

(6 pages)

Reg. No. :

Code No. : 6074

Sub. Code : PBOM 43

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Botany — Core

APPLIED BIOTECHNOLOGY

(For those who joined in July 2017-2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is Callus?
 - (a) Tissues that grow to form an embryoid
 - (b) An unorganized actively dividing the mass of cells maintained in a culture
 - (c) An insoluble carbohydrate
 - (d) A tissue that grows from an embryo

2. The technique of obtaining large number of plantlets by tissue culture method is called _____.
- (a) Organ culture
 - (b) Micropropagation
 - (c) Macropropagation
 - (d) Plantlet culture
3. A vector is a plasmid used to transfer the
- (a) Chromosome (b) gene
 - (c) Nucleus (d) cell
4. Genetic engineering increases the efficiency and
- (a) productivity (b) Metabolism
 - (c) meiosis (d) mitosis
5. Which of the following is not required for the biodegradation process?
- (a) Micro-organism
 - (b) Environment conditions
 - (c) Adhesive
 - (d) Substrate

10. Preliminary clinical results with a humanized antibody against the interleukin-2 receptor have suggested the
- (a) absence of human immune response against murine proteins (HAMA) response.
 - (b) presence of HAMA response
 - (c) poor recognition of immunoglobulin, Ig constant regions
 - (d) all the above

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 single cell culture.

Or

- (b) Explain suspension culture.

12. (a) Describe Ti plasmids.

Or

- (b) Write notes on Ri plasmids.

13. (a) Explain golden rice and its significance.

Or

- (b) Write notes on *Flavr savr* tomato.

14. (a) Comment on biosensors.

Or

(b) Explain bio recovery of metals.

15. (a) Add note on genetically engineered humulin.

Or

(b) Write an essay on applications of gene therapy.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Give an account on applications of plant tissue culture in agriculture.

Or

(b) Explain the methods involved in micro propagation.

17. (a) Write notes on promoters and terminators.

Or

(b) Describe cloning in eukaryotes.

18. (a) Discuss on pest resistant transgenic plant.

Or

(b) Write an essay on transgenic plant for molecular pharming.

19. (a) Explain *ex situ* bio remediation with examples.

Or

(b) What are the applications of fungal enzymes in industries?

20. (a) Give an account on vaccines and its applications.

Or

(b) Write an essay on production of antibodies.

(6 pages)

Reg. No. :

Code No. : 6411

Sub. Code : ZBOM 11

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Botany — Core

ALGOLOGY AND BRYOLOGY

(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 does not contain nuclear membrane?
(a) *Nostoc* (b) *Volvox*
(c) *Sargassum* (d) *Oedogonium*

2. BGA are included in
(a) Fungi (b) Protista
(c) Prokaryotes (d) Eukaryotes

3. Which among the following possess isomorphic haplo-diplontic life cycle?
- (a) *Ulva* (b) *Laminaria*
- (c) *Sargassum* (d) Polysiphonia
4. Which of the following group never produces motile, flagellated cells among any of its members?
- (a) Chrysophyta (b) Pahaephyta
- (c) Chlorophyta (d) Rhodophyta
5. Agar and carrageenan are polymers of _____
- (a) glucose (b) phosphoric acid
- (c) starch (d) Galactose
6. Which of the following species are important for cervical dilation?
- (a) *Laminaria japonica*
- (b) *Gracilaria*
- (c) *Chondrus*
- (d) *Gonyaulax catenella*

7. Which is wrong in respect to Bryophytes?
- (a) Water is essential for fertilization
 - (b) Presence of archegonia
 - (c) Presence of ciliated sperms
 - (d) Presence of autotrophic independent sporophytes.
8. Algal bloom is due to and results in
- (a) Presence of large amount of nutrients in water
 - (b) Excessive growth of free floating or planktonic algae
 - (c) Distinct colour to the water bodies
 - (d) All of these
9. Antherozoid mother cells are
- (a) Androgonia (b) Antherozoids
 - (c) Androcytes (d) Jacket
10. Meristematic tissues are present in
- (a) *Marchantia*
 - (b) *Polytrichum*
 - (c) *Porella*
 - (d) *Anthoceros*

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Illustrate the occurrence Rhodophyceae.

Or

- (b) Chart the classification of algae by Fritsch.

12. (a) Describe about flagella in algae.

Or

- (b) Distinguish chromatophores in algae.

13. (a) Justify the toxicity from algae.

Or

- (b) Express the role of algae in fertility of soil.

14. (a) Describe the characteristics features of Marchantiales.

Or

- (b) Comment on interrelationship of Bryophytes.

15. (a) Enumerate origin of Bryophytes.

Or

(b) Explain the gametophyte generation in Bryophytes.

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 sexual reproduction on Bacillariophyceae.

Or

(b) Illustrate the occurrence and thallus structure of Chlorophyceae.

