

8. In *Marchantia*, gametophyte produces _____.
a) Gametes b) Spores c) Elaters d) zygote
9. Capsule of *Funaria* consists of
a) Foot, seta and operculum b) Foot, seta and teeth
c) Apophysis, theca and operculum d) Foot, seta and elaters
10. Peristome teeth of moss plants show _____.
a) Xerochasy b) Hydrochasy c) Serichasy d) Hygrochasy

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. What is thallus?
12. What is Nannandrous species?
13. What is hormogonium?
14. What is hapteron?
15. What is cystocarp?
16. What is protonema?
17. What is receptacle?

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) Enumerate the general characters of Algae.
(OR)
b) Outline the classification of algae given by Fritsch.

19. a) Explain the sexual reproduction in *Oedogonium*.

(OR)

- b) Describe the structure of a *Diatom* cell.

20. a) Describe the thallus structure of *Polysiphonia*.

(OR)

- b) Describe the structure of *Nostoc* colony.

21. a) Bring out the classification of Bryophytes proposed by Smith.

(OR)

- b) Explain the structure of a mature sporophyte of *Marchantia*.

22. a) Explain the methods of vegetative reproduction in *Funaria*.

(OR)

- b) Describe the structure of a *Funaria* gametophyte.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. Discuss the economic importance of algae with reference to their beneficial roles.
24. Describe the mode of asexual reproduction in *Vaucheria*.
25. Explain the sexual reproduction in *Sargassum*.
26. Explain the internal structure of *Anthoceros* thallus with a neat labeled diagram.
27. Give an illustrative account on the structure of *Funaria* capsule.




VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : First Semester : Paper – II

FUNGI AND PLANT PATHOLOGY

Under CBCS – Credit 4

 Time: **3** Hours

 Max. Marks: **75**
SECTION – A
Answer ALL Questions :
(10 × 1 = 10)

1. Nutritionally, fungi may be best characterized as
 - a) Photosynthetic autotrophs b) chemosynthetic autotrophs
 - c) Absorptive heterotrophs d) ingestive heterotrophs
2. Botanical name of Yeast is
 - a) *Saccharomyces cerevisiae* b) *Penicillium notatum*
 - c) *Albugo candida* d) *Trichoderma viride*
3. Blue or green mold is
 - a) *Penicillium* b) *Albugo* c) *Stemonitis* d) *Cercospora*
4. Which of the following does not contain Chlorophyll?
 - a) Fungi b) Algae c) Bryophyta d) Pteridophyta
5. A typical long cycled rust fungus produces during its life cycle
 - a) 5 spore forms b) 2 spore forms
 - c) 4 spore forms d) 3 spore forms
6. Repeating spore in puccinia species is _____.
 - a) Ascospore b) Uredospore c) Basidiospore d) Teleutospore
7. Which is commonly called as Bioindicator?
 - a) Fungi b) Lichens c) Algae d) Angiosperm
8. Saxicolous refers to lichens that grow on
 - a) Soil b) Tree barks c) Rock d) Water

9. Significant contribution on the epidemiology of disease cycle of stem rust of Wheat was made by

- a) Mehta. K.C b) Mundkur. B.B c) Payak.M.M d) Nagarajan

10. The interaction of host, pathogen & environment and dispersal of pathogen refer to

- a) Etiology b) Epidemiology c) Pathogenesis d) Symbiosis

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. Comment on Ergot disease of rye.

12. What are called antibiotics?

13. Draw and label the structure of *Penicillium*.

14. What is heteroecious parasites?

15. Define somatogamy.

16. Mention any four characteristic features of lichens.

17. Mention the symptoms of little leaf of brinjal disease.

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) Briefly discuss the role of fungi in industry.

(OR)

b) Give a short note on the role of fungi in food spoilage.

19. a) Explain briefly the sexual reproduction in *Albugo*.

(OR)

b) Write short note on the sexual reproduction in *Stemonitis*.

20. a) Briefly explain the structure of gill of *Agaricus*.

(OR)

b) Briefly describe the asexual reproduction in *Cercospora*

21. a) Differentiate between Crustose lichens and Foliose lichens.

(OR)

b) Enumerate the economic importance of lichens.

22. a) Discuss in brief about symptoms and control measures of Citrus Canker disease.

(OR)

b) Explain the causes and control measures of blast disease in rice plant.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. Give an account of the classification of fungi proposed by Alexopoulos.

