



VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST

(Autonomous & Residential)

[Affiliated to Madurai Kamaraj University]

M.Sc. Zoology Degree (Semester) Examinations, November 2019

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

BIOCHEMISTRY

Under CBCS – Credit 4

Time: **3 Hours**

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

- Enzymes subjected to the feedback inhibition are
 - Coenzymes
 - Apoenzymes
 - Allosteric enzymes
 - Holoenzyme
- In eukaryotes, the net gain of ATP in the complete oxidation of one molecule of glucose is
 - 20 ATP
 - 56 ATP
 - 36 ATP
 - 46 ATP
- Which of the following plays a special role in the brain metabolism?
 - Glutamate
 - Pyruvate
 - Aspartate
 - Lysine
- Cholesterol is synthesized from
 - Acetyl- CoA
 - PGE
 - Pyran
 - Pyrrole
- _____ is the major site for purine nucleotide biosynthesis
 - Kidney
 - Liver
 - Muscle
 - Brain

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

- What is Testosterone?
- Describe Vitamin C.
- Define Prokaryote.
- What is Gluconeogenesis?
- Comment on Urea cycle.
- State about Carboxylic acid.
- Define rRNA.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

- What are the fat soluble vitamins? Write a note on structure and functions of any three fat soluble vitamins.
(OR)
 - List out important hormones and their functions.
- Summarise the overview of Glycogenolysis.
(OR)
 - Explain shortly about the significance of HMP shunt.
- Describe shortly about the Transamination.
(OR)
 - Give a brief note on metabolism of glutamate family of amino acids.
- Write a note on functions of lipids.
(OR)
 - Give a short note on phospholipids of Ketone bodies.
- Write an essay on catabolism and Adenine.
(OR)
 - Develop a detail note on catabolism of nucleotide Co-enzymes.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

- Explicate the mechanisms of enzyme action.
- Write an essay on process of glycolysis.
- Explore the urea cycle and its significance.
- Enlighten the metabolism of Arachidonates.
- Explain in detail note on various types of RNA.

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M.Sc. Zoology Degree (Semester) Examinations, November 2019

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

CELL AND MOLECULAR BIOLOGY

Under CBCS – Credit 4

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. Phospholipids in liposomes undergo
 - a) Oxidation
 - b) Acetylation
 - c) Hydrolysis
 - d) Both a and c
2. Which of the following is a major role of Golgi?
 - a) Sorting and packaging the modified proteins
 - b) Synthesis of plasma β –cells and antibodies
 - c) Synthesis of proteoglycans
 - d) All of the above
3. During cell division chromosome attaches with spindle.
 - a) Kinetochore
 - b) Centromere
 - c) Centriole
 - d) Secondary constriction
4. During protein synthesis an anticodon of tRNA pairs with
 - a) rRNA nucleotide bases
 - b) DNA nucleotide bases
 - c) mRNA nucleotide bases
 - d) other tRNA nucleotide bases
5. _____ refers to the transcriptional changes undergone by mRNA inside the nucleus.
 - a) Transcription
 - b) Processing
 - c) Translation
 - d) Amplification

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. What are the functions of animal cell membrane?
7. What is Autophagy?
8. What is the term for programmed cell death?
9. Define RFLP.
10. Comment on genetic code.
11. What is mRNA synthesis?
12. Draw a structure of DNA.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Analyze the chemical composition and specialization of plasma membrane

(OR)

- b) Write a short note on oxidative phosphorylation.

14. a) Write about origin and functions of endoplasmic reticulum.

(OR)

- b) Discuss about the functions of golgi complex.

15. a) Write a short note on cell cycle.

(OR)

- b) Distinguish between mitosis and meiosis.

16. a) What is the principles of RFLP? How is it used?

(OR)

- b) Explain the different characters of genetic code.

17. a) Give a brief account on transcription in prokaryotes and eukaryotes

(OR)

- b) Give a brief note on operon hypothesis.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. Analyze the process of Krebs cycle.
19. Describe structure and functions of Lysosomes.
20. Give an account on cancer cell characters, types and diagnosis.
21. 'DNA is the genetic material' – Discuss.
22. Summarise the events of initiation and termination during protein synthesis.

