

(6 Pages)

Reg. No. :

Code No. : 20374 E Sub. Code : AEBO 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fifth Semester

Botany

Major Elective - I — PLANT ECOLOGY AND
PHYTOGEOGRAPHY

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The natural residence of every organism is known as
(a) Biome (b) Niche
(c) Habit (d) Habitat
2. Which among the following is a sedimentary cycle
(a) Phosphorus cycle
(b) Nitrogen cycle
(c) Hydrogen cycle
(d) Oxygen cycle

3. Which of the following is the most stable ecosystem?
(a) Desert (b) Ocean
(c) Forest (d) Mountain
4. Presence of sunken stomata is the characteristic feature of
(a) Psammophytes (b) Xerophytes
(c) Hydrophytes (d) Lithophytes
5. The study of relationship of a single environment is called
(a) Synecology
(b) Autecology
(c) Ecosystem ecology
(d) Population ecology
6. Ecological succession in sand is called
(a) halosere (b) xerosere
(c) hydrosere (d) psammosere
7. Which bioremediation approach involves using plants to degrade pollutants?
(a) Biopile (b) Phytoremediation
(c) Composting (d) Phycoremediation

8. Identify the organism which is popularly called "oil eating microbe"
- (a) *Escherichia coli*
(b) *Pseudomonas putida*
(c) *Pseudomonas aeruginosa*
(d) *Salmonella typhi*
9. Who among the following had proposed the continental drift theory?
- (a) Engler (b) Darwin
(c) Wallace (d) Wegener
10. Indian remote sensing satellites are called
- (a) INSAT (b) IRS
(c) GSAT (d) IRS SAT
- PART B — (5 × 5 = 25 marks)
- Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.
11. (a) Examine fire as a factor.
Or
(b) Ascertain the role of plants in the ecosystem.
12. (a) Highlight the anatomical adaptations of hydrophytes.
Or
(b) Bring out the physiological adaptations of xerophytes.
13. (a) Explain the concept of population.
Or
(b) Expound the terms consociation and society.
14. (a) Define xenobiotics. How it is useful in ecosystem monitoring?
Or
(b) List down the types of bioremediation.
Or
15. (a) What is mean by continental drift? How it is relevant in phytogeography?
Or
(b) Bring out the climatic regions of India.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Describe the soil as an important factor in the ecosystem.

Or

- (b) Illustrate the carbon cycle.

17. (a) List down the components of the ecosystem.

Or

- (b) Classify the ecosystem.

18. (a) Explain the concept of community.

Or

- (b) Quadrat method of vegetation analysis is easy to conduct - Justify.

19. (a) Examine the concept of biomonitoring.

Or

- (b) Highlight the importance of biosensors in monitoring environmental pollution.

20. (a) Explain the principles of phytogeography.

Or

- (b) Describe the phenomenon of endemism.

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B.Sc. (CBCS) DEGREE EXAMINATION, APRIL, 2023

Sixth Semester

Botany

Major Elective - I — HORTICULTURE AND PLANT BREEDING

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The study of flower is called

- (a) Botany (b) Floriculture
(c) Phenology (d) Zoology

2. Indoor garden is generally

- (a) Light loving
(b) Shade loving
(c) Sea water loving
(d) Desert loving

3. Kitchen garden are also known as

- (a) Home garden
(b) Nutrition garden
(c) Vegetable garden
(d) All of the above

4. Artificial propagation of plants are done by how many method?

- (a) 6 (b) 5
(c) 4 (d) 3

5. Main feature of English garden is

- (a) Lawn (b) Rockery
(c) Lanterns (d) Borders

6. The art of making animal shape in plant is

- (a) Topiary
- (b) Pinching off
- (c) Edging
- (d) Hardening

7. A hybrids always

- (a) Heterozygous
- (b) Homozygous
- (c) Both of the above
- (d) Often homozygous

8. Which is the oldest breeding method?

- (a) Hybridization
- (b) Selection
- (c) Mutation breeding
- (d) Introduction

9. Somatic hybridization is achieved through

- (a) Grafting
- (b) Conjugation
- (c) Protoplast fusion
- (d) rDNA technology

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10. Heterosis is

- (a) Hybrid compatibility
- (b) Hybrid vigour
- (c) Pollen sterility
- (d) Pollen pistil incompatibility

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe about landscaping garden.

Or

(b) Discuss about formal Kitchen garden.

12. (a) Describe, the post harvest technology.

Or

(b) Write about patch budding.

13. (a) Comment on Hedges.

Or

(b) Elucidate on hanging basket.

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[P.T.O]

14. (a) Enumerate - the mass lines selection.

Or

(b) Describe, plant introduction agency in India.

15. (a) Describe, mutation breeding procedure.

Or

(b) Enumerate the application of polyploidy breeding.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain different types of gardening.

Or

(b) Write the scope of horticulture.

17. (a) Discuss about transplantation method.

Or

(b) Contrast about cutting, grafting.

18. (a) Explain water garden.

Or

(b) Enumerate about garden tools.

19. (a) Describe about Heterosis breeding.

Or

(b) Purposes of plant introduction - discuss.

20. (a) Explain physical mutagens.

Or

(b) Compare somaclonal variation and selection method.

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Code No. : 20379 E Sub. Code : AEBO 64

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Sixth Semester

Botany

Major Elective - II — ENVIRONMENTAL
BIOTECHNOLOGY - II

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The area of human settlement on the earth is called
 - (a) Lithosphere
 - (b) Anthrosphere
 - (c) Hydrosphere
 - (d) Geosphere

2. The determination of pollutants in marine water and fresh water using bioluminescence test was first used by

- (a) Neelson and Hasting
- (b) Mendel
- (c) Bentham
- (d) Ramaiah and Chandramohan

3. RDF is the other name for this

- (a) Hydrogen
- (b) Bio gas
- (c) Ethanol
- (d) Biodiesel

4. Euphorbia tirucalli belongs to the family

- (a) Rubiaceae
- (b) Orchidaceae
- (c) Malvaceae
- (d) Euphorbiaceae

5. This method is used for the reclamation of acidic soils

- (a) Liming
- (b) Algalisation
- (c) Gypsum
- (d) Green manuring

6. Soil erosion is caused by

- (a) Excess of rain
- (b) Deforestation
- (c) Wind
- (d) All the above

7. Which of the following microbe is used in bioremediation?
- (a) Clostridium
 - (b) Pseudomonos
 - (c) Methanobacterium
 - (d) Bacteriocide
8. An example for hydrocarbon
- (a) Steam (b) Petrol
 - (c) Wax (d) Calcium
9. Acid rain is caused by
- (a) Sulphur dioxide and nitrogen dioxide
 - (b) Methane
 - (c) Carbon dioxide
 - (d) Carbon monoxide
10. The major cause of the thinning of ozone layer is the use of _____
- (a) Hydro chloro fluoro carbons
 - (b) Chloro fluoro carbons
 - (c) (a) and (b)
 - (d) None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write short notes on hydrosphere.
- Or
- (b) Explain the role of biosensors in pollution monitoring.
12. (a) Write notes on uses of biogas.
- Or
- (b) Write notes on uses of hydrogen gas.
13. (a) Explain the primary and secondary treatment of sewage.
- Or
- (b) Write short notes on water recycling.
14. (a) List out the differences between biodegradation and bioremediation.
- Or
- (b) Give a brief account on biodegradation of hydrocarbons.

16. (a) Explain global warming.

Or

(b) What are the effects of ozone depletion on human beings?

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the various biotechnological methods that help to measure pollution.

Or

(b) Write an essay about the aims of environmental biotechnology.

17. (a) Describe the structure of biogas plant.

Or

(b) Give a detailed account on petroleum plants.

18. (a) Write an essay on soil conservation.

Or

(b) Explain sustainable agricultural management.

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19. (a) Discuss about solid waste management.

Or

(b) Write an essay on phytoremediation.

20. (a) Write an essay on the causes of green house effect and the measures to control it.

Or

(b) What is remote sensing? Write about the applications of remote sensing in ecology.

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PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The other name of psilotum is
(a) Spike moss (b) Club moss
(c) Whisk fern (d) Water fern
2. Pteridophytes are commonly called as
(a) Cryptogams (b) Vascular cryptogams
(c) Phanerogams (d) Angiosperms

7. Angiosperm like gymnosperm is
(a) Pinus (b) Cycas
(c) Gnetum (d) None of the above
8. Woody climber species of Gnetum is
(a) Gnetum latifolia
(b) Gnetum ula
(c) Gnetum gnemone
(d) None of these
9. The geological time scale consists of _____ eras.
(a) 6 (b) 3
(c) 8 (d) 5
10. Lyginopteris is a fossile of _____
(a) Bryophyte (b) Gymnosperm
(c) Pteridophyte (d) None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) How are pteridophytes classified by spore?
Or
(b) Describe the structure of synangium of psilotum.

3. Which plant has ligule?
(a) Psilotum
(b) Lycopodium
(c) Marsilea
(d) Selaginella
4. Maiden hair - fern is
(a) Psilotum
(b) Lycopodium
(c) Selaginella
(d) Adiantum
5. Naked ovule is seen in this plant group
(a) Angiosperm
(b) Gymnosperm
(c) Algae
(d) Fungi
6. Dwarf shoots are present in
(a) Cycas
(b) Gnetum
(c) Pinus
(d) Marsilea

12. (a) Explain the internal structure of adiantum rhizome.
Or
(b) Describe the external morphology of Selaginella.
13. (a) Describe the general characters of gymnosperms.
Or
(b) With neat labelled diagram explain the structure of pinus needle.
14. (a) Describe the external structure of gnetum plant.
Or
(b) Describe the economic importance of gymnosperms.
15. (a) Write any one method of fossilisation.

- Or
- (b) Describe the internal structure of rhynea stem.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Describe the internal structure of *Psilotum* rhizome and stem.

Or

- (b) Describe the life history of *Lycopodium*.

17. (a) Describe the internal structure of *Selaginella* stem and rhizophore.

Or

- (b) Write an essay on the life history of *Adiantum*.

18. (a) Describe the structure of male and female cones of *Pinus*.

Or

- (b) Describe the external structure of *Pinus*.

19. (a) Describe the structure of *Gnetum ovule*.

Or

- (b) Explain the primary and secondary growth of *Gnetum* stem.

20. (a) Write notes on geological time scale.