17. (a) Distinguish life cycle pattern in algae.

Or

(b) Explain alternation of generations in algal system.

18. (a) Evaluate the economic importance of algae.

Or

(b) How will you develop algae for commercial cultivation? Discuss.

19. (a) Enumerate the classification of Bryophytes by Rothmaler and Smith.

Or

- (b) Discuss the features of Anthocerotales.

20. (a) Describe economic importance of Bryophytes.

Or

- (b) Elucidate alternation of generations in Bryophytes.

(6 pages)

Reg. No. :

Code No. : 6412

Sub. Code : ZBOM 12

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Botany – Core

MYCOLOGY, LICHENOLOGY AND PLANT
PATHOLOGY

(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 groups has cell wall?
 - (a) Bacteria, plant and animals
 - (b) Bacteria, fungi and plants
 - (c) Bacteria, fungi and animals
 - (d) Bacteria and plants only

2. Which component is present in the cell wall of fungi?
- (a) Hemicellulose (b) Cellulose
(c) Pectin (d) Chitin
3. Ergotamine tartarate extracted from *Claviceps*, is used to cure _____.
- (a) Bodyache (b) Headache
(c) Fever (d) Stomach pain
4. Plant decomposers are _____.
- (a) Monera and fungi
(b) Fungi and plantae
(c) Protista and animals
(d) Animals and monera
5. This is a crustose lichen
- (a) *Peltigera* (b) *Usnea*
(c) *Rhizocarpon* (d) None of the above
6. Majority of lichens are the pollution indicators of
- (a) CO (b) Mercury
(c) NO₂ (d) SO₂

7. What does biocontrol refer to?
- (a) Use of biological methods for controlling plant diseases
 - (b) Use of chemical methods for controlling plant diseases
 - (c) Use of morphological methods by the plants to control the attack of pathogens
 - (d) Use of physical methods by the plants to control the attack of pathogens
8. What is the method of controlling pests in agriculture by the organic farmer?
- (a) Chemical fertilizers
 - (b) Natural predation
 - (c) Morphological method
 - (d) Physiological method
9. The incubation period for stem rust of wheat in south India is
- (a) One month
 - (b) 27 days
 - (c) 12-15 days
 - (d) 60 days
10. Citrus canker is caused by _____.
- (a) *Xanthomonas citri*
 - (b) *Agrobacterium radiobacter*
 - (c) *Anaplasma phagocytophilum*
 - (d) *Azotobacter vinelandii*

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Illustrate vegetative reproduction in Ascomycotina.

Or

- (b) Express the composition of fungal cell wall.

12. (a) Mention the heterothallism in fungi.

Or

- (b) Describe endotrophic mycorrhizae.

13. (a) Explain the mode of nutrition in lichens.

Or

- (b) Chart the Miller's classification of Lichens.

14. (a) Describe the defense mechanism in plants.

Or

- (b) Mention the physical methods for control the plant diseases.

15. (a) Identify control measures of mosaic disease in brinjal.

Or

- (b) Explain disease cycle in white rust of crucifers.

PART C — (5 × 8 = 40 marks)

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

16. (a) Illustrate the characteristic features of Deuteromycotina.

Or

- (b) Explain the vegetative reproduction in Basidiomycotina.

17. (a) Describe the structure and symbiotic association of mycorrhizae.

Or

- (b) Enumerate life cycle pattern in fungi.

18. (a) “Lichens as Pollution Indicators”-Justify.

Or

- (b) Defend the reproduction of lichens in three groups.

19. (a) How will you apply biological method of plant disease control? Discuss.

Or

- (b) Examine the phytoalexins in plant disease management.

20. (a) Illustrate the effects, symptoms causal organisms disease cycle and control measure of citrus canker disease.

Or

- (b) Enumerate the effects, symptoms, causal organisms disease cycle and control measure of late blight of potato disease.
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(6 pages)

Reg. No. :

Code No. : 6413

Sub. Code : ZBOM 13

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Botany – Core

MICROBIOLOGY AND IMMUNOLOGY

(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. A haemocytometer is a special counting chamber designed for counting
 - (a) Bones
 - (b) Cells
 - (c) Nerves
 - (d) Pulse rate

2. Which of the following are the recommended heat temperature and time periods for the moist heat sterilization method used in an autoclave?
- (a) 180 °c for 5 minutes
 - (b) 121 °c for 15 minutes
 - (c) 126 °c for 3 minutes
 - (d) 160 °c for 45 minutes
3. The smallest cells of mycoplasmas are about _____ in diameter.
- (a) 1 micrometre
 - (b) 0.3 micrometre
 - (c) 5 micrometre
 - (d) 1 metre
4. Mycoplasmas can be cultivated in vitro on nonliving media as
- (a) Facultative aerobes
 - (b) Obligate aerobes
 - (c) Facultative anaerobes
 - (d) Microaerophiles
5. Botulism prevention involves
- (a) Proper heat sterilization before food canning
 - (b) Addition of chemical preservatives
 - (c) Proper low temperature treatment before food canning
 - (d) All of these