24. Write an essay on the sexual reproduction in *Penicillium*.

25. Describe sexual reproduction of *Agaricus*.

26. Discuss about the sexual reproduction in lichens.

27. Give a detailed account on Bunchy top of Banana.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Third Semester : Paper – I

BIOCHEMISTRY, BIOPHYSICS & BIOMETRICS

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

- If –OH group at penultimate carbon atom in open chain structure of sugar is on the right hand side, the sugar is called as,
a) L-sugar b) D-sugar c) R-sugar d) S-Sugar
- Which of the following is a sulphur containing amino acids?
a) Glycine b) Methionine c) Threonine d) Alanine
- Which of the following is characteristic of Z-DNA?
a) Each turn of two polynucleotide chains is completed after 10 base pairs
b) Helical coiling of DNA molecules is left handed
c) Distance between axis and sugar phosphate is above 10 Å
d) All of the above
- Protein part of the enzyme is called as,
a) Holoenzyme b) Prosthetic group
c) Apoenzyme d) Amino acids
- The best thing you can do for the health of a green-leafed plant is to illuminate it with
a) Red light b) Green light c) Blue light d) U.V.light
- What does first law of thermodynamics state?
a) Energy can neither be destroyed nor created
b) Energy cannot be 100 percent efficiently transformed from one type to another

- c) SI unit of energy is Kilo Joule
 d) Input of heat energy increases the rate of movement of atoms and molecules
7. Reactions which are light-independent are termed as
 a) Light reactions b) Dark reactions
 c) Gaseous reactions d) Dull reactions
8. Supply of O₂ to an aerobic plant respiring anaerobically would lead to increase in ATP synthesis in
 a) Mitochondrial outer membrane
 b) Mitochondrial inner membrane
 c) Mitochondrial cristae membrane
 d) Mitochondrial matrix membrane
9. The fundamental statistical indicators are
 a) Mean b) Median c) Variance d) Range
10. Considering sample rather than population, standard deviation is thus denoted by
 a) Small 's' b) Capital 'S' c) Ω d) σ .

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. What is monosaccharide? Give two examples.
 12. Mention the types of RNA.
 13. How do the peptide bond formed in proteins?
 14. Define the property of Denaturation in Enzymes.
 15. What is Redox Reaction?
 16. State Bioluminescence with suitable examples.
 17. Define Mean and Median.

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) List our any five important properties of Lipids.
 (OR)
 b) Draw and write brief notes on Watson and Crick model of DNA.
19. a) Write short notes on structure of proteins.
 (OR)
 b) Write down any five properties of amino acids.
20. a) Define free energy change and add a note on its importance in Redox reactions.
 (OR)
 b) What is entropy? Add a note on its physical significance.
21. a) Explain the Nature of Light with suitable diagrams.
 (OR)
 b) Differentiate the Action Spectra from the Absorption Spectra.
22. a) Draw the structure of a table used in biostatistics with suitable explanation of each parts.
 (OR)
 b) Define standard error and add a note on its uses.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. Explain the structure and properties of Monosaccharides with suitable examples.
24. Enumerate the mechanism of enzyme action in detail.
25. Enunciate the Mitochondrial and chloroplast bioenergetics with one suitable example in each.
26. Explain and differentiate the process of phosphorescence from Fluorescence.
27. Describe the different methods of collection of data in the field of Biometrics.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Third Semester : Paper – II

GENETICS & BIO INFORMATICS

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. Mendel performed his famous hybridization experiments on
 - a) *Pisum sativum*
 - b) *Lathyrus sativus*
 - c) *Lathyrus odoratus*
 - d) *Nicotiana tabacum*
2. In all the Mendel's experiments, the two alleles causing a trait were
 - a) Dominant-recessive
 - b) Co-dominant
 - c) Incompletely dominant
 - d) Co-recessive
3. Multiple alleles are found
 - a) In different chromosomes
 - b) At the same locus in one type of chromosomes
 - c) At different loci in the same chromosome
 - d) None of these
4. Husband has blood group A and Wife has blood group B.
 - a) A, B, AB and O
 - b) A
 - c) B
 - d) AB
5. Who discovered male sterility?
 - a) Correns
 - b) Rhoades
 - c) Sonneborn
 - d) Bycottet et. al.
6. Which one of the following is a mutagen?
 - a) Nitrous oxide
 - b) CO₂
 - c) CO
 - d) SO₂
7. Law of filial regression was postulated by
 - a) Mendel
 - b) Morgan
 - c) Watson and Crick
 - d) Galton

8. A gene is a
a) Complete DNA molecule b) Specific part of DNA molecule
c) Heterochromatic part of DNA d) Set of ribonucleotides
9. BLAST Technique was developed by _____.
a) Altschul b) Lipman c) Paul d) Charles
10. Polymerase Chain Reaction (PCR) was discovered by
a) Watson b) Anderson c) Johnson d) Kary Mullis

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. What is back cross? Give an example.
12. Define epistasis.
13. What are the different types of blood groups?
14. Distinguish between mutation and mutagen.
15. What is a database? Give an example.
16. Comment on Taq polymerase.
17. What is the importance of genomics?

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) Explain the Mendelian laws of segregation and dominance with the help of a checker board.

(OR)

- b) Explain the Dihybrid Cross with an example.

19. a) Give a short account on multiple alleles with an example.

(OR)

- b) Describe the mechanism of sex determination in plants with an example.

20. a) Discuss any three types of chromosomal aberrations.

(OR)

- b) Describe the mechanism of plastid inheritance.

21. a) Write short notes on NCBI.

(OR)

- b) How will you construct a phylogenetic tree?

22. a) Enumerate the salient features of Prokaryotic genome.