Or

- (b) Write an essay on *Lyginopteris*.
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B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fifth Semester

Botany — Core

CELL BIOLOGY AND EMBRYOLOGY OF
ANGIOSPERMS

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. These ribosomes are found in prokaryotic cells

- (a) 80S
- (b) 70S
- (c) 50S
- (d) 40S

7. The entry of pollen tube into the ovule through the integuments is called

- (a) Polygamy (b) Chalazogamy
- (c) Porogamy (d) Mesogamy

8. Nuclear and cellular endosperm is seen in a

- (a) Monocot plant
- (b) Dicot plant
- (c) (a) and (b)
- (d) Gymnosperms

9. Occurrence of more than one embryo within a seed is called

- (a) Apromixis
- (b) Apospory
- (c) Polymbryony
- (d) Parthenocarpy

10. Polymbryony was first discovered by

- (a) Leeuwenhoek (b) Bentham
- (c) Griffith (d) Linnaeus

2. How many daughter cells are produced in mitosis?

- (a) 2 (b) 4
- (c) 8 (d) 16

3. Which one of the following is called as protein factories of the cell?

- (a) Mitochondria (b) Ribosome
- (c) Chloroplast (d) Nucleus

4. Endoplasmic reticulum was discovered by

- (a) Benda (b) Golgi
- (c) Robert Hook (d) Porter

5. The innermost layer of the anther is called as

- (a) Epidermis (b) Middle layer
- (c) Endothecium (d) Tapetum

6. The lower three nuclei present in the embryosac is called

- (a) polar nuclei (b) synergids
- (c) egg nucleus (d) antipodals

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Tabulate the differences between prokaryotic and eukaryotic cell.

Or

(b) Write the significance of mitosis.

12. (a) Explain the structure of ribosomes.

Or

(b) Explain the structure of golgi complex.

13. (a) With suitable diagram explain the structure of microsporangium.

Or

(b) Write short notes on megasporogenesis.

14. (a) Explain double fertilization.

Or

(b) Write short notes on post fertilization changes.

15. (a) Write short notes on apomixis.

Or

(b) Write short notes on parthenogenesis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe meiosis.

Or

(b) Describe the structure of prokaryotic cell with suitable diagram.

17. (a) Describe the structure and functions of mitochondria.

Or

(b) Describe the structure and functions of nucleus.

18. (a) Describe the different types of ovules.

Or

(b) Describe the polygonum type of embryo sac development.

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19. (a) Discuss about the development of dicot embryo.

Or

(b) Describe the types of endosperm.

20. (a) Write an essay on polyembryony.

Or

(b) Write short notes on :

(i) Parthenocarpy

(ii) Apospory.

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MORPHOLOGY AND TAXONOMY OF ANGIOSPERMS

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- 1. Whorled phyllotaxy is seen in
 - (a) Ocimum
 - (b) Allamanda
 - (c) Mimosa
 - (d) Phyllanthus

- 2. Phyllode is found in this plant
 - (a) Opuntia
 - (b) Muchlenbeckia
 - (c) Euphorbia tirucalli
 - (d) Parkinsonia
- 3. _____ is used to protect the herbarium specimens against the attack of fungi.
 - (a) Naphthalene balls
 - (b) Mercuric chloride
 - (c) Para-dichloro-benzene
 - (d) D.D.T.
- 4. Who introduced the binomial nomenclature?
 - (a) Engler
 - (b) Hooker
 - (c) Bentham
 - (d) Linnaeus
- 5. Hesperidium is seen in
 - (a) Cucurbitaceae
 - (b) Rutaceae
 - (c) Caesalphiaceae
 - (d) Asclepiadaceae

- 6. Botanical name of bitter gourd is _____
 - (a) Cucumis sativus
 - (b) Momordica charantia
 - (c) Coccinia indica
 - (d) Cucurbita pepo
- 7. Translators are found in
 - (a) Asclepiadaceae
 - (b) Sterculiaceae
 - (c) Cucurbitaceae
 - (d) Amaranthaceae
- 8. Verticillaster inflorescence is seen in
 - (a) Sapotaceae
 - (b) Lamiaceae
 - (c) Rubiaceae
 - (d) Asclepiadaceae
- 9. The fruit of poaceae is _____
 - (a) Follicle
 - (b) Pepo
 - (c) Regma
 - (d) Caryopsis
- 10. Latex is extracted from
 - (a) Salvia
 - (b) Ocimum
 - (c) Leucas
 - (d) Hevea

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b). Each answer should not exceed 250 words.

- 11. (a) With suitable examples, explain tap root modifications.

Or

 (b) With suitable diagrams, explain underground stem modifications.
- 12. (a) List out the merits and demerits of Bentham and Hookers classification.

Or

 (b) Write notes on binomial nomenclature.
- 13. (a) List out the salient features of Rutaceae.

Or

 (b) Enumerate the economic importance of cucurbitaceae.
- 14. (a) List out the salient features of sapotaceae.

Or

 (b) Describe the floral characters of the family Lamiaceae.

15. (a) Describe the inflorescence of genus euphorbia.

Or

(b) Give an account about the inflorescence of Poaceae.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the various types of racemose inflorescence seen in plants.

Or

(b) Write an essay on phyllotaxy.

17. (a) Describe Bentham and Hooker classification of plants.

Or

(b) Write an essay on the herbarium preparation.

18. (a) Write a detailed account on the character and economic importance of caesalpiniaceae.

Or

(b) Explain the floral characters of the family apiaceae.

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19. (a) Elaborately discuss the salient features of asclepiadaceae.

Or

(b) Describe the family Rubiaceae.

20. (a) Explain the family characters of euphorbiaceae.

Or

(b) Poaceae is an economically important family - substantiate this statement.

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PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The instrument that is used to determine the concentration of biochemical compounds is called
 - (a) pH meter
 - (b) Colorimeter
 - (c) Chromatography
 - (d) Centrifugation

7. The enzymes acting on lipids are named as

- (a) nucleases
- (b) lipases
- (c) sucrase
- (d) lactase

8. The protein part of an enzyme is called

- (a) Apoenzyme
- (b) Holoenzyme
- (c) Isoenzyme
- (d) Endoenzyme

9. One of the following is nucleic acid sequence database

- (a) CATH
- (b) PIR
- (c) SCOP
- (d) DDBJ

10. PIR is

- (a) enzyme database
- (b) protein database
- (c) nucleic acid database
- (d) none of these

2. Svedberg invented _____

- (a) Colorimeter
- (b) pH meter
- (c) Spectrophotometer
- (d) Centrifuge

3. Which of the following is the storage polysaccharide in plants?

- (a) Pectin
- (b) Chitin
- (c) Starch
- (d) Cellulose

4. This is the disaccharide

- (a) maltose
- (b) glucose
- (c) starch
- (d) cellulose

5. One of the following is an example for tertiary structure of proteins

- (a) prolamine
- (b) albumin
- (c) myoglobin
- (d) haemoglobin

6. Ergosterol is

- (a) carbohydrate
- (b) protein
- (c) lipid
- (d) a solvent

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Describe covalent bonds.

Or

- (b) Write short notes on centrifuge.

12. (a) Describe the structure of sucrose.

Or

- (b) Write the physical properties of monosaccharides.

13. (a) Explain the tertiary structure of proteins.

Or

- (b) Describe the properties of lipids.

14. (a) Write the classification of enzymes.

Or

- (b) Explain the role of enzymes in industry.

15. (a) Write short notes on internet.

Or

- (b) Write short notes on PIR.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Give a brief account on atom.

Or

- (b) Write the principle, structure and uses of pH meter.

17. (a) Write the properties of disaccharides.

Or

- (b) Describe the structure and properties of starch.

18. (a) Describe the primary and secondary structure of proteins.

Or

- (b) Write the classification of lipids.

19. (b) Explain the mechanism of enzyme action.

Or

- (b) Write briefly about nomenclature of enzymes.

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20. (a) Write an essay on enzyme database.

Or

- (b) Write an essay on computer.
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Reg. No. :

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B.Sc. (CBCS) DEGREE EXAMINATION, APRIL, 2023

Sixth Semester

Botany — Core

GENETICS, EVOLUTION AND BIOSTATISTICS

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A cross of F₁ individual with recessive parent is called
(a) back cross (b) monohybrid cross
(c) test cross (d) dihybrid cross
2. Lethal genes are observed in these plants
(a) Maize (b) Pea
(c) Sweet pea (d) Mirabilis

7. Use and disuse theory was proposed by
(a) Darwin (b) Lamarck
(c) Devries (d) Mendel
8. Natural selection theory was first proposed by
(a) Lamarck (b) Darwin
(c) Punnet (d) Mendel
9. Mode is
(a) The most frequent value
(b) The least frequent value
(c) The central value
(d) Average
10. Mean is the
(a) average (b) standard deviation
(c) variability (d) frequency

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3. Complementary gene hypothesis was first proposed by
(a) Mendel (b) Hugo devries
(c) Bateson (d) Johanson
4. The ratio 15 : 1 is the interaction of
(a) Lethal genes
(b) Poly genes
(c) Complementary genes
(d) Duplicate genes
5. The combination of a nitrogenous base + sugar + phosphate is called
(a) nucleic acid (b) nucleoside
(c) nucleotide (d) all the above
6. One of the following is not a pyrimidine
(a) thymine (b) uracil
(c) cytosine (d) cytokinin

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PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write an account on incomplete dominance in monohybrid cross.
Or
(b) Explain Mendel's law of independent assortment with suitable example.
12. (a) Explain the polygenic inheritance using ear length of corn as an example.
Or
(b) Comment on complementary genes.
13. (a) With suitable example, explain sex determination in plants.
Or
(b) Write short notes on characterisation of genetic code.
14. (a) Comment on natural selection theory.
Or
(b) Analyze use and disuse theory.

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[P.T.O.]

15. (a) Write notes on chi-square test.

Or

(b) Write short notes on mode.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) What are lethal genes? Give an account on lethal gene action in maize and mice.

Or

(b) Give a detailed account on Dihybrid cross.

17. (a) Describe the supplementary gene interaction with suitable illustration.

Or

(b) Give a detailed account on duplicate factors.

18. (a) Describe the experiment to prove that DNA as the genetic material.

Or

(b) Explain semiconservative method of DNA replication.

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19. (a) Describe the mutation theory of Hugo de vries.

Or

(b) Analyze speciation.

20. (a) Describe the collection and interpretation of data in biostatistics.

Or

(b) Describe standard deviation.