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SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. Microbial Taxonomy.
7. Log Phase.
8. Epidemiology.
9. Rhizosphere effect.
10. Eutrophication.
11. Curing method.
12. Fluidized Bed Bioreactor.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Elucidate the Five Kingdom Concept of Classification.
(OR)
b) Differentiate between Prokaryotic and Eukaryotic Microorganisms.
14. a) Discuss about the different methods of Bacterial culture.
(OR)
b) Illustrate the various growth phases of Bacteria.
15. a) Categorize the different modes of transmission by Pathogens.
(OR)
b) Summarize about the symptoms, diagnosis and treatment of Tuberculosis.

16. a) Enumerate the factors affecting microbial community in the soil.
(OR)

b) Explain about the sanitary test for Coliforms.

17. a) Explore the indication, prevention and treatment of Botulism disease.
(OR)

b) Bring out the major steps in Down Stream processing.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. Describe the morphology and fine structure of Bacteria.
19. Discuss about the different culture media for the growth of microorganisms.
20. Write an essay on Host Parasite interactions.
21. Illustrate the biogeochemical cycle of Nitrogen.
22. Elaborate the principle and methods of food preservation techniques.

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M.Sc. Zoology Degree (Semester) Examinations, November 2019

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

BIOINFORMATICS

Under CBCS – Credit 5

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. RAM' stands for
 - a) Random Access Memory
 - b) Read Access Memory
 - c) Read Arithmetic Memory
 - d) Random Arithmetic Memory
2. The first network that planted the seeds of internet was
 - a) ARPANET
 - b) NSFnet
 - c) Vnet
 - d) both a and b
3. In the Url of NCBI, the meaning of NIH is
 - a) National Integrated hierarchy
 - b) National Institute of Health
 - c) Non Integrated Humics
 - d) National Institute of Higher taxa
4. The phylogenetic tree showing the relative recentness of common ancestry is
 - a) Cladogram
 - b) Phylogram
 - c) Dendrogram
 - d) Phyloticgram
5. The single spiral chain of amino acids, stabilized by hydrogen bond produces the secondary structure of protein as
 - a) β- Pleated sheet
 - b) β- sheet
 - c) Alpha- helix
 - d) Loops and Turns

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. What is Mainframe Computer?
7. Give the mode of Booting virus.
8. What is meant by primary database?
9. Explain Data retrieval tools.
10. Write expansion of SCOP.
11. Give the importance of psi rotation.
12. Comment on comparative modelling.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Write brief notes on operating system.
(OR)
b) Why the software packages are important for current world?
14. a) Explain the mechanism of webpage.
(OR)
b) Write notes on data storage and its uses.
15. a) Briefly analyse the importance of bioinformatics.
(OR)
b) Explain briefly about role of NCBI.

16. a) Compare PAM and BLOSUM matrices.

(OR)

b) Analyze the mechanism of tools used for phylogenetic analysis.

17. a) Explain the various methods used for predicting the secondary structure of protein.

(OR)

b) Briefly write about Abintio and threading.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. Discuss briefly about history and components of computers.
19. What is web page? How can you create web pagers using HTML?
20. Give an account on methods of construction of phylogenetic trees.
21. Write an essay on methods of gene prediction and difficulties.
22. Give an account on spdbv and Ramachandran plot for evaluation protein.

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GENETICS

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. Teminism is a
 - a) Central dogma of gene expression
 - b) Reverse transcription
 - c) Circular gene flow
 - d) Cytoplasmic inheritance
2. In general, endospore formation occurs in
 - a) Gram positive bacteria
 - b) Gram negative bacteria
 - c) Both a and b
 - d) Streptomyces
3. Process of mating through which two bacterial cells transfer their DNA, a cell acts as a host while other as recipient, process is known as
 - a) Transduction
 - b) Transformation
 - c) Conjugation
 - d) Mating
4. Addition or deletion of a nucleotide base pair involves
 - a) point mutation
 - b) silent mutation
 - c) nonsense mutation
 - d) frame shift mutation
5. According to HGP, the percentage of genetic similarity among all humans is,
 - a) 90%
 - b) 99.9%
 - c) 95%
 - d) 88%

SECTION – B

Answer any FIVE Questions :

(5 × 2 = 10)

6. Define Dihybrid cross.
7. Comment on the importance of Transformation.
8. What are transposons?
9. How is frame shift mutation caused?
10. Relate the importance of Human Genome Project.
11. What is Muton?
12. Write short notes on Hfr strain.