(OR)

- b) Give a brief account on Proteome analysis.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. What are complementary genes? Explain with an illustration.
24. Give an account of the theories explaining the crossing over phenomenon.
25. Explain the regulation of gene expression in prokaryotes with a help of a model.
26. Explore the tools used in sequence analysis.
27. Explain the principle, procedure and application of RAPD.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Fifth Semester : Paper – I

TAXONOMY OF ANGIOSPERMS & ECONOMIC BOTANY

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

- Obdiplostemony is a characteristic feature of
 - Rutaceae
 - Rubiaceae
 - Lamiaceae
 - Poaceae
- A complete flower is that flower which has
 - Calyx
 - Calyx and Corolla
 - Calyx and Gynoecium
 - Calyx, Corolla, Androecium and Gynoecium
- Who published the principles of Numerical Taxonomy?
 - Heywood
 - Sneath and Sokal
 - Smith and Swine
 - Linnaeus
- What are the purpose of chemotaxonomy used as at most level of ____?
 - Variety
 - Rank
 - Division
 - All are correct
- Head inflorescence is the characteristic feature of the family
 - Rutaceae
 - Astraceae
 - Annonaceae
 - Solanaceae
- Centella* belongs to family of _____.
 - Apiaceae
 - Sterculiaceae
 - Fabaceae
 - Liliaceae
- Calotropis gigantea* belongs to the family
 - Asteraceae
 - Lamiaceae
 - Euphorbiaceae
 - Asclepiadaceae
- Achyranthes aspera* L. belongs to _____ family
 - Euphorbiaceae
 - Amaranthaceae
 - Lamiaceae
 - Solanaceae

9. *Gossypium species* yield _____

- a) Fibres b) Wool c) Silk d) Spices

10. Which one is called as 'Kungumapuvu' in tamil _____.

- a) Clove b) Saffron c) Cinnamom d) Cardamom

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. Define Holotype.

12. Mention any two merits of Bentham and Hooker's classification.

13. Define mounting process.

14. Mention the economic importance of the family Rubiaceae.

15. Explain Gynostegium.

16. What is resupination?

17. Mention the name of the gum yielding plants.

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) Define Nomenclature and typification.

(OR)

b) Give an outline of Phylogenetic System of classification.

19. a) Write short notes on chemotaxonomy.

(OR)

b) What are the techniques to be followed in herbarium preparation.

20. a) Describe the floral characters of Rutaceae.

(OR)

b) Discuss the floral characters of Cucurbitaceae.

21. a) Describe the floral characters of lamiaceae.

(OR)

b) Give an account on economic importance of Poaceae.

22. a) Write notes on fiber yielding plants.

(OR)

b) Mention some spices and condiments obtained from leaves and twigs.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. Comment on Bentham & Hooker's System of classification and mention its merits and demerits.

24. Describe numerical taxonomy in detail.

25. Compare the floral characters of Mimosaceae and Caesalpiniaceae.

26. Explain the spikelet of Poaceae.

27. Comment on fiber yielding plants and their uses.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Fifth Semester : Paper – II

PLANT PHYSIOLOGY

Under CBCS – Credit 5

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. Diffusion pressure is,
 - a) Directly proportion ato concentration of diffusing particles
 - b) Inversely proportional to concentration of diffusing particles
 - c) Independent of concentration of diffusing particles
 - d) None of the above
2. Water potential value are always,
 - a) Positive
 - b) Negative
 - c) Both positive and negative
 - d) None of the above
3. Water holding capacity of soil is much greater in,
 - a) Sandy soil
 - b) Clay soil
 - c) Loam
 - d) None of the above
4. Which one of the following colours of light is effective in stomatal opeing?
 - a) Red
 - b) Far-red
 - c) Blue
 - d) Green
5. Transpiration pull and cohesion of water theory of ascent of sap was first proposed by,
 - a) Dixon
 - b) Jolley
 - c) Dixon and Jolley
 - d) Sachs
6. Classical observations leading to discovery of photosynthesis were made by,
 - a) Van Helmot and Stephan Hales
 - b) Priestly, Ingen Houz and Jean Senebier
 - c) Nicolas Theodore de Sassure and Meyer
 - d) All of above

7. Which of the following is acceptor of CO₂ in dark reaction of photosynthesis?

- a) 3 PGA b) Ru-5-P c) RuBP d) Xu-5-P

8. Rate of photosynthesis is greater in,

- a) UV-light b) Infra-red light
c) Intermittent light d) Continuous light

9. Chlorosomes are found in,

- a) Green bacteria b) Purple sulphur bacteria
c) Purple non-sulphur bacteria d) Heliobacteria

10. Most of the reactions of glycolysis require presence of,

- a) Mg⁺⁺ ions b) Mn⁺⁺ ions c) Ca⁺⁺ ions d) K⁺ ions

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. What is diffusion?

12. Define Active transport.

13. Explain Ascent of Sap.

14. What is IAA?

15. What is Nitrification?

16. What is Phloem?

17. Explain Trophic movement.

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

18. a) Write a brief account on Guttation.

(OR)

b) Explain the factors affecting Absorption.

19. a) Explain Dark reaction process.

(OR)

b) Write short notes on Respiratory Quotient.

