simply referred as _____.

8. End product of Glycolysis is _____.

III. Very Short Answer Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

9. What are the products of Photosynthesis?

10. How an ionic bond is formed?

11. Define Green House Effect?

12. What is the disease in humans that is caused due to the absence of an extra X chromosome in Females?

IV. Match the Following Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

Group A

Group B

13) Mitochondria

(A) Energy currency produced during Respiration

14) Glycolysis

(B) Requires oxygen and produces more ATP

15) ATP

(C) Site of the Krebs Cycle and Electron Transport chain

16) Respiration

(D) Breaks down glucose into pyruvate in the cytoplasm

V. True or False Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

17. Nitrogen is a greenhouse gas. (True / False)

18. Green Chemistry is related to environmental Toxicity. (True / False)

19. Fertilization is also called as syngamy. (True / False)

20. Gymnosperms produce seeds that are enclosed within a fruit. (True / False)



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DEPARTMENT OF BOTANY & ZOOLOGY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY/ZOOLOGY Major

SEMESTER: I

MID - I EXAMINATION

GROUP: I B.Sc Honours (Botany/Zoology Major)

Paper: I (Paper Title: Introduction to Applied Biology)

Max. Marks: 20 Marks

I. Multiple Choice Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

1. What is the common application of Biotechnology in plant sciences ?
a) Software development b) Crop Genetic Engineering c) Animal cloning d) Water Treatment
2. Golden Rice is rich in ?
a) Vitamin A b) Vitamin B c) Vitamin K d) Vitamin C
3. How many different Amino Acids are commonly found in proteins?
a) 10 b) 20 c) 30 d) 40
4. Who is known as the Father of Microbiology?
a) Edwin John Butler b) Ferdinand Cohn c) Robert Koch d) Antoni Van Leeuwenhoek

II. Fill in the Blank Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

5. Bacterial cell grown on hydrocarbons wastes from the petroleum Industry are source of _____.
6. The first successful cloning of a mammal, _____ was achieved in 1996.
7. In BT cotton, BT indicates _____.
8. The _____ bond is present in proteins.

III. Very Short Answer Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

9. What is the direction of water flow for bacterial cell living in a hypotonic environment?
10. What is the basic block of the proteins?
11. Explain the structural differences between Simple and Complex Carbohydrates?
12. PCR stands for what?

IV. Match the Following Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

Group A

Group B

- | | |
|------------------------------|---|
| 13) Plant Sciences | (A) Genetic modification for desirable traits |
| 14) Animal Sciences | (B) Production of biofuels and enzymes |
| 15) Industrial Biotechnology | (C) Development of Genetically modified crops |
| 16) Pharmaceutical Sciences | (D) Production of vaccines and therapeutic proteins |

V. True or False Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

17. Penicillin causes inhibition of Mycoplasmas. (True / False)
18. Cellulose is a structural polysaccharide in plant cell walls. (True / False)
19. Industrial applications of Biotechnology do not include the production of Biofuels. (True / False)
20. Cloning involves the generation of genetically identical copies of DNA or Organisms. (True / False)



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DEPARTMENT OF BOTANY & ZOOLOGY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY/ZOOLOGY Major

SEMESTER: I

MID-II EXAMINATION

GROUP: I B.Sc Honours (Botany/Zoology Major)

Paper: I (Paper Title: Introduction to Classical Biology)

Max. Marks: 20 Marks

I. Multiple Choice Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

1. The type of respiration in which Acetic acid and alcohol are formed ?
a) Aerobic respiration b) Anaerobic respiration c) Both d) None
2. A growth inhibitor?
a) Auxin b) Gibberellin c) Abscissic acid d) Cytokinin
3. Systematic Botany is concerned with ?
a) Diversity of plants b) Naming c) Evolution and differentiation d) All the above
4. Which of the following is known as the powerhouse of a cell ?
a) Mitochondria b) Cytoplasm c) Lysosome d) Nuclei

II. Fill in the Blank Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

5. _____ Chemical bond is strongest bond.
6. The term Taxonomy was first introduced by _____.
7. Diabetes mellitus caused by _____ disorder.
8. _____ is the basic physical and functional unit of heredity.

III. Very Short Answer Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

9. What is Plasmid ?
10. Which molecule do not interact with water molecules ?
11. Name of the branch of chemistry concerned about radioactivity?
12. Write the advantage of In-situ conservation of Biodiversity?