6. *Clostridium perfringens* poisoning is associated with
- (a) Meat products (b) Vegetables
(c) Canned foods (d) Fish products
7. Urea degrading bacteria
- (a) *Bacillus pasture*
(b) *B. niger*
(c) *Micrococcus sp*
(d) *Clostridium pasteurianum*
8. Which is known as sewage fungus?
- (a) *Cephalosporium* (b) *Penicillium*
(c) *Leptomitus* (d) *Rhizobium*
9. How many types of antibodies are there?
- (a) Five (b) Three
(c) Two (d) Four
10. Which of the following statements is true about the IgM of humans?
- (a) IgM can cross the placenta
(b) IgM can protect the mucosal surface
(c) IgM is produced by high-affinity plasma cells
(d) IgM is primarily restricted in the circulation

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Enumerate physical methods of sterilization.

Or

- (b) Show the ultrastructure of Gram positive bacterial cell.

12. (a) Explain the structure of Mycoplasma.

Or

- (b) Describe the lysogenic cycle of viruses.

13. (a) Explain the spoilage of fruits.

Or

- (b) Show the production of acetic acid.

14. (a) List out the role of BGA.

Or

- (b) Infer the rhizosphere region of plants.

15. (a) Comment on innate immunity.

Or

- (b) Mention about T cell epitopes.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Illustrate the haemocytometer and its uses for cell count.

Or

- (b) Describe the bacterial growth.

17. (a) Give an account of viroids and prions.

Or

- (b) List out the general characteristics of viruses.

18. (a) Determine preservation of food products.

Or

- (b) Elucidate the dairy and canned foods.

19. (a) Examine the significance of microbial inoculants in agriculture.

Or

- (b) Notify the indicator organisms in an environment.

20. (a) Discuss on antigenicity.

Or

(b) Describe about principle, working mechanism and applications of ELISA.

(6 pages)

Reg. No. :

Code No. : 6414

Sub. Code : ZBOM 14

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Botany – Core

PHYTOCHEMISTRY

(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 solvent used for extraction is known as
 - (a) Distillate
 - (b) Extract
 - (c) Mare
 - (d) Menstruum
2. Identify the process used for extraction
 - (a) Infusion
 - (b) Decoction
 - (c) Digestion
 - (d) All of the above

3. Which of the following is NOT the class of secondary metabolite?
- (a) Amino acids (b) Terpenes
(c) Phenolics (d) Alkaloids
4. Name the class of secondary metabolites which is characterized by the presence of the hydroxyl group with an aromatic ring?
- (a) Glycosides (b) Phenolics
(c) Alkaloids (d) Terpenes
5. Beta-carotene, a plant pigment falls under which of the following classes of terpenes?
- (a) Triterpenes
(b) Teteraterpenes
(c) Diterpenes
(d) Polyterpenes
6. Epicatechin gallate (ECG) is a type of flavonoid, found in which of the following?
- (a) Orange (b) Green tea
(c) Berries (d) Carrot

7. Stas-otta process is used for extraction of
- (a) Glycosides
 - (b) Alkaloids
 - (c) Terpenoids
 - (d) Resins
8. Saponin glycosides shows one of the following property
- (a) Laxative
 - (b) Anti convulsant
 - (c) Foaming
 - (d) Astringent
9. Which of the following is used in the preparation of dental products?
- (a) Clove
 - (b) Mentha
 - (c) Cinnamom
 - (d) Fennel
10. Volatile oil _____
- (a) Has low refractive index
 - (b) Has specific rotation
 - (c) Soluble in water
 - (d) Leave stain on evaporation

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Measure the scope of Phytochemistry.

Or

- (b) How will you prepare the plant extracts?

12. (a) Quote the secondary metabolites in plants.

Or

- (b) What are the methods used for separation of plant constituents?

13. (a) Classic flavonoids.

Or

- (b) Explain about β carotenes.

14. (a) Identify the properties of glycosides.

Or

- (b) Extend the natural sources of glycosides.

15. (a) Mention the sources of volatile oils.

Or

(b) Describe about extraction and utilization of tulsi oil.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Enumerate parameters for selecting appropriate plant extraction method.

Or

(b) State the importance of phytochemistry in Pharmaceutical industries.

17. (a) Illustrate primary phytochemical screening methods.

Or

(b) Discuss on polyvalent action of phytomedicines.

18. (a) Provide the sources and therapeutic applications of Ephedrine.

Or

(b) Distinguish between flavones and Flavanones.

19. (a) Explain the structure and significance of Coumarins.

Or

(b) Evaluate the toxicological effects of glycosides.

20. (a) Discuss on phytochemical, extraction and uses of sandal wood oil.