20. a) Explain the steps involved in Nitrate reduction.

(OR)

b) Describe the steps in Glycerol synthesis.

21. a) Explain the classification of Enzymes present in plant cell.

(OR)

b) Enlist the role of Microelements in plants.

22. a) Write brief account on Auxins.

(OR)

b) Explain Vernalisation process.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

23. Explain in detail about the mechanism of water movement in plants.

24. Describe Krebs cycle.

25. Write short notes on β oxidation of fatty acids.

26. Describe the mechanism of absorption of minerals

27. Explain in detail about Photoperiodism.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Fifth Semester : Paper – III

MICROBIOLOGY

Under CBCS – Credit 3

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. Tuberculosis is a
 - a) Water borne disease
 - b) Air borne disease
 - c) Food borne disease
 - d) Athropod borne disease
2. Most common mode of cell division in bacteria is
 - a) Binary fission
 - b) Transverse binary fission
 - c) Longitudinal binary fission
 - d) Budding
3. Autoclaving is carried at
 - a) Dry heat
 - b) Atmospheric pressure
 - c) 121°C
 - d) All of these
4. The effect of antibiotics on microorganisms is mainly due to
 - a) Inhibition of cell-wall synthesis
 - b) Damage to the cytoplasmic membrane
 - c) Inhibition of nucleic acid and protein synthesis
 - d) All of the above
5. Bacteria which are able to grow only at 0°C are known as
 - a) Psychrophiles
 - b) Obligate psychrophiles
 - c) Average psychrophiles
 - d) Mesophiles
6. Yeast extract is an excellent source of
 - a) Vitamin
 - b) Proteins
 - c) Fats
 - d) Carbohydrates

7. Lactic acid is used as
 a) Smelling agent b) Flavouring agent
 c) Preservative for Food d) Both b & c
8. Basic principle in industrial microbiology is
 a) Suitable growth conditions b) Fermentation
 c) Providing aseptic conditions d) All of these
9. Which one is Pentameric antibody?
 a) IgA b) IgE c) IgM d) IgD
10. Which one has the highest molecular weight?
 a) IgA b) IgG c) IgM d) IgE

SECTION – B

Answer any FIVE Questions : **(5 × 2 = 10)**

11. What is Microbial diversity?
12. Why do we need to control the growth of Microorganisms?
13. Define : Antibiotic.
14. What is generation time?
15. Define : Chemoautotrophs.
16. What is Immunology?
17. What are the types of Immunity?

SECTION – C

Answer ALL Questions : **(5 × 5 = 25)**

18. a) Discuss in detail the Cell Wall structure and chemical composition of Cyanobacteria.

(OR)

- b) Explain the general characteristics of Viruses.

19. a) How does the physical agents control microorganisms?

(OR)

- b) Give a brief account on role of antibiotics.

20. a) Write the classification of bacteria based on the nutritional requirements.

(OR)

- b) Explain the various types of culture media. Add a note on the preparation of culture media.

21. a) Discuss the electron transport system of Purple Sulphur Bacteria.

(OR)

- b) Discuss the industrial production of Ethanol.

22. a) Briefly explain the types of antigens.

(OR)

- b) Explain the different types of antibody.

SECTION – D

Answer any THREE Questions : **(3 × 10 = 30)**

23. Explain the Ultrastructure of bacteria with suitable diagram.
24. Write the role of chemical agents in control of microorganisms.
25. Explain the phases of bacterial growth.
26. Discuss the industrial production and application of Lactic acid.
27. Give a detailed account on any two types of antigen – antibody reactions.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Elective Subject : Fifth Semester : Paper – I

MEDICINAL BOTANY

Under CBCS – Credit 5

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. AYUSH
 - a) Ayurvedha Yoga Systems
 - b) Indian Systems
 - c) Ayurvedha Yoga Unani Siddha Homeopathy
 - d) Siddha system
2. WHO is _____.
 - a) Wealth Health Office
 - b) World Health Organization
 - c) Worth Healing Operation
 - d) Wide Health Organization
3. Alkaloids are
 - a) Carbon -Nitrogen
 - b) Hydrogen –Nitrogen
 - c) Nitrogen-Nitrogen
 - d) Only Nitrogen
4. Following methods are used in the preparation and processing of the crude drugs
 - a) Harvesting and collection
 - b) drying
 - c) Garbling and Packing
 - d) All the above
5. Moisture content of a drug can be determined by heating at
 - a) 100 °C
 - b) 105 °C
 - c) 120°C
 - d) 150°C
6. The coriander powder is mixed with _____.
 - a) Cassia seed
 - b) Faecal matter of donkey
 - c) Stones
 - d) None of the above
7. Ginger is obtained from
 - a) Acorus species
 - b) Withania species
 - c) Zingiber species
 - d) Curcuma species

8. In *Ferula asafoetida*, useful part is _____
a) Stem b) Root c) Fruits d) All of the above
9. Aloin is obtained from
a) Aloe b) Curcuma c) Cassia d) Digitalis
10. *Embelica officinalis* belongs to _____
a) Fabaceae b) Euphorbiaceae c) Rubiaceae d) Malvaceae

SECTION – B

Answer any FIVE Questions : **(5 × 2 = 10)**

11. Write the meaning of Ayurveda.
12. What are Resin and Gum?
13. Give the meaning of Garbling.
14. Mention the Organoleptic Evaluation of Drugs.
15. Mention the medicinally useful part of *Cinnamomum* and *Myristica*.
16. Give the Botanical Name and the Family Name of Flower and Fruit yielding plants studied by you.
17. What are the Medicinal uses of Safflower?