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Reg. No. :

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B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Sixth Semester

Botany — Core

PLANT PHYSIOLOGY

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The movement of water from its higher concentration to lower concentration through a membrane is called
 - (a) Osmosis
 - (b) Diffusion
 - (c) Imbibition
 - (d) Absorption

6. Kreb's cycle occurs in
 - (a) Chloroplast
 - (b) Golgi apparatus
 - (c) Nucleus
 - (d) Mitochondrion
7. Bundle sheath and mesophyll chloroplasts are seen in
 - (a) C₄ plants
 - (b) C₃ plants
 - (c) Pteridophytes
 - (d) Cactai
8. The reaction center of pigment system I is
 - (a) P680
 - (b) P690
 - (c) P700
 - (d) P600
9. Identify the growth hormone responsible for apical dominance
 - (a) Auxin
 - (b) Gibberellin
 - (c) Cytokinin
 - (d) Ethylene
10. Process of rupturing hard seed coat is called
 - (a) Stratification
 - (b) Scarification
 - (c) Drying
 - (d) None of the above

Page 3 Code No. : 20372 E

2. Balsam plant experiment is associated with
 - (a) Water absorption
 - (b) Translocation of organic solute
 - (c) Ascent of sap
 - (d) Transpiration
3. Which one of the following helps to cool the leaf surface?
 - (a) Guttation
 - (b) Transpiration
 - (c) Respiration
 - (d) Photosynthesis
4. Tissue helping translocation of organic solutes
 - (a) Xylem
 - (b) Phloem
 - (c) Cambium
 - (d) All of these
5. Which one of the following is related to ion absorption?
 - (a) Pulsating theory
 - (b) Cohesion-tension theory
 - (c) Capillary force theory
 - (d) Protein-lecithin theory

Page 2 Code No. : 20372 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write notes on Osmosis.
Or
(b) How are different factors affect absorption of water in plants?
12. (a) Explain about the mechanism of opening and closing of stomata.
Or
(b) List out various experimental proofs support phloem is associated with transport of organic.
13. (a) Write short notes on Donnan equilibrium.
Or
(b) Explain the reactions of glycolysis.
14. (a) Describe cyclic electron transport.
Or
(b) Elucidate C₄ pathway.
15. (a) Draw 'Sigmoid curve' and explain its phases.
Or
(b) Give a detailed account on the physiological effects of auxins.

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[P.T.O.]

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Discuss in detail the mechanism of absorption of water.

Or

- (b) Explain in detail about mechanism of ascent of sap.

17. (a) Discuss the theories explaining stomatal movement.

Or

- (b) Write an essay on translocation of organic solutes.

18. (a) With the help of different theories, explain the mechanism of mineral absorption.

Or

- (b) Explain the various reactions of citric acid cycle.

19. (a) Give a detailed account on non-cyclic electron transport.

Or

- (b) Write an essay on C₃ cycle.

20. (a) Explain physiological roles of gibberellin.

Or

- (b) Give a detailed account on seed dormancy.
-

Code No. : 20373 E Sub. Code : AMBO 63

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Sixth Semester

Botany — Core

MICROBIOLOGY

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The process of vaccination was introduced by
(a) Robert Koch (b) Edward Jenner
(c) Louis Pasteur (d) Alexander Fleming
2. Who is called the father of immunology?
(a) Edward Jenner
(b) Anton Von Leeuwenhock
(c) Robert Koch
(d) Louis Pasteur

6. T4 bacteriophage was discovered by
(a) Twort (b) Ivanowski
(c) Luc Montagnier (d) Ehrenberg
7. Nicholas appert is the
(a) Father of fermentation
(b) Father of bottling
(c) Father of canning
(d) Father of pasteurization
8. The toxicity introduced into food by microbes and their products is called
(a) Food poisoning (b) Food spoilage
(c) Food infection (d) Food preservation
9. Knoll and Ruska designed the
(a) Phase contrast microscope
(b) Flourescence microscope
(c) Polarization microscope
(d) Electron microscope

3. Blastobacter, seliberia are generally known as
(a) Binary fission bacteria
(b) Budding bacteria
(c) Fragmentation bacteria
(d) Conidiospores bacteria
4. The process of DNA uptake by the bacteria from the surrounding environment is called
(a) Bacterial transduction
(b) Bacterial transformation
(c) Bacterial conjugation
(d) Binary fission
5. HIV virus is
(a) Rod shaped virus
(b) Spherical shaped virus
(c) Tadpole shaped virus
(d) Helical shaped virus

10. The first microscope was discovered by
(a) Knoll and Rusk
(b) Jenssen and Hans
(c) Anton van Leewenhoek
(d) Erwin Whilhelm muller

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write the contribution of Anton van Leeuwenhock and Louis Pasteur.

Or

- (b) Explain five kingdom classification.

12. (a) Demonstrate the growth of bacteria.

Or

- (b) Write the importance of bacteria.

13. (a) Explain the structure of HIV.

Or

(b) Explain the structure of TMV.

14. (a) Explain food spoilage.

Or

(b) Explain food poisoning.

15. (a) Define fermenter.

Or

(b) Write short notes on phase contrast microscope.

PART C — (5 × 8 = 40 marks)

Answer ALL questions by choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Explain ultrastructure of bacteria.

Or

(b) Explain the nutritional types of bacteria.

17. (a) Explain the reproduction of bacteria.

Or

(b) Explain the phases of growth of bacteria.

Page 5 Code No. : 20373 E

18. (a) Write the structure of bacteriophage with suitable diagram.

Or

(b) Give a detailed account on multiplication of bacteriophage.

19. (a) Explain the procedure of making wine.

Or

(b) Explain the method of food preservation.

20. (a) Explain electron microscope.

Or

(b) Explain fluorescent microscope.

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Reg. No. :

Code No. : 20386 E Sub. Code : ANBO 41

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Fourth Semester

Botany

Non Major Elective – FOOD AND NUTRITION

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

1. Identify the energy yielding food
 - (a) Carbohydrates
 - (b) Proteins
 - (c) Lipids
 - (d) Vitamins and Minerals
2. Kwashiorkor is disease caused by the deficiency of
 - (a) Proteins
 - (b) Vitamins and Minerals
 - (c) Carbohydrates
 - (d) Lipids

3. Gluten, a type of protein, is found in abundance in
(a) Paddy (b) Wheat
(c) Ragi (d) Sorghum
4. Which among the following is high in tomato?
(a) Lycophene (b) Ascorbic acid
(c) Glutamic acid (d) Tartaric acid
5. Brining is the technique of
(a) Addition of salt to the food
(b) Addition of sugar to the food
(c) Keeping of microbes away from the food
(d) Heating of foods
6. Jam can be best prepared from
(a) Tomato (b) Pine apple
(c) Banana (d) Grapes
7. Which among the following is not a food additive?
(a) Emulsifiers (b) Flavouring agents
(c) Sugar (d) Foaming agents
8. Botulism is a
(a) Disease
(b) Food poisoning complication
(c) Disorder
(d) Development

9. Fermentation produces
(a) Alcohol (b) Ghee
(c) Oil (d) Vitamins
10. Wine is produced from
(a) Grapes (b) Fruits
(c) Vegetables (d) Pulps

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Elucidate the term balanced diet with suitable example.
Or
(b) List down the major classes of food.
12. (a) Bring out the nutritive value of cereals.
Or
(b) Highlight the nutritive value of Cucumber and Brinjal.
13. (a) Do you think that sugar can be used for food preservation? If so, explain.
Or
(b) How will you prepare pickle?
14. (a) Give an account of food additives.
Or
(b) Explain the detection of food adulteration.

15. (a) Classify the beverages.

Or

(b) Critically examine the process of fermentation.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on Protein as a source of food.

Or

(b) Critically examine the term energy value.

17. (a) Analyse the nutritive value of any two millets that you have studied.

Or

(b) Establish the importance of Guvava and pomegranate as essential fruit for human consumption.

18. (a) How will you use oil and spices for food preservation?

Or

(b) How will you prepare jam?

19. (a) Describe the Botulism.

Or

(b) Write an essay on Salmonellosis.

20. (a) List down the types of fermentation.

Or

(b) Bring out the uses of fermentation.

(6 pages)

Reg. No. :

Code No. : 20380 E Sub. Code : ASBO 31

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Third Semester

Botany — Skill Based Core

MUSHROOM CULTURE TECHNOLOGY

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An edible sac fungus is

- (a) *Lycoperdon*
- (b) *Agaricus*
- (c) *Morchella*
- (d) *Rhizopus*

2. Identify the medium used for mushroom cultivation

- (a) MS medium
- (b) Oat meal agar medium
- (c) Mc Conky Agar medium
- (d) Beef extract medium

3. Which among the following is the most successful locally available substrate for mushroom cultivation?

- (a) Paddy straw
- (b) Sugarcane pulp
- (c) Paper waste
- (d) Coir pith

4. Identify the state that cultivates more mushrooms than other states in India

- (a) Punjab
- (b) Haryana
- (c) Tamil Nadu
- (d) Gujarat

5. The temperature at the time of fruiting body formation

- (a) 14-16°C and humidity at 65%
- (b) 14-18°C and humidity at 85%
- (c) 14-20°C and humidity at 85%
- (d) 14-18°C and humidity at 65%

6. Which among the following is not found in mushrooms?

- (a) Fat (b) Protein
(c) Carbohydrate (d) Vitamins

7. Which among the following is a fungal disease of mushrooms?

- (a) drippy gill (b) mummy disease
(c) green cap (d) biotch

8. Salting of mushrooms is done by

- (a) addition of sodium benzoate
(b) addition of sodium chloride
(c) addition of sodium nitrate
(d) addition of sodium oxalate

9. Calorific value of one pound of mushroom is

- (a) 100 kcal (b) 120 kcal
(c) 80 kcal (d) 50 kcal

10. Which among the following antioxidant is present in mushrooms?

- (a) Potassium (b) Selenium
(c) Strontium (d) Sodium

Page 3 Code No. : 20380 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Highlight the prospects of mushroom cultivation as a small scale industry.

Or

(b) Highlight the features of poisonous mushrooms.

12. (a) List down the basic requirements of mushroom cultivation.

Or

(b) How will you prepare mother spawn in polypropylene bag?

13. (a) Explain the spawn running of oyster mushrooms.

Or

(b) How will you harvest button mushrooms?

14. (a) Write short notes on the pathogens and control of fungal diseases of mushrooms.

Or

(b) Explain the significance of mushrooms.

Page 4 Code No. : 20380 E

[P.T.O.]

15. (a) What do you mean by long term storage of mushrooms?

Or

(b) Explain refrigeration of mushrooms.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Examine the medicinal value of mushrooms.

Or

(b) Describe the life cycle of *Agaricus* species.

17. (a) Discuss the preparation of PDA medium.

Or

(b) Describe the sterilization of mushroom.

18. (a) Explain the cultivation of paddy straw mushroom.

Or

(b) Examine the factors affecting mushroom bed preparation.

Page 5 Code No. : 20380 E

19. (a) Critically analyse the diseases of mushrooms caused by insects.

Or

(b) Analyse the nutritional value of mushrooms.

20. (a) Describe the preparation of mushroom omelett.

Or

(b) Explain the ingredients and preparation of mushroom samosa.