Or

(b) Give an account on medicinal uses of resins.

(6 pages)

Reg. No. :

Code No. : 6415

Sub. Code : ZBOM 21

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second 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. In Pteridophytes, a spore germinates to produce
 - (a) sporophyte
 - (b) sporangium
 - (c) prothallus
 - (d) microsporophyll
2. The sporangia of *Rhynia* are
 - (a) Apical and *homosporous*
 - (b) Lateral and *homosporous*
 - (c) Apical and *homosporous*
 - (d) Lateral and *homosporous*

3. Ligule is present in
(a) *Rhynia* (b) *Psilotum*
(c) *Selaginella* (d) *Lycopodium*
4. Vascular canal in *Equisetum* is situated
(a) Below the ridges
(b) Below the furrows
(c) Below the ridges and furrows
(d) Between the pith and the epidermis.
5. A stele without pith is
(a) Solenostele (b) Siphonostele
(c) Haplostele (d) Dictyostele
6. Which of the following has medicinal value and is a pteridophyte?
(a) *Lycopodium* (b) *Adiantum*
(c) *Gnetum* (d) *Dryopteris*
7. Which of the following statement is not correct for the gymnosperms?
(a) Leaves are compound
(b) Naked seeds are formed
(c) Xylem is made up of tracheids
(d) Xylem is made up of vessels

8. In *Cycas* male cone lacks
- (a) Microspore (b) Microsporophylls
(c) Microsporangium (d) Nucellus
9. What is the longest part of Earth's history
- (a) Precambrian Time (b) Paleozoic Era
(c) Mesozoic Era (d) Cenozoic Era
10. List the 4 times periods (eras) beginning with the most recent one
- (a) Precambrian Time, Mesozoic, Cenozoic, Paleozoic
(b) Paleozoic, Mesozoic, Precambrian, Cenozoic
(c) Precambrian Time, Paleozoic, Mesozoic, Cenozoic
(d) Paleozoic, Precambrian, Mesozoic, Cenozoic

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) What is the leptosporangiate and eusporangiate type of development?

Or

- (b) Write short notes on the gametophyte of *Rhynia*.

12. (a) Write short notes on the development and structure of sporangia in *Selaginella*.

Or

- (b) Describe in detail the gametophytic generation in *Equisetum*.

13. (a) Describe the term stele. Give an account of the evolution of stele in pteridophytes.

Or

- (b) Describe briefly the merits and demerits of telome theory.

14. (a) Give an account of the female gametophyte of *Cycas*?

Or

- (b) Write short notes on the resemblances between gymnosperm and pteridophytes.

15. (a) How are fossil plants named?

Or

- (b) Comment on the compressions and compactions.

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 classification of the Pteridophytes proposed by Smith (1955)

Or

- (b) Discuss the reproductive structures of *Lepidodentron*.

17. (a) Describe the sexual reproduction in *Pteris*.

Or

- (b) Give a detailed account of the reproduction in *Isoetes*.

18. (a) Describe various types of steles studied by you.

Or

- (b) Discuss the different stages in the life cycle of a homosporous pteridophyte.

19. (a) Describe the resemblance and differences between gymnosperms and pteridophytes.

Or

- (b) Write a short note on the economic importance of gymnosperms.

20. (a) Describe the types of fossil types.

Or

(b) Give a detailed account on geological time scale.

(6 pages)

Reg. No. :

Code No. : 6416

Sub. Code : ZBOM 22

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Botany — Core

GENETICS AND CELL BIOLOGY

(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. DNA polymerase I is involved in
 - (a) Removal of RNA primer
 - (b) Filling of gap
 - (c) Joining of Okazaki fragments
 - (d) Both (a) and (b)

7. Split gene arrangement is found in
(a) *HIV* (b) *E. coli*
(c) *Yeast* (d) *B. thuringiensis*
8. In Eukaryotes, one of the following mechanisms is not correct in terms of regulation of gene expression
(a) Transcriptional level
(b) Splicing level
(c) Transport of mRNA from the cytoplasm to the nucleus
(d) Translational level
9. What would happen if lysosomes get ruptured in a cell?
(a) Cell dies
(b) Cell shrinks
(c) Cell swells up
(d) Nothing would happen
10. Mitosis and meiosis take place respectively in
(a) Meristem and gametangia
(b) Gametangia and meristem
(c) Permanent tissues and secretory tissues
(d) Secretory tissues and permanent tissues

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Explain different types of DNA studies by you.

Or

- (b) Describe plant mitochondrial DNA.

12. (a) What is photo reactivation DNA repair?

Or

- (b) Comment on sex-linked and sex-limited characters.

13. (a) Write short notes on translation inhibitors.

Or

- (b) Explain – the Wobble hypothesis.

14. (a) Write short notes on non-coding genes.

Or

- (b) Write short notes on the trp operon.