IV. Match the Following Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

Group A

Group B

- | | |
|-------------------------------|-------------------------------|
| 13) Family | (A) <i>Apis cerana indica</i> |
| 14) Indian Bee | (B) Fabaceae |
| 15) Polymer Chemistry | (C) Synthesis of DNA |
| 16) S phase in the cell cycle | (D) Focus on macromolecules |

V. True or False Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

17. Strong bonds are Primary bonds (True / False)
18. Pancreas belongs to more than one organ system (True / False)
19. In Anaphase the chromosomes line up at the equator of the spindle (True / False)
20. Binominal Nomenclature system was given by RH Whittaker (True / False)



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DEPARTMENT OF BOTANY & ZOOLOGY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY/ZOOLOGY Major

SEMESTER: I

MID -II EXAMINATION

GROUP: I B.Sc Honours (Botany/Zoology Major)

Paper: I (Paper Title: Introduction to Classical Biology)

Max. Marks: 20 Marks

I. Multiple Choice Questions. Each Question carries 1 Mark. $4 \times 1 = 4$ Marks

1. Restriction Enzymes were discovered by ?
a) Smith and Nathans b) Alexander Fleming c) Berg d) None
2. Uridine present in ?
a) DNA b) RNA c) Purine d) All the Above
3. Which of the following monosaccharides is the majority found in the human body?
a) D-type b) L-type c) LD-type d) None of the above
4. The PCR Technique was developed by _____?
a) Kohler b) Altman c) Milstein d) Kary mullis

II. Fill in the Blank Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

5. Small Fox vaccine was developed by _____.
6. MEAN formula _____.
7. ELISA _____.
8. Symbiotic bacteria example _____.

III. Very Short Answer Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

9. Glucose
10. Biofertilizers
11. Genomics
12. Monoclonal Antibodies?

IV. Match the Following Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

Group A

Group B

- | | |
|--------------------------|---|
| 13) Protomics | (A) Electroporation |
| 14) Gene Transfer method | (B) Defected genes are replaced by new ones |
| 15) Gene therapy | (C) European Bioinformatics Institute |
| 16) EBI | (D) Study of Proteins in the cell |

V. True or False Questions. Each Question carries 1 Mark.

$4 \times 1 = 4$ Marks

17. A population is a collection of all individuals . (True / False)
18. Bioremediation means environmental clean-up process. (True / False)
19. Spirulina is a Biopesticide . (True / False)
20. Innate immunity is also called as inborn immunity. (True / False)



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY Major & Minor

SEMESTER: II

MID-I EXAMINATION

GROUP: I B.Sc Honours (Botany Major & Minor)

Course: 3 (Paper Title: Non -Vascular Plants (Algae, Fungi, Lichens and Bryophytes) Max.Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Write an essay on Thallus Organization in Algae?
2. Write an essay on Economic importance of Algae?
3. Explain life cycle of Ectocarpus?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Algae pigments
2. Life cycles in Algae
3. F.E. Fritsch Classification
4. Spirogyra
5. Cystocarp
6. Vaucheria Sex organs
7. Diatoms
8. Nutrition in fungi

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. What is the primary mode of nutrition in algae?
a) Heterotrophic b) Paracytic c) Autotrophic d) Saprophytic
2. Which of the following is an example of unicellular algae?
a) Spirogyra b) Chlorella c) Ulva d) Sargassum
3. Which pigment is common in all algae?
a) Chlorophyll-a b) Xanthophyll c) Phycocyanin d) Carotenoids
4. Which of the following is an example of red algae?
a) Ulva b) Spirogyra c) Chlamydomonas d) Polysiphonia
5. F.E. Fritsch classified algae mainly based on _____, reserve food, flagella structure, and habitat.
6. The class _____ in Fritsch's classification includes brown algae, which store food as laminarin and mannitol.
7. The cell wall of fungi is made up of chitin. (True / False)
8. The mode of nutrition in fungi is always autotrophic. (True / False)

Match the Columns

List I

- 9) Male sex organ of Vaucheria
- 10) Female sex organ of Polysiphonia

List II

- (A) Spermatangia
- (B) Antheridium
- (C) Oogonium
- (D) Carpogonium



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY Major

SEMESTER: II

MID -I EXAMINATION

GROUP: I B.Sc Honours (Botany Major)

Course: 4

(Paper Title: Origin of Life and Diversity of Microbes)

Max. Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Five Kingdom classification of R.H. Whittaker ?
2. Explain structure of TMV and Multiplication of TMV?
3. Write general characteristics and importance of Actinomycetes?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Miller- Urey Experiment
2. Germ theory of disease
3. Gemini Virus
4. Prions
5. Cyanobacteria
6. Mycoplasma
7. Archaeobacteria
8. Cloning vectors