Page 6 Code No. : 20380 E

(6 Pages)

Reg. No. :

Code No. : 20383 E Sub. Code : ASBO 42

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Botany

Skill Based Core — PRESERVATION OF FRUITS
AND VEGETABLES

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- One among the following is a stable food
(a) Milk (b) Fish
(c) Egg (d) Sugar
- Which of the following fruit is the highly nutritious?
(a) Banana (b) Apple
(c) Pomegranate (d) Orange

- Which of the following is the popular home preservative method?
(a) Refrigeration (b) Drying
(c) Canning (d) All the above
- Propyl Gallate is an ———
(a) Antibiotic (b) Antifungal
(c) Antibacterial (d) Antioxidant
- The preservative used in Jam is
(a) Sodium sorbate
(b) Sodium propionate
(c) Sodium benzoate
(d) Sodium di acetate
- is used as colouring agent in squash preparation.
(a) Anthocyanin
(b) Carbondisulphide
(c) Methyl bromide
(d) Hydrocyanic acid

7. Dry fruit preparation can be done with this fruit
(a) Fig (b) Mango
(c) Banana (d) All the above
8. This is not the ingredient of lime pickle
(a) Lemon (b) Mango
(c) Salt (d) Chilli powder
9. Which of the following banana variety is suitable for canning?
(a) Vannan (b) Nendran
(c) Poovan (d) All the above
10. Which of the following vegetables are mixed during the canning of beans?
(a) Peas
(b) Carrot
(c) Both (a) and (b)
(d) None of the above

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PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Describe the factors that affect the storage of fruits.
Or
(b) Expound the microbial spoilage of fruits.
12. (a) Describe the principles of preservation by dehydration.
Or
(b) Write short notes on drying.
13. (a) How is fruit juice prepared from orange?
Or
(b) Expound the jam preparation using tomato.
14. (a) How would you prepare tomato sauce?
Or
(b) Describe the process of drying of mango.

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[P.T.O.]

15. (a) Give an account on canning of banana.

Or

(b) Highlight the importance of canning.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Highlight the nutritive value of fruits.

Or

(b) Highlight the nutritive value of vegetables.

17. (a) Explain food preservation by refrigeration and freezing.

Or

(b) What is canning? Give a brief account on canning.

18. (a) What is squash? How is squash prepared from grape?

Or

(b) Write about the guava jelly preparation.

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19. (a) Describe the methods of pickle preparation using mango and lemon.

Or

(b) What is ketchup? Explain the steps involved in the preparation of tomato ketchup.

20. (a) Describe how beans and mushrooms are canned.

Or

(b) Describe the canning methods of tomato and mango.

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(6 pages)

Reg. No. :

Code No. : 20530 E Sub. Code : CABO 11

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

First/Third Semester

Botany — Allied

PLANT DIVERSITY AND MEDICINAL BOTANY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Identify the most advanced algae

- (a) Chlorophyceae
- (b) Cyanophyceae
- (c) Bacillariophyceae
- (d) Rhodophyceae

2. Which among the following is an edible fungus?

- (a) *Aspergillus* (b) *Polyporus*
- (c) *Rhizopus* (d) *Agaricus*

3. Lichen is an example for

- (a) Parasitism (b) Predatorship
- (c) Symbiosis (d) Saprophytic

4. Which among the following is widely regarded as the amphibians of plant kingdom?

- (a) Bryophytes (b) Pteridophytes
- (c) Gymnosperms (d) Algae

5. Which among the following is called vascular cryptogams?

- (a) Bryophytes (b) Pteridophytes
- (c) Gymnosperms (d) Algae

6. Turpentine is obtained from

- (a) Gymnosperm (b) Fungi
- (c) Algae (d) Bryophytes



7. How many families are recognized by Bentham and Hooker in angiosperm classification?

- (a) 198 (b) 200
(c) 202 (d) 190

8. Where you come across pollinium?

- (a) Rutaceae (b) Euphorbiaceae
(c) Asclepiadaceae (d) Poaceae

9. Which among the following plant is used in cosmetic industries?

- (a) *Aloe vera*
(b) *Piper nigrum*
(c) *Phyllanthus amarus*
(d) *Coleus amboinicus*

10. Vincristine is obtained from

- (a) *Aloe vera*
(b) *Coleus amboinicus*
(c) *Catharanthus roseus*
(d) *Phyllanthus amarus*

Page 3 Code No. : 20530 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) List down the general characters of algae.

Or

(b) Draw the structure of *Volvox* colony.

12. (a) Explain the internal structure of *Usnea* thallus.

Or

(b) Bring out the general characters of Bryophytes.

13. (a) Highlight the internal structure of the stem of *Lycopodium*.

Or

(b) List down the general characters of Gymnosperms.

14. (a) Examine the inflorescence of euphorbiaceae.

Or

(b) Analyse the salient features of Rutaceae.

Page 4 Code No. : 20530 E

[P.T.O.]



15. (a) Mention the common name, family, morphology of the useful part and medicinal uses of *Phyllanthus amarus*.

Or

- (b) Explain the medicinal uses of *Piper nigrum*.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the economic importance of algae.

Or

- (b) Examine the structure of basidiocarp of *Polyporus*.

17. (a) Criticize the sexual reproduction in *Usnea*.

Or

- (b) Illustrate the life cycle of *Funaria*.

18. (a) Describe the internal structure of the strobilus of *Lycopodium*.

Or

- (b) Criticize the events leading to the fertilization in *Pinus*.

19. (a) Examine the floral characters of Asclepiadaceae.

Or

- (b) Explain the economic importance of Poaceae.

20. (a) Analyse the medicinal properties and uses of *Coleus*.

Or

- (b) Explain the phytochemical properties and uses of *Catharanthus*.
-



(6 Pages)

Reg. No. :

Code No. : 20531 E Sub. Code : CABO 21

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Second/Fourth Semester

Botany — Allied

EMBRYOLOGY, PLANT ANATOMY PHYSIOLOGY
AND BIOTECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Egg in female gametophyte is accompanied by
 - (a) Antipodal cells
 - (b) Synergids
 - (c) Definitive nucleus
 - (d) Tube nucleus

2. Endosperm is a ——— tissue.
 - (a) Nutritive
 - (b) Defense
 - (c) Mechanical
 - (d) Covering
3. Food conducting tissue is ———
 - (a) Phloem
 - (b) Xylem
 - (c) Cambium
 - (d) All the above
4. Which one is a complex tissue?
 - (a) Xylem
 - (b) Parenchyma
 - (c) Collenchyma
 - (d) Sclerenchyma
5. Which one of the following process is called as necessary evil?
 - (a) Transpiration
 - (b) Photosynthesis
 - (c) Respiration
 - (d) Absorption
6. The movement of molecules from the region of higher concentration to the region of its lower concentration is known as ———
 - (a) Diffusion
 - (b) Imbibition
 - (c) Plasmolysis
 - (d) Osmosis

7. Yeast multiple through _____ method.
(a) Budding (b) Mitosis
(c) Meiosis (d) Binary fission
8. Which one of the following is used as a biofertilizer?
(a) *Nostoc* (b) *Azolla*
(c) *Anabaena* (d) All the above
9. The explant sterilizing agent is
(a) Mercuric chloride
(b) Ethylene oxide
(c) Phenol
(d) Nitric acid
10. Undifferentiated mass of cells is called
(a) Suspension (b) Embryo
(c) Callus (d) Plantlet

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Distinguish the types and functions of endosperm with neat sketch.
Or
(b) Concise the structure of Ovule and its types.

12. (a) Compare the primary structure of dicot stem with monocot stem.

Or

- (b) Describe simple tissues.

13. (a) How will you differentiate active and passive absorption?

Or

- (b) Explain the structure of chloroplast.

14. (a) What is biofertilizer? Enumerate the role of *Nostoc*.

Or

- (b) Briefly Explain about mass culture of yeast.

15. (a) Enlist the steps involved in callus culture.

Or

- (b) Give an account on sterilization techniques.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Describe monosporic and bisporic type of female gametophyte development.

Or

- (b) Illustrate the structure of dicot embryo.

17. (a) Define meristematic tissue. Explain its classification.

Or

- (b) Illustrate the internal morphology of dorsiventral leaf.

18. (a) Describe the factors affecting water absorption.

Or

- (b) Describe the mechanism of transpiration in plant. Explain the factors affecting transpiration.

19. (a) Describe in detail about the structure and multiplication of yeast.

Or

- (b) Describe the methods of mass cultivation of *Nostoc*.

Page 5 Code No. : 20531 E

20. (a) Write the tools required for tissue culture laboratory.

Or

- (b) Enumerate the applications of tissue culture.

Page 6 Code No. : 20531 E

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Describe the sexual reproduction in volvox.

Or

(b) Give an account on the life cycle patterns seen in Algae.

17. (a) Explain the sexual reproduction in Chara.

Or

(b) Write about the post fertilization changes takes place in Gracilaria.

18. (a) Describe the cultivation of Gracilaria.

Or

(b) Explain the economic importance of algae.

19. (a) Describe the mass culture of Nostoc.

Or

(b) Describe the mass culture of Spirulina.

20. (a) Explain sexual reproduction in marchantia.

Or

(b) Describe the sporophyte of marchantia.

8/6/23
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Reg. No. :

Code No. : 20526 E Sub. Code : CMBO 11

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

First Semester

Botany – Core

ALGAE AND BRYOPHYTES

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- The classification of Algae was proposed by
(a) F.E. Fritsch (b) G.M. Smith
(c) Linnaeus (d) Bentham
- Haplontic life cycle is found in
(a) Chara (b) Sargassum
(c) Gracilaria (d) Volvox



3. The male sex organ of Chara is called as
 - (a) Gemmae
 - (b) Nucule
 - (c) Globule
 - (d) Archegonium
4. Cryptoblasts are seen in
 - (a) Chara
 - (b) Sargassum
 - (c) Volvox
 - (d) Caulerpa
5. Alginic acid is obtained from
 - (a) Nostoc
 - (b) Volvox
 - (c) Sargassum
 - (d) Laminaria
6. The most important red algae used as human food is
 - (a) Ulva
 - (b) Gelidium
 - (c) Porphyra
 - (d) Chlorella
7. _____ is called as cyanobacteria.
 - (a) Chlorella
 - (b) Volvox
 - (c) Nostoc
 - (d) Chara
8. One of the following is consumed as single cell protein
 - (a) Ulva
 - (b) Nostoc
 - (c) Spirulina
 - (d) Chlorella
9. These plants are called as amphibious plants
 - (a) Pteridophytes
 - (b) Algae
 - (c) Fungi
 - (d) Bryophytes

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10. The structure which helps in the dehiscence of capsule of marchantia is
 - (a) Seta
 - (b) Foot
 - (c) Gemmae
 - (d) Elaters

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Classify the algae according to Fritsch.
Or
(b) Explain the structure of volvox colony.
12. (a) Explain the external structure of chara thallus with diagram.
Or
(b) Describe the internal structure of Sargassum stipe with suitable diagram.
13. (a) List out the uses of agar agar.
Or
(b) Explain the extraction methods of Carrageenin.
14. (a) Explain the structure of nostoc.
Or
(b) Describe the nutritive importance of spirulina.
15. (a) Classify bryophytes according to Rothmaler.
Or
(b) Describe the transverse section of marchantia thallus with diagram.