15. (a) Describe cell theory.

Or

- (b) Comment on the lamp brush chromosome.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Give an account of the Watson and Crick model of DNA.

Or

- (b) Explain the process of DNA replication in eukaryotes.

17. (a) What is meant by genetic recombination? Explain the mechanisms of bacterial recombination.

Or

- (b) Give a detailed account of the gene mutation and the factors responsible for gene mutation.

18. (a) Write an essay on the mechanism of transcription in prokaryotes.

Or

- (b) Describe the types of RNA.

19. (a) What is gene? Describe the classification of genes and their description.

Or

- (b) Explain gene regulation in Eukaryotes.

20. (a) Discuss the cell cycle of the eukaryotic cell.

Or

(b) Give a detailed account of the ultra-structure of chromosome.

(6 pages)

Reg. No. :

Code No. : 6417

Sub. Code : ZBOM 23

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Botany – Core

PLANT ANATOMY, EMBRYOLOGY AND
MORPHOGENESIS

(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 cell of the meristem have
 - (a) Young mature dividing cells with large conspicuous nuclei and no intercellular space
 - (b) Large vacuole
 - (c) Abundant cell inclusions
 - (d) All of the above

2. A permanent tissue than can develop the power of division is
- (a) Parenchyma
 - (b) Collenchyma
 - (c) Fibres
 - (d) Sieve tube
3. P protein helping in the transport of organic food is found in
- (a) Sieve tubes (b) Tracheids
 - (c) Vessels (d) Collenchyma
4. Cork is formed in the extra stellar region
- (a) plerome (b) phellogen
 - (c) phelloderm (d) periderm
5. In Kranz anatomy, the bundle sheath cell have
- (a) thin walls, many intercellular spaces and no chloroplasts
 - (b) thick walls, no intercellular spaces and a large number of chloroplasts
 - (c) thin walls, no intercellular spaces and several chloroplasts
 - (d) thick walls, many intercellular spaces and few chloroplasts

6. Identify the wrong statement in the context of heartwood
- (a) Organic compounds are deposited in it
 - (b) It is highly durable
 - (c) It conducts water and minerals
 - (d) It comprises dead elements with highly lignified walls
7. A plant root has 16 chromosomes, so
- (a) Gamete has 16 chromosomes
 - (b) Gamete has 8 chromosomes
 - (c) Endosperm has 8 chromosomes
 - (d) Endosperm has 16 chromosomes
8. In angiosperms pollen grains are dehisced at
- (a) 4 celled stages
 - (b) mostly at 2 and sometimes at 3 celled stages
 - (c) 3 celled stages
 - (d) pollen tube stage
9. Which of the following aspect of light influences morphogenesis?
- (a) Duration
 - (b) Quality
 - (c) Intensity
 - (d) All of the above

10. A differentiated cell
- (a) Is pluripotent
 - (b) Can divide and produce new cells
 - (c) Cannot divide and produce new cells
 - (d) Can give rise to different types of cells

PART B — (5 × 5 = 25 marks)

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

11. (a) Bring out the characters of meristematic cells.

Or

- (b) Write notes on the seasonal activity of cambium

12. (a) What is anomalous secondary growth? Explain how secondary thickening occurs in *Achyranthus* stem.

Or

- (b) What is periderm? How does periderm formation take place in the dicot stems?

13. (a) Write short notes on tension wood.

Or

- (b) Enumerate the ontogeny of the dicot leaves.

14. (a) What are the pre-pollination and post pollination steps in male gametophyte development?

Or

- (b) Compare monosporic embryo sac with bisporic and tetrasporic embryo sac.

15. (a) Define polarity. Briefly describe zygotic polarization in *Fucus*?

Or

- (b) Define symmetry. Briefly describe the types of symmetry.

PART C — (5 × 8 = 40 marks)

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

16. (a) Write notes on the organization of SAM.

Or

- (b) Define vascular cambium and its function.

17. (a) What are lenticels? How does lenticel formation take place in plants?

Or

- (b) Write an essay on the location, structure and functions of parenchyma.

18. (a) Write an essay on the physical properties of woods.

Or

- (b) Write an essay on wood defects.

19. (a) Write an explanatory note on the development of microsporangium.

Or

- (b) Explain the development of different types of endosperms in Angiosperms.

20. (a) Explain the meaning of morphogenetic factors. Mention different types and functions of morphogenetic factors?