SECTION – C

Answer ALL Questions : **(5 × 5 = 25)**

18. a) Write a note on Unani System of Medicine.
(OR)
b) Write any Two systems of Classification of Crude drugs.
19. a) Give a brief account on Secondary Metabolites Products derived from plants.

(OR)

- b) Analyse the various Phytochemical Constituents of Medicinal plants.

20. a) Comment on Adulteration of drugs.
(OR)

- b) Explain the Methods of Drug Evaluation.

21. a) Discuss about Gum and Resin with one example.
(OR)

- b) Explain the Morphology, Useful Parts and Medicinal Uses of senna.

22. a) Write a general note on Amla.
(OR)

- b) Write the Chemical Constituents and Medicinal Uses found in Aloe vera.

SECTION – D

Answer any THREE Questions : **(3 × 10 = 30)**

23. Define Pharmacognosy? And explain the Siddha and Ayurveda Systems of Indian Medicine.
24. Write a brief note on Phytochemical Constituents and Pharmacological Importance of Medicinal plants?
25. Write an account on the Method of Collection, Processing and Storage of Crude drugs.
26. Describe the Active Principles and Medicinal Uses of Ginger and *Cinnamomum*.
27. Give a detailed account on the Cultivation, Collection, Processing and Uses of *Withania, somnifera*.



Under CBCS – Credit 2

Max. Marks: **75**

Answer ALL Questions :

(10 × 1 = 10)

- Which of the following is a non renewable resource?
 - Coal
 - Forests
 - Water
 - Wildlife
- Common energy sources in Indian villages is _____.
 - Electricity
 - Coal
 - Sun
 - Wood and animal dung
- Crude oil is
 - Colorless
 - Odorless
 - Smelly yellow to black liquid
 - Odorless yellow to black liquid
- Boiling water reactor and pressurized water reactors are _____.
 - Nuclear reactor
 - Solar reactor
 - Biogas reactor
 - All the above
- The following is indirect method of solar energy utilization
 - Wind energy
 - Biomass energy
 - Wave energy
 - All of the above
- The collection of efficiency of flat plate collector on solar energy can be improved by
 - Putting a selective coating on the plate
 - Evacuating the space above the absorber plate
 - Both (a) and (b)
 - None of the above

7. Wind energy is harnessed as _____ energy with the help of windmill or turbine.

- a) Mechanical b) Solar c) Electrical d) Heat

8. The amount of electrical energy that can be generated by a hydroelectric power plant depends upon _____.

- a) Head of water b) Quantity of water
c) Specific weight of water d) Efficiency of alternator

9. Hydropower plant is _____.

- a) Non-renewable source of energy
b) Conventional source of energy
c) Non conventional source of energy
d) Continuous source of energy.

10. Both power and manure is provided by _____.

- a) Nuclear plants b) Thermal plants
c) Biogas plants d) Hydroelectric plant

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. Define solar panels.

12. What is wind turbine?

13. What are the necessary services to avail on wind mill?

14. Differentiate the generator and transformers.

15. What is Liquefaction?

16. What is Esterification?

17. What is bioethanol?

SECTION – C

Answer ALL Questions :

(3 × 9 = 27)

18. a) Define conventional and non conventional energy resources with examples.

(OR)

b) Give an advantages and disadvantages of nuclear energy.

19. a) How to produce solar energy? Its advantages.

(OR)

b) Explain the tidal energy.

20. a) Write the benefits of wind energy, how to construct the wind mills?

(OR)

b) Give a method of production of bioethical.

SECTION – D

Answer any TWO Questions :

(2 × 14 = 28)

21. Write an account of energy resources on present world scenario.

22. Write a note on conventional energy resources.

23. Give a brief account on biogas production? Its needs.

24. Detailed account on biodiesel production from various sources.





VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – IV : Skill Based Subject : Third Semester : Paper – I

BIOINSTRUMENTATION

Under CBCS – Credit 2

Time: **2 Hours**

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. Electron microscope was discovered by
a) Knoll & Ruska b) Anton c) Boston d) Wilson
2. In pH meter, the glass electrode contains
a) Silver wire b) silver chloride c) HCl d) All
3. Centrifuge works based on the principles of _____ force.
a) Centrifugal b) centripetal c) both d) none
4. In Thin Layer Chromatography (TLC) the glass slide is coated with
a) Silica gel b) sand c) glass d) wood
5. The Colorimeter is used to measure _____.
a) Optical Density b) pH c) BOD d) COD
6. The colorimeter consists of
a) Light source b) Filter c) Photocell d) All
7. The pH meter contains
a) Glass electrode b) Calomel electrode c) Both d) None
8. The Centrifuge is used to separate things based on _____.
a) Sedimentation force b) OD c) BOD d) COD
9. The chromatographic technique was discovered by
a) Tswett b) Tiselius c) Swedberg d) Sorensen
10. The sedimentation value is measured in _____.
a) S Units b) Rf c) OD d) pH

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. Ocular meter.
12. Magnification.
13. Beer's law.
14. Partition coefficient.
15. Sedimentation coefficient.
16. Chromatogram.
17. Electrophoresis.