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(6 pages)

Reg. No. :

Code No. : 20527 E Sub. Code : CMBO 21

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Second Semester

Botany — Core

PLANT ANATOMY AND MICRO TECHNIQUES

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

1. Increasing girth is due to _____
 - (a) Lateral Meristem
 - (b) Intercalary Meristem
 - (c) Primary Meristem
 - (d) Apical meristem
2. Tunica corpus theory is connected with
 - (a) Root apex (b) Root cap
 - (c) Shoot apex (d) Secondary growth

3. The tissue that lies between the upper and lower epidermis of the leaf is known as
 - (a) Fibres (b) Sclerenchyma
 - (c) Mesophyll (d) Veins
4. Border parenchyma is seen in _____
 - (a) Dicot leaf (b) Dicot root
 - (c) Dicot stem (d) Monocot stem
5. The number of xylem or phloem bundles in monocot root is
 - (a) 8 to 20 (b) 15 to 20
 - (c) 17 to 20 (d) 12 to 30
6. Endodermis is present in
 - (a) Monocot plant
 - (b) Dicot plant
 - (c) Gymnospermic plant
 - (d) All the above
7. Study of vascular supply to the leaf from stems is
 - (a) Nodal anatomy
 - (b) Anatomy
 - (c) Internal Morphology
 - (d) Taxonomy



8. Unilocular node is present in
(a) Justicia (b) Azadirachta
(c) Aralia (d) Sunflower
9. Magnification of light microscope is
(a) 1500X (b) 2000X
(c) 1000X (d) 2500X
10. Methylene blue is a
(a) Neutral stain (b) Acidic stain
(c) Basic stain (d) Vital stain

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the structure and function of Sclerenchyma.
Or
(b) Differentiate Xylem with phloem.

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12. (a) Write a note on primary structure of Dicot root.

Or

- (b) Give an account on internal structure of Monocot leaf.

13. (a) Describe secondary thickening of Dicot root.

Or

- (b) Explain the anomalous secondary growth takes place in *Dracaena*?

14. (a) What is Glands? Explain its types.

Or

- (b) Briefly explain about Trichomes.

15. (a) Write down the procedure of simple staining.

Or

- (b) List out the applications of Electron microscope.

Page 4 Code No. : 20527 E
[P.T.O.]



PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Elucidate the xylem tissue with suitable diagram.

Or

- (b) Explain the structure and functions of Phloem.

17. (a) Differentiate the primary structure of dicot and monocot stem.

Or

- (b) Illustrate the structure of Monocot stem.

18. (a) Explain the anomalous secondary growth takes place in *Boerhaavia*?

Or

- (b) Compare secondary thickening of dicot stem with dicot root.

19. (a) Write an essay on Nodal anatomy.

Or

- (b) Give a detailed account on epidermal tissue system.

Page 5 Code No. : 20527 E

20. (a) Write an essay on Transmission electron microscope.

Or

- (b) Describe the procedure of permanent slide preparation.

Page 6 Code No. : 20527 E



(6 Pages)

Reg. No. :

Code No. : 20528 E Sub. Code : CMBO 31

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Third Semester

Botany — Core

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The study of fungi is called as
 - (a) Phycology
 - (b) Bryology
 - (c) Mycology
 - (d) Algology
2. White rust disease is caused by
 - (a) Peziza
 - (b) Aspergillus
 - (c) Albugo
 - (d) Puccinia
7. Bunchy top of banana virus is transmitted by
 - (a) Aphis
 - (b) Mealy bug
 - (c) Caterpillars
 - (d) Epilachna beetle
8. Citrus canker disease is caused by
 - (a) Pseudomonas
 - (b) Xanthomonas
 - (c) Rhodoxanthomonas
 - (d) Micrococcus
9. Vegetative reproduction in lichens generally takes place by
 - (a) Ascospores
 - (b) Basidiospores
 - (c) Soredia
 - (d) Teleutospores
10. Corticolous lichens grow on
 - (a) Rocks
 - (b) Soil
 - (c) Bark
 - (d) Roots

Page 3 Code No. : 20528 E

3. An example for heteroecious fungus is
 - (a) Albugo
 - (b) Peziza
 - (c) Puccinia
 - (d) Aspergillus
4. The fruit body of peziza is
 - (a) Cleistothecium
 - (b) Apothecium
 - (c) Perithecium
 - (d) Pseudothecium
5. Red rot of sugarcane is due to the infection of
 - (a) Bacteria
 - (b) Fungi
 - (c) Insects
 - (d) Virus
6. The leaf spot disease of arachis hypogea is popularly called
 - (a) Mosaic disease
 - (b) Rust disease
 - (c) Tikka disease
 - (d) Wilt disease

Page 2 Code No. : 20528 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Enumerate the important characteristics of fungi.

Or

(b) Describe the asexual reproduction in albugo.
12. (a) Explain the v.s. of apothecium of peziza.

Or

(b) Explain the aecidiospore stage of puccinia.
13. (a) List the disease symptoms caused by cercospora in groundnut.

Or

(b) Write the causal organism and symptoms of paddy blast disease.
14. (a) Explain the control measures of tobacco mosaic virus.

Or

(b) Write the causal organism and symptoms of tobacco mosaic disease.

Page 4 Code No. : 20528 E

[P.T.O.]

15. (a) How lichens are classified?

Or

(b) Write short notes on :

(i) soredia

(ii) isidia.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Outline the classification of fungi proposed by alexopoulos.

Or

(b) Describe the structure, reproduction and life cycle of aspergillus.

17. (a) Explain the life cycle of puccinia on wheat plant.

Or

(b) Write an essay on economic importance of fungi.

18. (a) Describe the dissemination and control measures of Tikka disease of groundnut.

Or

(b) Describe the causal organism, symptoms and control measures and red rot of sugarcane.

19. (a) Explain the symptoms, dissemination and control measures of Bunchy top of banana.

Or

(b) Describe the symptoms and control measures of citrus canker.

20. (a) Describe the apothecium of usnea.

Or

(b) Write an essay on the economic importance of lichens.

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Botany — Core

PTERIDOPHYTES, GYMNOSPERMS AND
PALEOBOTANY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following has synangia?
(a) Lycopodium (b) Psilotum
(c) Adiantum (d) Selaginella
2. Which of the following is club moss?
(a) Marsilea (b) Psilotum
(c) Lycopodium (d) Selaginella

3. Rhizophore is seen in
(a) Lycopodium (b) Psilotum
(c) Selaginella (d) Marsilea
4. Which plant is known as spike moss?
(a) Lycopodium (b) Marsilea
(c) Psilotum (d) Selaginella
5. Naked ovule is seen in this plant group
(a) Fungi (b) Algae
(c) Angiosperm (d) Gymnosperm
6. Winged pollen grain is present in
(a) Isoetes (b) Gnetum
(c) Pinus (d) Lycopodium
7. Which of the following is present in Gnetum
(a) Fibres (b) Vessels
(c) Tracheids (d) All the above

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8. The pavement tissue in the ovule of Gnetum develops from
(a) Male gametophyte
(b) Female gametophyte
(c) Integument
(d) Nucellus
9. The geological time scale consists of _____ eras.
(a) 6 (b) 3
(c) 8 (d) 5
10. Rhynia is a fossil
(a) Pteridophyte (b) Gymnosperm
(c) Angiosperm (d) Bryophyte

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write down the general characters of Pteridophyte.

Or
(b) Explain the types of steles in Lycopodium.

Page 3 Code No. : 20529 E

12. (a) Describe the anatomical structure of selginella rhizophore.

Or
(b) Describe the external structure of Adiantum.
13. (a) Describe the internal structure of Pinus needle.

Or
(b) Explain the structure of female cone of Pinus with diagram.
14. (a) Describe the external morphology of Gnetum plant.

Or
(b) Explain the secondary growth in Gnetum stem.
15. (a) Write notes on Geological Time Scale.

Or
(b) Describe the internal structure of Rhynia stem.

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PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Write an essay on the internal structure of root and stem of Lycopodium.

Or

- (b) Expound the life cycle of Psilotum.

17. (a) Describe how does selaginella reproduce by means of spores.

Or

- (b) Explain the reproduction in Adiantum.

18. (a) Describe the external structure of Pinus.

Or

- (b) Explain how does Pinus reproduce?

19. (a) List out the Angiospermic characteristic features of Gnetum.

Or

- (b) Describe the economic importance of Gymnosperms.

20. (a) Explain the various methods of fossilization.

Or

- (b) Describe the internal structure of Lepidodendron stem.

(6 pages)

Reg. No. :

Code No. : 20536 E Sub. Code : CNBO 31

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Third Semester

Botany

Non Major Elective – GARDENING AND GARDEN
MANAGEMENT

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. In a formal garden the imaginary central line is known as
(a) Edges (b) Axis
(c) Focal point (d) Hedges
2. Main features of English garden
(a) Lawn (b) Rockery
(c) Lanterns (d) Border

7. What is a kitchen garden?
(a) Collections of plants that you can grow indoors
(b) Garden at the backyard
(c) Collections of vegetables that are grown in agricultural fields
(d) Group of fruits and vegetables which grow only in summer
8. The highly decomposed organic matter rich in minerals like nitrogen, phosphorus, and potassium, in particular, produced from the activity of earthworm is called
(a) Humus
(b) Vermicompost
(c) Worm Casting
(d) Compost bedding
9. The miniaturization of plants under Bonsai is originated from
(a) Canada (b) Egypt
(c) Japan (d) Venezuela
10. Terrarium is a
(a) Glass garden
(b) Green house plant
(c) Type of bonsai
(d) Part of the Japanese garden

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3. Soft wood cutting is possible in
(a) *Hibiscus* (b) *Tectona*
(c) Mango (d) *Terminalia*
4. Which among the following technique is popularly called "gootee"?
(a) Simple layering
(b) Air layering
(c) Whip grafting
(d) Patch budding
5. Which of the following is the quickest method of lawn making?
(a) Seeding (b) Dibbling
(c) Turfing (d) Turf plastering
6. Hedges are
(a) Plants growing on the center of the garden
(b) Plants raised on the lawns
(c) Plants growing on the borders of the garden
(d) Plants hanging on the pergolas

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PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Compare formal garden with informal garden.
Or
(b) Give an account of English gardens.
12. (a) Write a short note on commonly used garden implements.
Or
(b) Explain leaf cutting.
13. (a) Comment on edges.
Or
(b) How will you prepare flower beds?
14. (a) Does compost pit required for houses? Explain.
Or
(b) List down the components of *Panchakaviya*.

Page 4 Code No. : 20536 E
[P.T.O.]

15. (a) Elucidate the principle of indoor gardening.

Or

(b) How will you prepare hanging baskets?

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on the principle of ornamental garden.

Or

(b) What do you mean by Moghul Garden? How it is created?

17. (a) "Air layering is a successful propagation technique"- Justify

Or

(b) Write an essay on stem cutting.

18. (a) How will you account for rockery?

Or

(b) What is mean by topiary? How it is designed?

Page 5 Code No. : 20536 E

19. (a) Prepare the layout of a kitchen garden giving choice of plants.