Or

- (b) Explain symmetry in angiosperm flowers.
-

(6 pages)

Reg. No. :

Code No. : 6418

Sub. Code : ZBOM 24

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Botany – Core

ENTREPRENEURSHIP AND ECONOMIC 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. Japanese garden does not have
 - (a) Terrace garden
 - (b) Sand garden
 - (c) Stone lantern
 - (d) Stream

2. Green Façade is the term used in which of the following
 - (a) Vertical gardening
 - (b) Green manuring
 - (c) Sericulture
 - (d) Vermiculture

3. Vegetables are mostly canned in
 - (a) Brine
 - (b) Syrup
 - (c) Water
 - (d) All the above
4. Onion is an example of
 - (a) rhizome
 - (b) corm
 - (c) stem tuber
 - (d) bulb
5. The fruit body of mushroom consists of
 - (a) Stipe
 - (b) Pileus
 - (c) Pedicel
 - (d) Both (a) and (b)
6. For long term storage, mushrooms are stored in
 - (a) Acid solution
 - (b) Alkaline solution
 - (c) Salt solution
 - (d) Alcohol
7. The breeding and rearing of earthworms in controlled environment is called
 - (a) vermiwash
 - (b) vermiculture
 - (c) vermicomposting
 - (d) vermicasting

8. NABARD was established in the year
- (a) 1969 (b) 1975
(c) 1982 (d) 1994
9. The queen of spices is
- (a) Cardamom (b) Pepper
(c) Ginger (d) Chilly
10. Too much caffeine can damage the
- (a) Heart only
(b) Kidneys only
(c) Pancreas
(d) Heart and Kidneys

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 kitchen garden. Explain the importance of the kitchen garden.

Or

- (b) Describe a rock garden.

12. (a) Discuss the methods of processing used for tomatoes.

Or

(b) Write notes on outdoor cultivation of *Chrysanthemum*.

13. (a) Illustrate the medicinal values of mushrooms.

Or

(b) Describe the preparations of any three mushroom recipes.

14. (a) Write short notes on vermiwash preparation.

Or

(b) Write short notes on EDP.

15. (a) Describe the utilization of ragi.

Or

(b) Comment on utilization and economic importance of rosemary volatile oils.

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 history, scope and importance of gardening.

Or

- (b) What benefits accrue from a water garden?

17. (a) Describe the processing, preservation and uses of major vegetables of Tamil Nadu you have studied.

Or

- (b) Give a detailed account of the greenhouse cultivation of flowering plants.

18. (a) Write an essay on the cultivation of the Oyster mushroom.

Or

- (b) Can mushrooms get diseases? Give an account of the diseases of mushrooms.

19. (a) What is organic farming? Discuss its impact on the environment.

Or

- (b) Write an essay on entrepreneurship funding agencies you have studied.

20. (a) Discuss the utilization and economic importance of rice and millet.

Or

- (b) Discuss the utilization and economic importance of cardamom and henna.
-

(6 pages)

Reg. No. :

Code No. : 6419

Sub. Code : ZBOM 31

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Botany – Core

TAXONOMY OF ANGIOSPERMS

(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. System of classification based on a number of characters is referred as
 - (a) Phylogenetic system
 - (b) Artificial system
 - (c) Natural system
 - (d) All of the above

2. Phylogeny is the study of
 - (a) Evolution of plants
 - (b) Origin and development of plants
 - (c) Origin and development of man
 - (d) Physiology of plants

3. Which year marked birth of modern system of biological nomenclature?
 - (a) 1753 (b) 1857
 - (c) 1757 (d) 1854

4. In the binomial naming system, species name will start with the _____
 - (a) Small letter (b) Capital letter
 - (c) Numerical form (d) Special sign

5. The principles of Numerical taxonomy were developed by
 - (a) Bentham And Hooker
 - (b) Engler And Prantl
 - (c) Sneath And Sokal
 - (d) Takhtajan And Cronquist

6. A document containing a comprehensive account of a specific taxonomic group, generally a genus or family is
- (a) Manual (b) Flora
(c) Monograph (d) Revision
7. The family Lythraceae belongs to the series
- (a) Disciflorae (b) Calyciflorae
(c) Heteromerae (d) Inferae
8. A floral formula does not tell about
- (a) ovary position
(b) whorls of floral parts
(c) number of floral parts
(d) placentation and aestivation
9. Labellum in Orchidaceae comes to anterior side by the twisting of the ovary through 180 degree. This process is called
- (a) Adnation (b) Articulation
(c) Resupination (d) Attenuation
10. Which of the following family belong to monochlamydeae?
- (a) Amaranthaceae (b) Cyperaceae
(c) Verbenaceae (d) Mimosaceae

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 artificial system of plant classification.

Or

- (b) Summarize the importance of plant taxonomy.

12. (a) Illustrate the salient features of ICBN.

Or

- (b) Explain about author citation.

13. (a) Distinguish the classical taxonomy from modern taxonomy.

Or

- (b) Explain the role of phytochemicals in taxonomy.

14. (a) Describe the floral characters of Menispermaceae.

Or

- (b) Describe the floral characters of Mimosaceae family.

15. (a) Describe the floral characteristics of Nyctaginaceae.

Or

- (b) Summarize the economic importance 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 natural system of plant classification.

Or

- (b) Illustrate the angiosperm phylogeny group classification.