SECTION – C

Answer ALL Questions :

(5 × 6 = 30)

13. a) Explain the process and importance of back cross and test cross.

(OR)

- b) Identify the various Mendelian laws and Explain.

14. a) Analyze the importance of various types of Plasmids.

(OR)

- b) Choose any one method of Plasmid DNA isolation and outline the process.

15. a) Classify the mechanism of transposition and outline the process involved.

(OR)

- b) Describe the structure of T4 bacteriophage with a suitable illustration.

16. a) Explain the mechanisms involved in Double Strand Break Model of recombination.

(OR)

- b) Identify the process involved in Tautomeric shift and discuss the effects.

17. a) Utilise negative eugenics principles and formulate any five strategies.

(OR)

- b) Identify Pedigree symbols to be used in genetic analysis. Illustrate.

SECTION – D

Answer any THREE Questions :

(3 × 10 = 30)

18. “Mendelian law does not hold good for all situations” – substantiate with any two examples.

19. Relate Lederberg and Tatum experiment for the discovery of conjugation and summarise the steps involved in conjugation.

20. Distinguish Specialised transduction from Generalised transduction and list the mechanisms involved in Specialised transduction.

21. Analyse the steps involved in any three types of DNA repair with illustrations.

22. Cite any two examples of congenital malformation and its diagnosis.

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M.Sc. Zoology Degree (Semester) Examinations, November 2019
Part – III : Core Subject : Third Semester : Paper – II

PHYSIOLOGY
Under CBCS – Credit 4

Time: **3 Hours**

Max. Marks: **75**

SECTION – A

Answer ALL Questions : (5 × 1 = 5)

- The function of swim bladder is
a) Gas exchange b) Hearing c) Sound production d) All
- The sound intensity is expressed as
a) Decibels b) cps c) Candela d) Mols
- P wave due to
a) Ventricular depolarization b) Ventricular repolarization
c) Atrial depolarization d) Atrial repolarization
- Alzheimer's disease in human is associated with the deficiency of
a) Dopamine b) Glutamic acid
c) Acetylcholine d) Gamma aminobutyric acid
- Haemoglobin oxygen dissociation curve is
a) Straight line b) Constant c) Sigmoid d) Parabolic

SECTION – B

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

- What is Alveoli?
- Define Osmoconformer.
- What is the role of Rods in vision?
- What is Actin?

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- Define Synapse.
- What is Haemoglobin?
- Define Dendrite.

SECTION – C

Answer ALL Questions : (5 × 6 = 30)

- a) Explain the exchange of gases occur in the respiratory organ. (OR)
b) Outline the maintenance of water and electrolyte balance.
- a) Examine the structure of human eye. (OR)
b) Analyse the physiological of heat and photo therapy.
- a) Evaluate the mechanism of muscle movement. (OR)
b) Examine cardiac cycle.
- a) Summarise the properties of inter neuron. (OR)
b) Explain about the reflex arc.
- a) Distinguish between artery and vein. (OR)
b) Discuss about cardiac rhythm.

SECTION – D

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

- Elaborate the endocrine regulation of reproduction.
- Outline the mechanism of Bioluminescence.
- Explain the mechanism of pulmonary ventilation.
- Examine the organisation of nervous system.
- Evaluate the components of the blood and its importance.