Or

(b) Discuss, in detail, the preparation of vermicomposting.

20. (a) Highlight the aesthetic value of Bonsai

Or

(b) What do mean by terrarium? How it is useful in gardening?

Page 6 Code No. : 20536 E

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which one is commonly known as fruit sugar?
 - (a) Glucose
 - (b) Lactose
 - (c) Sucrose
 - (d) Maltose

2. Which of the following has the highest calorific value?
 - (a) Carbohydrates
 - (b) Fats
 - (c) Proteins
 - (d) Vitamins
3. About half of your diet should be made up of _____
 - (a) Grains and vegetables
 - (b) Fruits and milk
 - (c) Milk and cheese
 - (d) Fats and sugars
4. Pulses are a good source of
 - (a) Sugars
 - (b) Fats
 - (c) Proteins
 - (d) Vitamins
5. All the following techniques are household preservation technique except
 - (a) Smoking
 - (b) Dehydration
 - (c) Salting
 - (d) Lyophilisation

6. Pickles and Jellies preparation is based on _____ concept.
 - (a) Plasmolysis
 - (b) Absorption
 - (c) Osmosis
 - (d) Inhibition
7. Common food poisoning microbes are
 - (a) *Calocybe and clostridium*
 - (b) *Clostridium and salmonella*
 - (c) *Salmonella and E.coli*
 - (d) *Clostridium and E.coli*
8. Commercial of available acetic acid is
 - (a) Brine
 - (b) Vinegar
 - (c) Tartar
 - (d) Salt
9. Maximum concentration of alcohol in beer is
 - (a) 3-6%
 - (b) 10-15%
 - (c) 15-20%
 - (d) 0-3%
10. An aerobic oxidation of proteins are otherwise called as
 - (a) Fermentation
 - (b) Putrefaction
 - (c) Esterification
 - (d) Decomposition

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are pseudocereals? Give its examples.
Or
(b) What are the prime objectives of food science?
12. (a) List out the nutritive value of millets.
Or
(b) Differentiate pulses with cereals. Give the examples of Pulses.
13. (a) Discuss drying methods.
Or
(b) Give a short note on Jellies.
14. (a) Write a note on botulism.
Or
(b) Define food additives. Why are they added to foods?

15. (a) Examine the importance of fermented foods.

Or

(b) Give an account on the steps involved in coffee processing.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on functions of food.

Or

(b) Discuss about the vitamin deficiency diseases.

17. (a) What are vegetables? Give its nutritive values with examples.

Or

(b) Give a detailed account on nutritive values of groundnuts.

18. (a) Discuss about the preparation of Jam.

Or

(b) Describe the importance of food preservation.

Page 5 Code No. : 20538 E

19. (a) Write an essay on food poisoning.

Or

(b) Name the major adulterants adulterated with essential commodities.

20. (a) Classify fermentation.

Or

(b) What are beverages? Explain its types with suitable examples.

Page 6 Code No. : 20538 E

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The mode of nutrition of algae is
 - (a) Autotrophic
 - (b) Heterotrophic
 - (c) Saprophytic
 - (d) Parasitic
2. This organism produces root nodules in leguminous plants
 - (a) Penicillium
 - (b) Rhizobium
 - (c) Clostridium
 - (d) Azotobactor

7. The loss of water in the form of water vapour from aerial plant part is known as
 - (a) Osmosis
 - (b) Transpiration
 - (c) Respiration
 - (d) Photosynthesis
8. The building blocks of proteins are
 - (a) Nucleotides
 - (b) Carbohydrates
 - (c) Aminoacids
 - (d) Lipids
9. Most efficient tissue for the conduction of water in plants
 - (a) Parenchyma
 - (b) Collenchyma
 - (c) Phloem
 - (d) Xylem
10. The ability of a cell to generate a new and entire organism
 - (a) Totipotency
 - (b) Explant
 - (c) Inplant
 - (d) Meristem

3. A phylogenic system of classification refers to the grouping of plants on the basis of
 - (a) Floral similarities
 - (b) Anatomical characters
 - (c) Evolutionary trends
 - (d) Morphological characters
4. The inflorescence of Poaceae is
 - (a) Spikelets
 - (b) Racemose
 - (c) Achene
 - (d) Cyme
5. In neem tree the following parts are medicinally useful
 - (a) Leaf
 - (b) Bark
 - (c) Flowers
 - (d) All the above
6. Rhizome of the following plant is medicinally useful
 - (a) Ginger
 - (b) Vetiveria
 - (c) Solanum
 - (d) Phyllanthus

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b). Each answer should not exceed 250 words.

11. (a) Write about the diagnostic features of fungi.

Or

 (b) Write the salient features of pteridophytes.
12. (a) Explain the economic importance of Poaceae family members.

Or

 (b) Write about the Engler and Prantle's system of classification.
13. (a) Write the botanical name, medicinally useful part and the medicinal uses of tuduvalai.

Or

 (b) Write the importance of Ocimum.
14. (a) Explain the mechanism of stomatal transpiration.

Or

 (b) Write the cyclic electron transport and photophosphorylation in photosynthesis.

15. (a) Describe Mendel's monohybrid cross.

Or

(b) Describe about simple tissues.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss the salient features of bacteria and viruses.

Or

(b) Describe in detail the economic importance of algae.

17. (a) Describe the important vegetative and floral characters of family cucurbitaceae. Add a note on its economic importance.

Or

(b) Write in detail account on binomial nomenclature.

18. (a) Explain the morphology of the useful part and medicinal uses of phyllanthus emblica.

Or

(b) Write the botanical name, useful part and medicinal uses of vetiver plant.

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19. (a) Describe C3 cycle.

Or

(b) Explain Kreb's cycle.

20. (a) Describe in detail about the structure and functions of chloroplast.

Or

(b) Discuss the enzymes used in gene cloning.

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(6 Pages)

Reg. No. :

Code No. : 20532 E Sub. Code : CSBO 31

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Third Semester

Botany — Skill Based Core

MUSHROOM CULTURE TECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Expanded head of mushroom is called
 - (a) Velum
 - (b) Pileus
 - (c) Stipe
 - (d) None of the above

2. This is NOT an edible mushroom
 - (a) Agaricus
 - (b) Amanita
 - (c) Pleurotus
 - (d) Volvariella

3. Which one of the following is used as a substrate for mushroom cultivation?
- (a) Sterilized grains of Rye and Millet
 - (b) Serum
 - (c) Plasma
 - (d) Lymphocytic fluid
4. Optimum pH of mushroom culture media
- (a) 4.5 to 5
 - (b) 5 to 5.5
 - (c) 5.5 to 6
 - (d) 6 to 7
5. Mushrooms are harvested by
- (a) Cutting
 - (b) Hand plucking
 - (c) Digging
 - (d) None of these
6. Which of the following is known as paddy straw mushroom?
- (a) Amanita
 - (b) Pleurotus
 - (c) Agaricus
 - (d) Volvariella
7. Mushrooms are rich in
- (a) Vitamin A
 - (b) Vitamin B complex
 - (c) Vitamin C
 - (d) Vitamin D

8. Mushroom are considered to be poor when the % of whiteness is
- (a) below 70 (b) 70
(c) above 70 (d) 100
9. Which one of the following is a short term storage method of mushroom?
- (a) Drying
(b) Canning
(c) Pickling
(d) Refrigeration
10. In which recipe mushroom powder is used
- (a) Pickle (b) Omlet
(c) Soup (d) Pulao

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Give an account on medicinal uses of mushroom.

Or

- (b) Comment on the poisonous mushrooms.

12. (a) Write about the various steps involved in spawn preparation.

Or

(b) Write notes on Oat meal agar medium preparation.

13. (a) Explain the principles of harvesting mushroom.

Or

(b) Write about the factors affecting mushroom bed preparation.

14. (a) Give an account on significance of mushrooms.

Or

(b) Describe any two bacterial diseases which affect mushroom.

15. (a) Give an account on packaging of fresh mushroom.

Or

(b) Write notes on any two mushroom recipes.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the morphology of mushroom.

Or

- (b) Explain the life cycle of pleurotus.

17. (a) What are the substrates used for mushroom cultivation?

Or

- (b) Give an account on mother spawn.

18. (a) Write the steps involved in the cultivation of paddy straw mushroom.

Or

- (b) Describe the cultivation method of button mushroom.

19. (a) List out the post harvest technology in mushroom cultivation.

Or

- (b) Discuss how are mushrooms protected from pests and mites.

20. (a) Explain drying and canning methods of storing mushroom.

Or

(b) How would you prepare mushroom samosa and mushroom pickle?

(6 Pages)

Reg. No. :

Code No. : 20535 E Sub. Code : CSBO 42

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Botany

Skill Based Core — PRESERVATION OF FRUITS AND VEGETABLES

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following microbe is popular for spoilage of fruits and vegetables?
(a) Mesophile (b) Thermophile
(c) Psychrophile (d) All
2. Development of fruit without fertilization is called
(a) Apospory (b) Parthenogenesis
(c) Parthenocarpy (d) Polygamy

3. Packing of fruits and vegetables in airtight container is called _____

- (a) Canning (b) Freezing
(c) Dehydration (d) Refrigeration

4. All the following techniques are household preservation technique except

- (a) Smoking (b) Dehydration
(c) Salting (d) Lyophilisation

5. Concentrate of fruits and vegetable juices

- (a) Favor the growth of *A. niger* and *A. flavus* species
(b) Favour the growth of yeast and acid, sugar tolerant *Leuconostoc* and *Lactobacillus* species
(c) Favor the growth of Saprophytic bacteria
(d) All

6. In most fruit juice the major portion to total soluble solids is

- (a) Salt (b) Sugar
(c) Vitamin (d) Minerals

7. Pickles are prepared by using _____
- (a) Nelli (b) Mango
(c) Lemon (d) All
8. Drying of fruits is a process used to remove _____
- (a) Water (b) Vitamin
(c) Microbes (d) Both (a) and (c)
9. Which of the following microorganism is eliminated in canned foods?
- (a) Mycobacterium tuberculosis
(b) Coxiella burnetii
(c) Clostridium botulinum
(d) Lactobacillus
10. The temperatures used for canning foods ranges from
- (a) 0-20°C
(b) 20-60°C
(c) 60-100°C
(d) 100-121°C

Page 3 Code No. : 20535 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) How would you use vegetables as a nutritional enrichment?
- Or
- (b) Examine the factors affecting fruits and vegetables.
12. (a) How fruit juices are preserved?
- Or
- (b) List out the natural preservatives.
13. (a) Discuss about the preparation of Jam.
- Or
- (b) Give a short note on Jellies.
14. (a) Discuss about drying methods.
- Or
- (b) Explain the methods of preparation tomato ketchup.

Page 4 Code No. : 20535 E
[P.T.O.]

15. (a) List out the significance canning.