17. (a) Describe the different nomenclatural types.

Or

- (b) Discuss about the effective and valid publication in plant taxonomy.

18. (a) Discuss about cladistics method of plant classification.

Or

- (b) Describe the various molecular markers using in molecular taxonomy.

19. (a) Explain the vegetative and floral characters with affinity of Verbenaceae.

Or

- (b) Explain the vegetative and floral characters with affinity of Asteraceae.

20. (a) Describe the family Euphorbiaceae and its economic importance.

Or

- (b) Describe the vegetative and floral characters of Orchidaceae and note on its economic importance.
-

(6 pages)

Reg. No. :

Code No. : 6420

Sub. Code : ZBOM 32

M.Sc.(CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Botany

BIOCHEMISTRY AND BIOPHYSICS

(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. Class of carbohydrate which cannot be hydrolyzed further, is known as?
(a) Disaccharides (b) Polysaccharides
(c) Proteoglycan (d) Monosaccharide

2. Which of the following biomolecules simply refers to as staff of life?
- (a) Lipids (b) Proteins
(c) Vitamins (d) Carbohydrates
3. Name the simplest amino acid
- (a) Alanine (b) Tyrosine
(c) Glycine (d) Asparagine
4. The most common secondary structure of proteins is
- (a) β - pleated sheet
(b) β -pleated sheet parallel
(c) β -pleated sheet non-parallel
(d) α -helix
5. Which of these is not a lipid?
- (a) Fats (b) Oils
(c) Proteins (d) Waxes
6. Beta-oxidation of fatty acids occurs in
- (a) mitochondria
(b) peroxisome and mitochondria
(c) peroxisome
(d) peroxisome, mitochondria and ER

7. This enzyme was first isolated and purified in the form of crystals
- (a) urease (b) pepsin
(c) amylase (d) rbonuclease
8. The nature of an enzyme is
- (a) lipid (b) vitamin
(c) carbohydrate (d) protein
9. What is the most common source of bioluminescence in surface waters?
- (a) Squid (b) Jellyfish
(c) Crustcians (d) Dinoflagellates
10. Which of the following is a branch of thermodynamics?
- (a) Equilibrium thermodynamics
(b) Classical thermodynamics
(c) Chemical thermodynamics
(d) All of the mentioned

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 structure and properties of maltose.

Or

- (b) Explain the amino sugar.

12. (a) Illustrate the tertiary structure of protein.

Or

- (b) Summarize the functions of amino acids.

13. (a) Summarize the properties of lipids

Or

- (b) Summarize the functions of gluconeogenesis.

14. (a) Summarize the properties of enzymes.

Or

- (b) Explain the mechanism of enzyme action.

15. (a) Summarize the uses of bioluminescence.

Or

- (b) ATP as cell's energy currency – Justify.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Summarize the properties of carbohydrates.

Or

- (b) Describe the mutarotation.

17. (a) Describe the secondary structure of protein.

Or

- (b) Explain the classification of amino acids.

18. (a) Explain the

(i) Phospholipids and

(ii) Steroids.

Or

- (b) Describe the beta oxidation of fatty acid.

19. (a) Explain the enzyme nomenclature and classification.

Or

(b) Explain the

(i) Coenzymes

(ii) Isoenzymes.

20. (a) Describe the properties of light.

Or

(b) Explain any two laws of thermodynamics.

(6 pages)

Reg. No. :

Code No. : 6421

Sub. Code : ZBOM 33

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Botany — Core

COMPUTER APPLICATION AND BIOINFORMATICS

(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 unit is responsible for converting the data received from the user into a computer understandable format?
 - (a) Output unit
 - (b) Input unit
 - (c) Memory unit
 - (d) Arithmetic and logic unit

2. Which of the following is designed to control the operations of a computer?
- (a) User (b) Application software
(c) System software (d) Utility software
3. The process of transferring files from a computer on the internet to your computer is called _____
- (a) Uploading (b) Forwarding
(c) FTP (d) Downloading
4. In internet terminology IP means _____
- (a) internet provider (b) internet protocol
(c) internet procedure (d) internet processor
5. In hierarchical genome sequencing approach, based on the results of _____ mapping _____ of the BAC clones on a chromosome can be determined.
- (a) physical, the location and orders
(b) physical, only the locations
(c) cytological, only the locations
(d) physical, only the orders
6. The human genome contains approximately _____
- (a) 6 billion base pairs (b) 5 billion base pairs
(c) 3 billion base pairs (d) 4 billion base pairs

7. In the pairwise energy based method, a protein sequence is searched for in a structural fold database to find the best matching structural fold using _____ criteria.
- (a) energy-based (b) residue-based
(c) structure-based (d) sequence-based
8. Which of the following is untrue about SCOP?
- (a) It is constructed almost entirely based on manual examination of protein structures
(b) The SCOP families consist of proteins having low sequence identity (>30%)
(c) It is a database for comparing and classifying protein structures
(d) The proteins are grouped into hierarchies of classes, folds, super families, and families
9. BLAST uses a _____ to find matching words, whereas FASTA identifies identical matching words using the _____
- (a) substitution matrix, hashing procedure
(b) substitution matrix, blocks
(c) hashing procedure, substitution matrix
(d) ktups, substitution matrix

10. Which of the following is not a benefit of BLAST?
- (a) speed
 - (b) statistical rigor
 - (c) handling of gaps
 - (d) more sensitive

PART B — (5 × 5 = 25 marks)

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

11. (a) Elaborate the advantages of MS Excel.