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M.Sc. Zoology Degree (Semester) Examinations, November 2019

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

PRINCIPLES OF BIOTECHNOLOGY

Under CBCS – Credit 4

Time: **3** Hours

Max. Marks: **75**

SECTION – A

Answer ALL Questions :

(5 × 1 = 5)

1. The desire to maintain a safe laboratory environment for all begins with _____?
 a) prevention b) microbiology c) ubiquity d) accidents
2. The first molecules of thin enzyme recognise specific site within the DNA but do not cleave and producing heterogeneous population of DNA, the enzyme is known as
 a) Type-I Restriction enzymes b) Type-II Restriction enzymes
 c) Type-III Restriction enzymes d) Type-IV Restriction enzymes
3. M₁₃ is a filamentous phage of *E.coli* which infects only some cells which contain
 a) Sex pilli b) Cell wall c) Peptidoglycon d) Karyon
4. The technique that determines, in which tissue or under which physiological conditions of a gene is expressed to produce a protein
 a) Eastern blotting b) Western blotting
 c) Southern blotting d) Northern blotting

5. A collection of clones that represents the complete genome of an organism is called as

- a) cDNA library
- b) oligo – dc – tailing
- c) Genomic library
- d) RNA – DNA – library

SECTION – B

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

- 6. What is the GATT and WTO?
- 7. How does restriction endonuclease work?
- 8. What is shuttle vector?
- 9. Comment Human Gene Therapy.
- 10. How restriction mapping is done?
- 11. Define Blotting technique.
- 12. What is Gene Transfer?

SECTION – C

Answer ALL Questions : (5 × 6 = 30)

- 13. a) Discuss the scope and importance of Biotechnology in promoting human welfare.

(OR)

- b) Write short notes on IPR.

14. a) Describe the DNA ligase.

(OR)

- b) Discuss the properties of DNA markers.

15. a) pBR 322 is an artificial plasmid – justify.

(OR)

- b) Explain the non viral method of vectors in human gene therapy.

16. a) Give an account on southern blotting technique.

(OR)

- b) Describe the Maxam and Gilbert method of DNA sequencing.

17. a) Explain the steps involved in the construction of cDNA.

(OR)

- b) How do you screen the recombinants through colony hybridization?

SECTION – D

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

- 18. Explain the Biosafety Guidelines in India.
- 19. Give an account on Restriction endonuclease.
- 20. Discuss the identification of recombinant DNA through direct method.
- 21. Explain the principles and applications of PCR Technique.
- 22. Analyze the genomics DNA library.

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M.Sc. / M.Com. Degree (Semester) Examinations, November 2019
Part – III : Non-Major Elective Subject : Third Semester : Paper – I

ECONOMIC ZOOLOGY

Under CBCS – Credit 5

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions : (5 × 1 = 5)

- The temperature required for making quality casting is
a) 15 – 20° C b) 25 – 30° C c) 5 – 10° C d) 0 – 5° C
- Who is the father of Apiculture?
a) Langstroth b) Dzierzon c) Quinby d) Newton
- Study of mulberry is called
a) Sericulture b) Moriculture c) Apiculture d) Aquaculture
- Causative agent of white spot disease in fish is
a) Virus b) Bacterium c) Protozoa d) Fungus
- Cow raised as Livestock for
a) Meat b) Milk c) Leather d) All the above

SECTION – B

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

- What is Vermicast?
- Define Vermiwash.
- Comment on Bee venom.
- Enlist the Scope of Sericulture.
- Mention the symptoms of Gill rot disease.
- Mention any two external characters of Black molly.
- What is Foot and Mouth Disease?

SECTION – C

Answer ALL Questions : (5 × 6 = 30)

- Discuss the process of Vermicomposting.
(OR)
b) Explain the characteristic features of *Eisenia foetida*.
- Comment on the different species of Honey bees.
(OR)
b) Explain the structure of Newton's bee hive and comment on its advantages.
- Describe the basic methods of propagation of mulberry.
(OR)
b) Write about the pebrine disease in silk worm.
- Enumerate the characteristics of cultivable fishes.
(OR)
b) Maintenance of water quality is essential for a successful aquarium – Discuss.
- Explain the Nutritive value of milk.
(OR)
b) Analyse the role of artificial insemination in dairy farming.

SECTION – D

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

- Analyse the role of vermitechnology in organic farming.
- Narrate the nutritive and medicinal value of Honey.
- Discuss the life cycle of *Bombyx mori* with suitable diagrams.
- Elucidate the technique of Induced spawning in fishes.
- What are Exotic Milch breeds? Explain the characteristics of Jersey and Holstein Friesian breeds.

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