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. Which of the following is true about Bacteriophage structure?
 - a) It has a head and tail structure
 - b) It only infects plants
 - c) It lacks genetic material
 - d) It has no protein coat
2. What is the shape of most viruses?
 - a) Spherical
 - b) Helical
 - c) Complex
 - d) All of the above
3. What is one major economic importance of viruses?
 - a) They help in nitrogen fixation
 - b) They produce oxygen
 - c) They are used in vaccine production
 - d) They form soil
4. What is the genetic material in most viruses?
 - a) DNA
 - b) RNA
 - c) Both DNA and RNA
 - d) Either DNA or RNA, never both
5. The _____ hypothesis suggests that life originated from organic molecules formed in Earth's early atmosphere.
6. The concept that life came from outer space through meteorites is known as _____.
7. Eubacteria have a well-defined nucleus surrounded by a nuclear membrane. (True / False)
8. Gram-positive bacteria have a thick peptidoglycan layer in their cell wall. (True / False)

Match the Columns

List I

- 9) Chlamydiae
- 10) Phytoplasma

List II

- (A) Lacks a cell wall, affects plants
- (B) Lives in extreme environments
- (C) Obligate intracellular bacteria
- (D) Produces methane gas



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY Major & Minor

SEMESTER: II

MID-II EXAMINATION

GROUP: I B.Sc Honours (Botany Major & Minor)

Course: 3 (Paper Title: Non -Vascular Plants (Algae, Fungi, Lichens and Bryophytes) Max.Marks:20Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Write general characteristics of Fungi ?
2. Discuss Economic Importance of Lichens?
3. Explain Marchantia Sexual Reproduction (Gametophyte) ?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Nutrition in Fungi
2. Parasexuality
3. Fungi Economic Importance
4. Rhizopus
5. Teleutospore
6. Apothecium
7. Gemma Cup
8. Wilt Disease

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. What is a network of hyphae called??
a) Sporangium b) Mycelium c) Capsule d) Thallus
2. Which of the following is a unicellular fungus?
a) Rhizopus b) Penicillium c) Yeast d) Mucor
3. Fungi that feed on dead organic matter are called _____.
a) Saprophytes b) Autotrophs c) Parasites d) Symbionts
4. Fungi reproduce asexually by producing _____.
a) Roots b) Seeds c) Pollen d) Spores
5. _____ lichens are bushy and often hang from trees or rocks.
6. The photosynthetic partner in a lichen is called the _____.
7. The life cycle of Puccinia involves only one host plant. (True / False)
8. Puccinia graminis tritici is the causal organism of black rust in wheat. (True / False)

Match the Columns List I

List II

- | | |
|--------------------------|---|
| 9) Anthoceros sporophyte | (A) Has foot, Long seta and capsule |
| 10) Funaria sporophyte | (B) Anchors the sporophyte to the gametophyte |
| | (C) Capsule is horn-shaped and photosynthetic |
| | (D) Has foot, short seta, and capsule |



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DEPARTMENT OF BOTANY

Year: 2024-25

Continuous Internal Assessment (CIA)

Subject: BOTANY Major

SEMESTER: II

MID -II EXAMINATION

GROUP: I B.Sc Honours (Botany Major)

Course: 4

(Paper Title: Origin of Life and Diversity of Microbes)

Max.Marks: 20 Marks

I. Answer **One** from the Following Questions. (Draw a labeled diagram whenever necessary) **1 x 5 = 5 Marks**

1. Describe an structure of Eubacteria ?
2. Explain the Economic importance of Bacteria?
3. Give an account on Rhizosphere ?

II. Short answer questions answer any **Five** of the following questions.

5 x 2 = 10 Marks

1. Gram Staining
2. Citrus Canker
3. Conjugation
4. Mutualism
5. Amensalism
6. Azospirillum
7. VAM
8. Cyanobacteria

III. Answer **All** the following Objective Questions.

10 x 1/2 = 5 Marks

1. What is the shape of bacillus-type Eubacteria?
 - a) Spherical
 - b) Spiral
 - c) Rod-shaped
 - d) Irregular
2. What type of ribosome are found in Eubacteria?
 - a) 80S
 - b) 70S
 - c) 60S
 - d) 50S
3. What role do plasmids play in Eubacteria?
 - a) Photosynthesis
 - b) Respiration
 - c) Protein synthesis
 - d) Antibiotic resistance
4. Which of the following is absent in Eubacteria?
 - a) Mitochondria
 - b) Ribosome
 - c) Nucleoid
 - d) Cell wall
5. _____ fix atmospheric nitrogen in the soil.
6. _____ are single-celled algae found in moist soils.
7. Mycorrhizal fungi help plants absorb water and nutrients. (True / False)
8. Symbiosis in soil always benefits only the microorganism, not the plant. (True / False)

Match the Columns

List I

- 9) Rhizobium
- 10) Frankia

List II

- (A) Associates with non-leguminous plants
- (B) Forms root nodules in legumes
- (C) Free-living nitrogen fixer
- (D) Acts in symbiosis with actinorhizal plants