Or

(b) How do you prepared canned mushroom?

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) What are fruits? Explain its nutritive values.

Or

(b) Describe the spoilage of vegetables.

17. (a) Explain the role of chemical preservatives in fruit and vegetables preservation.

Or

(b) Describe the importance of preservation.

18. (a) Describe the use of different enzymes in fruit juice manufacture.

Or

(b) How do you prepare squashes of popular fruits?

19. (a) What is pickling? How do you make pickles from vegetables available in your area?

Or

(b) Write an essay on preparation of chutney.

20. (a) Write an essay on canning of mango and its products.

Or

(b) Explain the canning recipes of cucumbers.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Describe about the male gametophyte.
Or
(b) Describe the structure of micro sporangium with suitable diagram.
17. (a) Write an essay about meristem.
Or
(b) Describe about the phloem.
18. (a) Give an account on the mechanism of water absorption.
Or
(b) Explain about calvin cycle.
19. (a) Describe about the nostoc.
Or
(b) Describe the reproduction in yeast.
20. (a) Explain about the MS medium.
Or
(b) Explain the applications of plant tissue culture.

16/06/23 FAN
Reg. No.

Code No. : 20212 E Sub. Code : SABO 21/
AABO 21

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023
Second/Fourth Semester
Botany — Allied
EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY
AND BIOTECHNOLOGY

(For those who joined in July 2017-2020)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The word "NPC" represents
(a) Pollen (b) Gametophyte
(c) Capsule (d) All of the above
2. Epicotyl and hypocotyl are seen in
(a) Embryo (b) Pollen
(c) Root (d) Gametophyte

3. It _____ is used for storage.
 (a) Parenchyma (b) Scleren chyma
 (c) Collen chyma (d) All of the above
4. Stomata are present in
 (a) leaf (b) root
 (c) stem (d) all of the above
5. _____ discovered cohesion theory.
 (a) Dixon (b) Nixon
 (c) Albert (d) Bose
6. _____ is used in fermentor.
 (a) Yeast (b) Azolla
 (c) Spirulina (d) Peziza
7. Nitrogen fixation associated cells in nostoc
 (a) Hormogone (b) Heterocyst
 (c) Akinete (d) None of these
8. Transpiration are of _____ types.
 (a) 1 (b) 2
 (c) 3 (d) 4
9. The word "Totipotency" was coined by him
 (a) Haberlandt (b) Morgan
 (c) Steward (d) Skoog

10. The media for plant tissue culture
 (a) MS (b) ES
 (c) PS (d) DS

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
 Each answer should not exceed 250 words.

11. (a) Describe the development of female gametophyte.
 Or
 (b) Give a detailed account of dicot embryo.
12. (a) Describe about the monocot root.
 Or
 (b) Describe about the monocot stem with diagram.
13. (a) Give a short account on photosynthesis.
 Or
 (b) Describe about the transpiration.
14. (a) Explain the structure of yeast.
 Or
 (b) Give a detail account on biofertilizer.
15. (a) Describe about the totipotency.
 Or
 (b) Describe about callus culture.

(6 Pages)

Reg. No. :

Code No. : 20207 E Sub. Code : SEBO 5 C

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fifth Semester

Botany

Major Elective - II — HORTICULTURE AND PLANT BREEDING

(For those who joined in July 2017-2019)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Bryophyllum is propagated by
(a) stem (b) leaves
(c) root (d) seeds
2. T-budding is otherwise called
(a) patch budding (b) chip budding
(c) shield budding (d) flute budding

3. Plants used to grow in rockery
(a) water plants
(b) mangrove plants
(c) shade loving plants
(d) xerophytic plants
4. Technique involved in bonsai
(a) budding (b) wiring
(c) layering (d) defoliation
5. It is a weedicide
(a) IAA (b) NAA
(c) 2,4 D (d) IBA
6. Which one of the following is an organic manure?
(a) Green manure (b) Farmyard manure
(c) Vermicompost (d) All the above
7. Removal of stamens from a bisexual flower
(a) Pollination (b) Emasculation
(c) Hybridization (d) Mutation

8. In mass selection method, the time taken to release a new variety
- (a) 10 years (b) 5 years
(c) 8 years (d) 20 years
9. Mutation breeding was first initiated by
- (a) Muller (b) Stadler
(c) Nicolson (d) Howard
10. Colchicine is used to
- (a) Chromosome doubling
(b) Chromosome reduction
(c) Nullisomic stage
(d) None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write notes on air layering.
- Or
- (b) Write an essay on the importance of horticulture.

Page 3 Code No. : 20207 E

12. (a) Briefly explain the technique involved in making bonsai plant.

Or

- (b) Write about any two garden implements used in horticulture.

13. (a) Explain the layout of a kitchen garden with suitable diagram.

Or

- (b) Give an account on transplantation methods.

14. (a) What are the objectives of plant breeding?

Or

- (b) Briefly explain about pureline selection.

15. (a) Describe briefly about mutagens.

Or

- (b) Write an essay on polyploidy breeding.

Page 4 Code No. : 20207 E

[P.T.O.]

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Write an account on grafting.

Or

(b) Enumerate the advantages and disadvantages of vegetative reproduction.

17. (a) How do you establish terrarium Explain?

Or

(b) Give an account on construction of a lawn.

18. (a) Write an essay on role of plant growth hormones in horticulture.

Or

(b) Give a detailed account on types of organic manure.

19. (a) Write elaborately about hybridization technique.

Or

(b) Describe in detail about mass selection.

Page 5 Code No. : 20207 E

20. (a) Discuss about the different features of mutation breeding.

Or

(b) Write an essay on breeding for disease resistance.

Page 6 Code No. : 20207 E

(6 Pages)

Reg. No. :

Code No. : 20207 E Sub. Code : SEBO 5 C

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Fifth Semester

Botany

Major Elective - II — HORTICULTURE AND PLANT BREEDING

(For those who joined in July 2017-2019)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Bryophyllum is propagated by
(a) stem (b) leaves
(c) root (d) seeds
2. T-budding is otherwise called
(a) patch budding (b) chip budding
(c) shield budding (d) flute budding

3. Plants used to grow in rockery
(a) water plants
(b) mangrove plants
(c) shade loving plants
(d) xerophytic plants
4. Technique involved in bonsai
(a) budding (b) wiring
(c) layering (d) defoliation
5. It is a weedicide
(a) IAA (b) NAA
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6. Which one of the following is an organic manure?
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(c) Vermicompost (d) All the above
7. Removal of stamens from a bisexual flower
(a) Pollination (b) Emasculation
(c) Hybridization (d) Mutation

8. In mass selection method, the time taken to release a new variety
- (a) 10 years (b) 5 years
(c) 8 years (d) 20 years
9. Mutation breeding was first initiated by
- (a) Muller (b) Stadler
(c) Nicolson (d) Howard
10. Colchicine is used to
- (a) Chromosome doubling
(b) Chromosome reduction
(c) Nullisomic stage
(d) None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write notes on air layering.
- Or
- (b) Write an essay on the importance of horticulture.

Page 3 Code No. : 20207 E

12. (a) Briefly explain the technique involved in making bonsai plant.

Or

- (b) Write about any two garden implements used in horticulture.

13. (a) Explain the layout of a kitchen garden with suitable diagram.

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- (b) Give an account on transplantation methods.

14. (a) What are the objectives of plant breeding?

Or

- (b) Briefly explain about pureline selection.

15. (a) Describe briefly about mutagens.

Or

- (b) Write an essay on polyploidy breeding.

Page 4 Code No. : 20207 E

[P.T.O.]

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Write an account on grafting.

Or

(b) Enumerate the advantages and disadvantages of vegetative reproduction.

17. (a) How do you establish terrarium Explain?

Or

(b) Give an account on construction of a lawn.

18. (a) Write an essay on role of plant growth hormones in horticulture.

Or

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19. (a) Write elaborately about hybridization technique.

Or

(b) Describe in detail about mass selection.

Page 5 Code No. : 20207 E

20. (a) Discuss about the different features of mutation breeding.

Or

(b) Write an essay on breeding for disease resistance.

Page 6 Code No. : 20207 E

(6 pages)

Reg. No. :

Code No. : 20209 E Sub. Code : SEBO 6 A

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Sixth Semester

Botany

Major Elective III – PLANT ECOLOGY AND
PHYTOGEOGRAPHY

(For those who joined in July 2017 – 2019)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The atmosphere contains _____% of nitrogen.
(a) 78 (b) 29
(c) 75 (d) 89
2. Which one of the following is a biotic factor?
(a) Plants (b) Animals
(c) (a) and (b) (d) Soil

3. The animals that consume the green plants are called
(a) Decomposers (b) Producers
(c) Consumers (d) Customers
4. The pyramid of energy is
(a) Always inverted
(b) Always upright
(c) Not a true pyramid
(d) Either upright or inverted
5. Only one dominant species characteristic to a particular area is called
(a) Association (b) Location
(c) Consociation (d) Plant formation
6. The study of the relationships of plants and animals in a natural habitat is called
(a) Association (b) Consociation
(c) Autecology (d) Synecology
7. The burning or combustion of wastes is called
(a) Landfill (b) Composting
(c) Bioremediation (d) Incineration

Page 2 Code No. : 20209 E

8. The use of transgenic plants for environmental clean-up is called
(a) Phytoremediation (b) Biobleaching
(c) Biodegradation (d) Bioremediation
9. Which one of the following is used for the acquisition of information about far away objects?
(a) Radium (b) Auxanometer
(c) Rador (d) Colorimeter
10. The continental drift was first proposed by
(a) Watson (b) Crick
(c) Wegner (d) Chase

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Give a brief account on Carbon cycle.
Or
(b) Explain the role of microbes which influence the growth on Vegetation.

Page 3 Code No. : 20209 E

12. (a) Describe energy flow in a forest ecosystem.
Or
(b) What are the morphological adaptations seen in hydrophytes? Explain with suitable examples.
13. (a) Describe the line transect method adopted to study plant community.

Or

- (b) Write short notes on Autecology.

14. (a) Give a brief account on phytoremediation.

Or

- (b) Write notes on Biobleaching.

15. (a) Give a brief account on Continental drift.

Or

- (b) List the different types of vegetations in Tamil Nadu.

Page 4 Code No. : 20209 E

[P.T.O]

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give a detailed account on abiotic factors.

Or

- (b) Write an essay on Nitrogen cycle.

17. (a) Describe Aquatic ecosystem.

Or

- (b) Give a detailed account on various kinds of adaptations seen in xerophytes.

18. (a) Distinguish between association and consociation with examples.

Or

- (b) Describe the quadrat method adopted to study plant community.

19. (a) Write an essay on Biosensors.

Or

- (b) Write an essay on Bioremediation.

20. (a) Write an essay on principles of phytogeography.

Or

- (b) Write an essay on remote sensing.