SECTION – C

Answer ALL Questions :

(3 × 9 = 27)

18. a) Explain about simple microscope with a diagram. **(OR)**
b) How will you measure the size of a bacterium using stage & ocular micrometer?
19. a) Draw and explain the pH electrodes. **(OR)**
b) Draw the Block diagram of Colorimeter.
20. a) Principles and types of centrifugation. **(OR)**
b) Principles and types of chromatography.

SECTION – D

Answer any TWO Questions :

(2 × 14 = 28)

21. Write about the functioning of Transmission Electron Microscope (TEM).
22. Explain about the Principles and applications of pH meter.
23. Describe in detail about Circular and ascending paper chromatography.
24. Give an account about the Principles and applications of Electrophoresis.





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B.Sc. Botany Degree (Semester) Examinations, November 2018

Part – IV : Skill Based Subject : Fifth Semester : Paper – I

MUSHROOM CULTIVATION

Under CBCS – Credit 2

Time: 2 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

- Name the fruiting body of *Pleurotus* mushroom
a) Ascocarp b) Basidiocarp c) Cleistocarp d) Apocarp
- The mushroom contains
a) Stipe b) Annulus c) Pileus d) All
- Mushroom is otherwise _____ structure.
a) Vegetative b) Non veg c) sexual d) None
- The seed of the mushroom is _____.
a) Spawn b) Cone c) spore d) wood
- Pleurotus* is commonly called as _____ mushroom.
a) Oyster b) Paddy c) Button d) Poison
- Name the poisonous mushroom
a) *Amanita* b) *Agaricus* c) *Volvariella* d) *Pleroutus*
- The mushroom contains very high _____.
a) Carbohydrate b) Protein c) Fat d) Ash
- The Mushroom which is eatable is otherwise called _____.
a) Edible b) Poisonous c) Social d) None
- Oyster mushroom is good for _____ patients.
a) *Sugar* b) *Cancer* c) *AIDS* d) *Asthma*
- _____ is the paddy straw mushroom.
a) *Volvariella* b) *Plerotus* c) *Agaricus* d) *Amanita*

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

11. Saprophytic fungus.
12. Dikaryotic mycelium.
13. Spawn.
14. Pesticides.
15. Name 3 Edible mushrooms.
16. Compost.
17. Insecticides.

SECTION – C

Answer ALL Questions :

(3 × 9 = 27)

18. a) What are the types of mushroom? **(OR)**
b) Explain about various uses of mushroom.
19. a) What are the types reproduction in *Agaricus*? **(OR)**
b) Explain about structure of *Pleurotus* mycelium.
20. a) How will you prepare a mushroom soup? **(OR)**
b) Explain the medicinal values of mushroom.

SECTION – D

Answer any TWO Questions :

(2 × 14 = 28)

21. Give an account on isolation and pure culture technique in mushroom cultivation.
22. Write an essay on mass cultivation of oyster mushroom.
23. Give an account on structure and life cycle of *Agaricus*.
24. Write an essay on any four recipes of mushroom.





VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

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M.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Third Semester : Paper – I

APPLIED PLANT BIOTECHNOLOGY

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. In genetic engineering 'molecular scissors' is a
 - a) Restriction endonuclease enzyme
 - b) Restriction exonuclease enzyme
 - c) DNA ligase enzyme
 - d) Both 'a' and 'b'
2. pBR 322 used as a vector for DNA cloning is
 - a) Natural bacterial plasmid
 - b) Engineered bacterial plasmid
 - c) Cosmid
 - d) Phagmid
3. Cry genes or Bt genes are obtained from
 - a) Cotton pest
 - b) Tobacco plant
 - c) *Bacillus thuringiensis*
 - d) *E. coli*
4. Methane content in the Biogas is
 - a) ~ 60%
 - b) ~25%
 - c) ~10%
 - d) ~5%
5. PCR stands for
 - a) Polynucleotide c-DNA
 - b) Polymeric c-DNA
 - c) Polymeric chain reaction
 - d) Polynucleotide chain reaction

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. What is plasmid vector?
7. Define cDNA library.
8. Define Ti plasmid.

9. Define-DNA.
10. Define Hepatitis B vaccines.
11. Define bioremediation.
12. What is bioethics?

SECTION – C

Answer ALL Questions : (5 × 6 = 30)

13. a) Give an account on characters of restriction enzymes. (OR)
b) Write short notes on gene library.
14. a) Write short notes on T-DNA. (OR)
b) Write short notes on gene transformation.
15. a) Give an account on isolation and preservation of microbes. (OR)
b) Give an account on streptomycin.
16. a) Comment on phytoremediation. (OR)
b) Give an account on xenobiotics.
17. a) Comment on BT cotton. (OR)
b) Give an account on molecular markers.