Or

- (b) What are the characteristics of computers?
Explain.

12. (a) Describe the complete history of internet.

Or

- (b) Write down the functions of search engines.

13. (a) Explain the need and potential of bioinformatics.

Or

- (b) Mention the purpose of human genome project.

14. (a) Point out the benefits of bioinformatics databases.

Or

- (b) Determine the DDBJ nucleic acid sequence databases.

15. (a) Distinguish between the JSMol and RASMol molecular visualization.

Or

- (b) Summarize the different types of FASTA.

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 different types of output units of computers.

Or

- (b) Explain the classification of computers.

17. (a) Examine the functions of internet service provider.

Or

- (b) Outline the advantages of internet browsers.

18. (a) Illustrate the concept of genomics and proteomics.

Or

- (b) What are the medically relevant genes? Explain.

19. (a) Draw and explain the architecture of SwissProt protein sequence databases.

Or

(b) Evaluate the need of SCOP structure databases.

20. (a) Formulate the prediction of activity spectra pass.

Or

(b) Analysis the various types of BLAST.

(6 pages)

Reg. No. :

Code No. : 6422

Sub. Code : ZBOM 34

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Botany — Core

RESEARCH METHODOLOGY AND
BIOINSTRUMENTATION

(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. Conference proceedings are considered as documents
 - (a) conventional
 - (b) primary
 - (c) secondary
 - (d) tertiary

2. Information is _____
- (a) Processed data (b) Raw data
(c) Input data (d) Organized data
3. Mean, median and mode are measures of
- (a) ANOVA
(b) Ways of sampling
(c) Measure of control tendency
(d) None of the above
4. A circle divided into sectors proportional to the frequency of items shown is called
- (a) Bar chart (b) Pie chart
(c) Histogram (d) Frequency polygon
5. In fluorescence microscopy, which of the following performs the function of removing all light except the blue light?
- (a) Exciter filter (b) Barrier filter
(c) Dichroic mirror (d) Mercury arc lamp
6. Resolving power of a microscope depends upon
- (a) The focal length and aperture of the eye lens
(b) The focal length and objective of the eye lens
(c) The apertures of the objective and the eye lens
(d) The wavelength of light illuminating the object

7. Select the correct statement from the following option
- (a) Spectroscopic methods require less time and more amount of sample than classical methods
 - (b) Spectroscopic methods require more time and more amount of sample than classical methods
 - (c) Spectroscopic methods require less time and less amount of sample than classical methods
 - (d) Spectroscopic methods require more time and less amount of sample than classical methods
8. Chromatography is a physical method that is used to separate _____
- (a) Simple mixtures (b) Complex mixtures
 - (c) Viscous mixtures (d) Metals
9. Which technique separates charged particles using electric field?
- (a) Hydrolysis (b) Electrophoresis
 - (c) Protein synthesis (d) Protein denaturing
10. What is IPR?
- (a) Intellectual Property Rights
 - (b) International Property Rights
 - (c) Indian Property Rights
 - (d) Intellectual Proper Right

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 importance of bibliography.

Or

- (b) Write the differences between short communication, review paper and original research.

12. (a) Explain the tabulation of data.

Or

- (b) Define standard error. How to calculate standard error?

13. (a) Summarize the principles and applications of phase contrast microscopy.

Or

- (b) Describe the rotary microtome.

14. (a) Explain thin layer chromatography with its applications.

Or

- (b) Summarize the applications of centrifugation.

15. (a) Explain the principles of electrophoresis and list its types.

Or

- (b) Explain the gel electrophoresis with its applications.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Summarize the importance of review of literature.

Or

- (b) Describe the structure of science thesis.

17. (a) Discuss the various tools and techniques of data collection used in research.

Or

- (b) Discuss the graphical representation of data.

18. (a) Describe the instrumentation of scanning electron microscope.

Or

- (b) Explain the fixation and fixatives.

19. (a) Explain the instrumentation and applications of UV-Visible spectroscopy.

Or

- (b) Describe the instrumentation and applications of GLC.

20. (a) Explain the principle and procedure of SDS-PAGE.

Or

- (b) Explain the principle and steps involved in agarose gel electrophoresis.
-