(6 pages)

Reg. No. :

Code No. : 20209 E Sub. Code : SEBO 6 A

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Sixth Semester

Botany

Major Elective III – PLANT ECOLOGY AND
PHYTOGEOGRAPHY

(For those who joined in July 2017 – 2019)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The atmosphere contains _____% of nitrogen.
(a) 78 (b) 29
(c) 75 (d) 89
2. Which one of the following is a biotic factor?
(a) Plants (b) Animals
(c) (a) and (b) (d) Soil

3. The animals that consume the green plants are called
(a) Decomposers (b) Producers
(c) Consumers (d) Customers
4. The pyramid of energy is
(a) Always inverted
(b) Always upright
(c) Not a true pyramid
(d) Either upright or inverted
5. Only one dominant species characteristic to a particular area is called
(a) Association (b) Location
(c) Consociation (d) Plant formation
6. The study of the relationships of plants and animals in a natural habitat is called
(a) Association (b) Consociation
(c) Autecology (d) Synecology
7. The burning or combustion of wastes is called
(a) Landfill (b) Composting
(c) Bioremediation (d) Incineration

Page 2 Code No. : 20209 E

8. The use of transgenic plants for environmental clean-up is called
(a) Phytoremediation (b) Biobleaching
(c) Biodegradation (d) Bioremediation
9. Which one of the following is used for the acquisition of information about far away objects?
(a) Radium (b) Auxanometer
(c) Rador (d) Colorimeter
10. The continental drift was first proposed by
(a) Watson (b) Crick
(c) Wegner (d) Chase

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Give a brief account on Carbon cycle.
Or
(b) Explain the role of microbes which influence the growth on Vegetation.

Page 3 Code No. : 20209 E

12. (a) Describe energy flow in a forest ecosystem.
Or
(b) What are the morphological adaptations seen in hydrophytes? Explain with suitable examples.
13. (a) Describe the line transect method adopted to study plant community.

Or

- (b) Write short notes on Autecology.

14. (a) Give a brief account on phytoremediation.

Or

- (b) Write notes on Biobleaching.

15. (a) Give a brief account on Continental drift.

Or

- (b) List the different types of vegetations in Tamil Nadu.

Page 4 Code No. : 20209 E

[P.T.O]

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give a detailed account on abiotic factors.

Or

- (b) Write an essay on Nitrogen cycle.

17. (a) Describe Aquatic ecosystem.

Or

- (b) Give a detailed account on various kinds of adaptations seen in xerophytes.

18. (a) Distinguish between association and consociation with examples.

Or

- (b) Describe the quadrat method adopted to study plant community.

19. (a) Write an essay on Biosensors.

Or

- (b) Write an essay on Bioremediation.

20. (a) Write an essay on principles of phytogeography.

Or

- (b) Write an essay on remote sensing.

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Cohesion - tension theory is related to
(a) Ascent of sap (b) Respiration
(c) Photosynthesis (d) Transpiration
2. The term matric potential is associated with
(a) Osmosis (b) Diffusion
(c) Imbibition (d) Ascent of sap

7. Which one of the following is a gaseous plant hormone?
(a) Gibberellin (b) Cytokinin
(c) Auxin (d) Ethylene
8. The instrument used to measure growth is
(a) Respiro meter (b) Auxano meter
(c) Photo meter (d) Dialato meter
9. Breaking seed dormancy by low temperature treatment is called
(a) impaction
(b) scarification
(c) stratification
(d) none of these
10. Give an example for biotic stress
(a) Fungi (b) Weeds
(c) Bacteria (d) All the above

3. Balsam plant experiment is associated with
(a) Ascent of sap
(b) Transpiration
(c) Translocation of organic solutes
(d) Water absorption
4. Which one of the following is a trace element?
(a) K (b) Ca
(c) Mn (d) Mg
5. The number of ATP molecules synthesized due to the complete breakdown of a glucose molecule is
(a) 30 (b) 37
(c) 38 (d) 40
6. Reaction center of photosystem II is
(a) P700 (b) P680
(c) P670 (d) P660

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Give an account on the factors that affect absorption of water by plants.
Or
(b) Give a brief account on diffusion.
12. (a) Discuss any two theories on Ascent of sap.
Or
(b) Write short notes on micronutrients.
13. (a) Bring out the differences between C3 and C4 plants.
Or
(b) Write short notes on glycolysis.
14. (a) Draw a growth curve and explain its various phases.
Or
(b) Explain the physiological role of gibberellins.

15. (a) Write about the methods of breaking seed dormancy.

Or

(b) Write an account on response of plants to drought.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss in detail about the mechanism of absorption of water.

Or

(b) Give a detailed account on mechanism of stomatal transpiration.

17. (a) List out the physiological roles and deficiency symptoms of NPK.

Or

(b) Describe the mechanism of translocation of organic solutes.

Page 5 Code No. : 20203 E

18. (a) Explain Calvin cycle.

Or

(b) Describe Krebs cycle.

19. (a) Write an essay on photoperiodism.

Or

(b) Give an account on vernalization.

20. (a) Write the factors that cause seed dormancy.

Or

(b) Write an account on response of plants to heat and salt.

Page 6 Code No. : 20203 E

(6 pages)

Reg. No. : _____

Code No. : 20204 E Sub. Code : SMBO 62

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Sixth Semester

Botany — Core

GENETICS, EVOLUTION AND BIostatISTICS

(For those who joined in July 2017–2019 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. A cross of F1 individual with recessive parent is called as
 - (a) Monohybrid cross
 - (b) Dihybrid cross
 - (c) Back cross
 - (d) Test cross

6. Operon concept was put forwarded by
 - (a) Devries
 - (b) Mendel
 - (c) Griffith
 - (d) Jacob and monad

7. Use and disuse theory was proposed by
 - (a) Hugo de vries
 - (b) Lamarck
 - (c) Darwin
 - (d) Mendel

8. Mutation theory was proposed by
 - (a) Darwin
 - (b) Lamarck
 - (c) Mendel
 - (d) Hugo de vries

9. Mode is
 - (a) The least frequent value
 - (b) The highest frequent value
 - (c) Average
 - (d) The central value

10. The median of 2, 3, 4, 5, 6, 7, 8 is
 - (a) 4
 - (b) 5
 - (c) 6
 - (d) 3

Page 3 Code No. : 20204 E

2. According to mendel's law the character expressed in F1 generation are
 - (a) Dominant
 - (b) Recessive
 - (c) (a) and (b)
 - (d) Incomplete dominance

3. Coupling and Repulsion is associated with
 - (a) Linkage
 - (b) Crossing over
 - (c) Mutation
 - (d) Complementary gene

4. Which one of the following formula is represented by Hardy Weinberg law
 - (a) $p + q = 0$
 - (b) $p + q = 3$
 - (c) $p + q = 4$
 - (d) $p + q = 1$

5. DNA does not have
 - (a) Thymine
 - (b) Adenine
 - (c) Guanine
 - (d) Uracil

Page 2 Code No. : 20204 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on Test cross.
Or
(b) What is complementary gene? Describe.

12. (a) Explain coupling and repulsion with suitable example.
Or
(b) What are the ways by which sex is determined in plants? Explain any one type.

13. (a) Describe the molecular structure of DNA.
Or
(b) Write notes on DNA replication.

14. (a) Explain use and disuse theory with suitable example.
Or
(b) Write short notes on mutation theory.

Page 4 Code No. : 20204 E

[P.T.O.]

15. (a) Write short notes on Arithmetic mean.

Or

(b) Discuss the chi-square test.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain polygenic inheritance with suitable example.

Or

(b) Explain Mendel's Dihybrid cross.

17. (a) Write an essay on crossing over.

Or

(b) Explain male sterility in maize.

18. (a) Give an account on characterization of Genetic code.

Or

(b) Discuss DNA as the genetic material.

19. (a) What is speciation? Describe the types of speciation.

Or

(b) Write an essay on natural selection theory.

Page 5 Code No. : 20204 E

20. (a) Write an essay on collection and interpretation of data in Biostatistics.

Or

(b) Write an essay on standard deviation.

Page 6 Code No. : 20204 E

(6 Pages)

Reg. No. :

Code No. : 20220 E Sub. Code : SNBO 4 B /
ANBO 42

U.G. (CBCS) DEGREE EXAMINATION,
APRIL 2023.

Fourth – Semester

Botany

Non-Major Elective — BOTANY FOR COMPETITIVE
EXAMINATION

(For those who joined in July 2017 – 2020)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Cell wall of fungi is made up of
- (a) cellulose (b) hemicellulose
(c) chitin (d) pectin

7. Stomata is associated with
- (a) transpiration
(b) ascent of sap
(c) bleeding
(d) guttation
8. Which gas is evolved during photosynthesis?
- (a) nitrogen
(b) hydrogen
(c) carbon dioxide
(d) oxygen
9. Who is called father of genetics?
- (a) Darwin (b) Mendal
(c) Punnet (d) Watsan
10. _____ is called as powerhouse of cell.
- (a) ribosome (b) plasma
(c) mitochondria (d) nucleus

Page 3 Code No. : 20220 E

2. Which one of the following has both living and non living character?
- (a) bacteria (b) fungi
(c) algae (d) virus
3. Engler and prantle system of classification is a _____ system.
- (a) artificial (b) natural
(c) phylogenetic (d) none of these
4. Paddy belongs to the family
- (a) Fabaceae (b) Cucurbitaceae
(c) Poaceae (d) None of these
5. Leaves of which plant is used to kill intestinal worms
- (a) Ocimum (b) Neam
(c) Acalypha (d) Vetiver
6. Which part of ginger is used medicinally
- (a) leaves (b) root
(c) rhizome (d) all the above

Page 2 Code No. : 20220 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b) not exceeding 250 words.

11. (a) Write the general characters of pteridophytes.
- Or
- (b) Enumerate the economic importance of algae.
12. (a) Write short notes on binomial system of nomenclature.
- Or
- (b) Explain the floral characters of cucurbitaceae.
13. (a) What are the medicinal uses of ocimum?
- Or
- (b) Write the botanical name and medicinal uses of neem.
14. (a) What are the types of transpiration?
- Or
- (b) Explain glycolysis.

Page 4 Code No. : 20220 E

[P.T.O]

15. (a) Explain the functions of nucleus.

Or

(b) Write about bio-fertilizer.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
answer should not exceed 600 words.

16. (a) What are the general characters and economic importance of gymnosperms?

Or

(b) Give an account on classification of plant kingdom.

17. (a) Explain the floral characters and economic importance of fabaceae.

Or

(b) Write the Bentham and Hooker system of classification.

18. (a) Write the botanical name, useful part and medicinal uses of Tulsi.

Or

(b) Write the medicinal uses of solanum trilobatum and phyllanthus emblica.

19. (a) Explain the mechanism of water absorption in plants.

Or

(b) Give a detailed account on cyclic electron transport.

20. (a) Write in detail about chloroplast.

Or

(b) Write an essay on basic concepts of genetic engineering.