SECTION – D

Answer any THREE Questions : (3 × 10 = 30)

18. Write an essay on recombinant DNA technology.
19. Give an elaborate account on molecular mechanism of *Agrobacterium tumefaciens*.
20. Write an essay on bioplastics.
21. Write an essay on bioremediation.
22. Write an elaborate account on transgenic plants.





VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

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M.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Third Semester : Paper – II

MICROBIOLOGY & IMMUNOLOGY

Under CBCS – Credit 4

Time: **3 Hours**

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. Father of Medical Microbiology is
 - a) Pasteur
 - b) Jenner
 - c) Koch
 - d) Antony van Leuwenhoek
2. According to Pasteur statements which one of the following is true?
 - a) Living organisms discriminate between stereoisomers
 - b) Fermentation is an aerobic process
 - c) Living organisms doesn't discriminate between stereoisomers
 - d) Both a & b
3. Photosynthetic pigment in bacteria is
 - a) Chlorophyll
 - b) Bacterochlorophyll
 - c) Chlorophyll A
 - d) All
4. To produce penicillin, main fermentable source in culture is
 - a) Glucose
 - b) Lactose
 - c) Sulphate
 - d) Sugars
5. Antibodies are
 - a) Proteins
 - b) Glycoproteins
 - c) Phospholipids
 - d) None of these

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. Define Enzyme.
7. What is fli?

8. Define synchronous culture.
9. What is ELISA?
10. Define conjugation.
11. Epitopes.
12. Define antibiotics.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Give an account on scope of microbiology. **(OR)**
b) Write short notes on function of bacteria.
14. a) Give an account on batch culture. **(OR)**
b) Write short notes on factor affecting bacterial growth.
15. a) Comment on transduction. **(OR)**
b) Give an account on aerobic respiration.
16. a) Comment on penicillium. **(OR)**
b) Give an account on vinegar.
17. a) Comment on β -lymbosites. **(OR)**
b) Give an account on immunodeficiency.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. Write an essay on ultra structure of bacteria, function and their cellular components.
19. Write an elaborate account on pure culture techniques.
20. Write an essay on microbial enzymes.
21. Write an essay on industrial production of alcohol.
22. Give an elaborate account on classification of immunoglobulin.





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M.Sc. Botany Degree (Semester) Examinations, November 2018

Part – III : Core Subject : Third Semester : Paper – III

BIOCHEMISTRY

Under CBCS – Credit 4

Time: **3 Hours**

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

- The primary source of synthesis of carbohydrates in plant is _____.
 a) Fat
 b) Protein
 c) CO₂ of atmosphere through photosynthesis
 d) None of the above
- Which of the following is not a component of triglycerides?
 a) Glycerol
 b) Long chain saturated fatty acid
 c) Long chain unsaturated fatty acid
 d) Long chain monohydric alcohol
- Combination of purine or pyrimidine base with pentose sugar is known as _____.
 a) Nucleotides
 b) Nucleosides
 c) Ribose sugars
 d) All of above
- The polypeptide chain, peptide bond is formed between carboxylic group and amino group of _____.
 a) Same amino acid
 b) Two consecutive amino acids
 c) Two different types of amino acids
 d) All of above
- One of the first enzymes discovered in isozyme form is _____.
 a) Aspartate kinase
 b) Lactate dehydrogenase
 c) Malate dehydrogenase
 d) None of the above

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. How will you define a chemical bond?
7. Relate the role of buffers to biological system.
8. Indicate the importance of Michelis - Menton equation.
9. Compare activator with inhibitor.
10. Interpret the term “building blocks of proteins”.
11. How will you differentiate saturated fatty acid from unsaturated fatty acid?
12. Illustrate the structure of cellulosic matrix of the plant cell wall.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Identify the qualities of a good buffer. (OR)
b) Build any two stabilizing interactions found in living system.
14. a) Construct the classification chart of vitamins with examples. (OR)
b) Examine the classes of enzymes as proposed by IUB.
15. a) Model the 3-D structure of protein in tertiary configuration. (OR)
b) Choose the physico-chemical properties of proteins.
16. a) Develop the pathway of glyoxylate metabolism. (OR)
b) Construct the classification model of carbohydrates.
17. a) Solve the biosynthesis of nicotine. (OR)
b) Build the composition of cell wall components.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. Examine the colorimetric measurement of pH.
19. List down the diseases caused by the deficiency of vitamins A, D and B.
20. Classify the proteins based on solubility and composition.
21. Inspect any four chemical properties of carbohydrates.
22. Analyse the intermediary metabolism of plants with any one example.




VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

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M.Sc. / M.Com. Degree (Semester) Examinations, November 2018

Part – IV : Non-Major Subject : Third Semester : Paper – I

MUSHROOM CULTIVATION

Under CBCS – Credit 5

 Time: **3 Hours**

 Max. Marks: **75**
SECTION – A
Answer ALL Questions :

(5 × 1 = 5)

1. What should be the temperature of compost when spawning is done?
 - a) 15 to 20°C
 - b) 22 to 25°C
 - c) 30 to 35°C
 - d) None of the above
2. A mature fruiting body of mushroom has following parts
 - a) Stipe
 - b) Pileus
 - c) Both (a) and (b)
 - d) None of the above
3. The characters of poisonous mushroom are
 - a) Pink spores
 - b) Brightly colored
 - c) Hot burning taste
 - d) All of the above
4. In which of the following stages of development mushrooms should be picked
 - a) Button stage
 - b) Cub stage
 - c) Flats or open stage
 - d) In any stage
5. Mushroom is a _____.
 - a) Parasite
 - b) Saprophyte
 - c) Autotroph
 - d) Symbiont

SECTION – B
Answer any FIVE Questions :

(5 × 2 = 10)

6. Define mushroom.
7. Draw a structure of mushrooms.
8. Give an example of any four medicinally important mushrooms.

9. How to you make mushroom gravy?

10. What is mean by starter culture on mushroom cultivation?

11. Define spawn run.

12. What is postharvest?

SECTION – C
Answer ALL Questions :

(5 × 6 = 30)

13. a) Write a note on general characteristics of mushroom.
(OR)
b) Describe the industrial status of mushrooms.
14. a) List out the economically viable mushrooms.
(OR)
b) Explain the methods of preparation of different mushroom recipes.
15. a) Give a protocol of sterilization process in mushroom cultivation.
(OR)
b) Describe the different kinds of spawn.
16. a) How to cultivate the oyster mushroom.
(OR)
b) Write the process of mushroom harvesting.
17. a) How to made freeze drying and canning preservation?
(OR)
b) What way marketing the mushroom products?

SECTION – D
Answer any THREE Questions :

(3 × 10 = 30)

18. Detailed account on life cycle of fungi
19. Write an essay on medicinal and nutritional value of mushrooms.
20. Give a brief account on preparation methods of grain spawn.
21. Mushroom farms-an overview with illustrations.
22. List on mushroom disease and their causes.





VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

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B.Sc. Zoology Degree (Semester) Examinations, November 2018

Part – III : Allied Subject : Third Semester : Paper – I

PLANT DIVERSITY

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(10 × 1 = 10)

1. The most primitive algae are
a) Blue green algae b) Brown algae c) Red algae d) Green algae
2. An example for Brown alga is
a) *Oedogonium* b) *Nostoc* c) *Sargassum* d) Lichens
3. Penicillin was discovered by
a) Micheli b) Alexander Fleming
c) Koch d) Antony van Leuwenhoek
4. Fungal hyphae with two genetically distinct nuclei are said to be
a) heterokaryotic b) monokaryotic c) dikaryotic d) karyotic
5. Unique feature of Bryophytes is
a) They produce spores b) They lack vascular tissues
c) They lack roots d) Their sporophyte is attached to gametophyte
6. The sporophyte of *Funaria* consists of
a) Foot and capsule b) Foot, Seta and Capsule
c) Capsule only d) Spore sac
7. Vascular tissue confined to the central region of stem forms the _____.
a) Bundles b) stele c) Cortex d) Pericycle
8. Which of the following plant is an epiphyte in *Lycopodium*?
a) *L. clavatum* b) *L. inundatum* c) *L. lucidulum* d) *L. phlegmaria*

9. Phloem of gymnosperms differs from angiosperms by
- a) having no sieve tube
 - b) having no sclerenchyma
 - c) having parenchyma
 - d) having no companion cells

10. Main body of Cycas plant is

- a) Sporophyte
- b) Gametophyte
- c) Thallus
- d) Mycelium

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

- 11. What is Parthenogenesis?
- 12. What are Cryptoblasts?
- 13. Define the term ‘Somatogamy’.
- 14. Based on the structure, what are the types of lichens?
- 15. Comment on Apospory.
- 16. What are the methods of vegetative reproduction found in *Lycopodium*?
- 17. What is transfusion tissue? Give its role.

SECTION – C

Answer ALL Questions :

(5 × 5 = 25)

- 18. a) Describe the vegetative mode of reproduction found in *Nostoc*.
- (OR)**
- b) How is an Oogonium developed in *Sargassum*?

19. a) Discuss the methods of asexual reproduction in Basidiomycetes.

(OR)

- b) Explain the structure of heteromerous lichen.

20. a) Discuss the different methods of vegetative reproduction in *Funaria*.

(OR)

- b) Describe the internal structure of stem of *Funaria*.

21. a) Describe the different types of steles found in *Lycopodium*.

(OR)

- b) Discuss the development of antheridium in *Lycopodium*.

22. a) Discuss the lifecycle pattern in *Cycas*.

(OR)

- b) State the economic importance of *Cycas*.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

- 23. Describe the stages of cell division in *Oedogonium* with suitable diagram.
- 24. Discuss the modes of reproduction in *Penicillium*.
- 25. With the help of a suitable diagram, explain the internal structure of *Funaria* capsule.
- 26. Describe the internal structure of stem of *Lycopodium*.
- 27. Discuss the internal structure of Coralloid Root in *Cycas*.

