


**VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234**

**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31CT11	<b>Programme:</b>	M.Sc., Zoology	<b>CIA:</b>	<b>III</b>
	<b>Date:</b>	23.12.2021	<b>Part:</b>	III	<b>Semester:</b>	<b>I</b>
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	<b>75</b>
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	<b>BIOCHEMISTRY</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Classify the monosaccharides with appropriate illustrations. **CO1**  
 (OR)
- b. Correlate the angle of rotational properties of bonds in a polypeptide with the 3D structure with reference to Ramachandran plot. **CO1**
2. a. Give a brief account on glycogenesis. **CO2**  
 (OR)
- b. Write about the metabolism of uronic acid **CO2**
3. a. Explain the process of oxidative deamination. **CO3**  
 (OR)
- b. What is transamination? Explain. **CO3**
4. a. Describe the biochemical action of prostaglandins. **CO4**  
 (OR)
- b. Give a brief account on  $\beta$ -oxidation of fatty acids. **CO4**
5. a. Analyze briefly the biosynthesis of pyrimidine. **CO5**  
 (OR)
- b. Give an account on various forms of DNA. **CO5**

**SECTION – B**

Answer **ALL** the Questions:


**(5 X 10 = 50 Marks)**

6. a. Discuss the chemistry and metabolic significance of vitamins, and minerals. Cite examples. **CO1**  
 (OR)
- b. Narrate the mechanism of action and kinetic properties of enzymes. **CO1**
7. a. Discuss the synthesis of glucose from non-carbohydrate sources. **CO2**  
 (OR)
- b. Describe the hexose monophosphate shunt and add a note on its significance. **CO2**
8. a. Discuss elaborately the metabolism of pyruvate family of amino acids. **CO3**  
 (OR)
- b. Explain the Krebs's and Henseleit cycle and add a note on its metabolic disorders. **CO3**
9. a. Write an essay on biosynthesis of fatty acids. **CO4**  
 (OR)
- b. Give an account on metabolism of cholesterol. **CO4**
10. a. Elucidate the catabolism of purine nucleotides and the associated metabolic disorders. **CO5**  
 (OR)
- b. Explain the fine structure of DNA and various forms of RNA. **CO5**

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31CT12	<b>Programme</b>	M.Sc., Zoology	<b>CIA:</b>	<b>III</b>
	<b>Date</b>	24.12.2021	<b>Part</b>	III	<b>Semester</b>	<b>I</b>
	<b>Duration</b>	2 Hours	<b>Academic Year</b>	2021-22	<b>Max.Marks:</b>	<b>75</b>
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	<b>CELL AND MOLECULAR BIOLOGY</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Focus light on the architecture of plasma membrane with reference to fluid – mosaic model. **CO1**  
(OR)
- b. Critically comment on mitochondrial DNA. **CO1**
2. a. Elucidate the structure and molecular constituents of Golgi complex. **CO2**  
(OR)
- b. What is the role of rRNA in protein synthesis? **CO2**
3. a. Discuss briefly the structure and functions of nucleolus and its components. **CO3**  
(OR)
- b. Enumerate the characteristics features of cancer cells. **CO3**
4. a. Justify DNA as genetic material through Griffith's experimental supports. **CO4**  
(OR)
- b. Prove RNA as genetic material by some experimental evidences. **CO4**
5. a. Enumerate the properties of genetic code with appropriate illustrations. **CO5**  
(OR)
- b. Describe the Lac operon model for regulation of gene activity. **CO5**

**SECTION – B**


Answer **ALL** the Questions:

**(5 X 10 = 50 Marks)**

6. a. Trace various transport mechanisms across the plasma membrane. **CO1**  
(OR)
- b. Explain the energy transduction in mitochondria. **CO1**
7. a. Discuss the molecular mechanism of endocytosis in lysosome. **CO2**  
(OR)
- b. Describe in detail the various stages of meiotic cell division. **CO2**
8. a. Explain the regulation of gene expression with reference to  $\lambda$  phage life cycle **CO3**  
(OR)
- b. What is signal hypothesis? Give the detailed mechanism involved in protein targeting. **CO3**
9. a. Discuss RFLP and add its applications. **CO4**  
(OR)
- b. Narrate the enzymology of DNA replication. **CO4**
10. a. Elaborate the mechanism of transcription in prokaryotes. **CO5**  
(OR)
- b. Write an essay on regulation of gene activity in eukaryotes. **CO5**

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31CT13	<b>Programme:</b>	M.Sc., Zoology	<b>CIA:</b>	<b>III</b>
	<b>Date:</b>	27.12.2021	<b>Part:</b>	III	<b>Semester:</b>	<b>I</b>
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	<b>75</b>
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	<b>MICROBIOLOGY</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Explain the Whittaker's five kingdom concept. **CO1**  
(OR)
- b. Outline the Koch's postulates. **CO1**
2. a. How microbes are classified based on their mode of nutrition? **CO2**  
(OR)
- b. What are the physical conditions for activation of bacteria? **CO2**
3. a. Explain the general concepts of pathogenicity and principles of epidemiology. **CO3**  
(OR)
- b. Give a brief note on *Candida albicans*. **CO3**
4. a. What are the various factors that influence the microbial population in an aquatic environment? **CO4**  
(OR)
- b. Highlight the role of microbes in recycling of carbon. **CO4**
5. a. What do you mean by food poisoning? Mention its causative organisms. **CO5**  
(OR)
- b. Discuss briefly about the fermenter design. **CO5**

**SECTION – B**

Answer **ALL** the Questions:


**(5 X 10 = 50 Marks)**

6. a. Through suitable sketch, describe the ultra structure of bacterial cell. **CO1**  
(OR)
- b. Differentiate between prokaryotes and eukaryotes. **CO1**
7. a. Elaborate the various types of culture media. **CO2**  
(OR)
- b. Discuss the various methods of culture growth of bacteria. **CO2**
8. a. Give a detailed account on the causative agent, epidemiology, symptoms and control measures of Polio. **CO3**  
(OR)
- b. Elucidate the mode of transmission, causes and symptoms of tuberculosis. **CO3**
9. a. Highlight the role of microbes in recycling of nitrogen. **CO4**  
(OR)
- b. Enumerate the characteristics of waste water and discuss its treatment. **CO4**
10. a. Describe the various methods of food preservation. **CO5**  
(OR)
- b. Write an essay on downstream processing. **CO5**

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31EP11	<b>Programme:</b>	M.Sc., Zoology	<b>CIA:</b>	III
	<b>Date:</b>	28.12.2021	<b>Part:</b>	III	<b>Semester:</b>	I
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	75
	<b>Study Component:</b>	Elective				
	<b>Course Title:</b>	<b>BIOINFORMATICS</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Discuss the important components of a computer CO1  
(OR)
- b. Explain the home page of MS word CO1
2. a. Discuss the role of internet in education CO2  
(OR)
- b. Comment on computer virus and antivirus CO2
3. a. Write a note on application of bioinformatics CO3  
(OR)
- b. Explain the various retrieving methodologies followed in NCBI, EMBL and in DDBJ CO3
4. a. Discuss the advantages and disadvantages of BLOSSUM and PAM matrices CO4  
(OR)
- b. Explain the various types of BLAST found in sequence comparison of NCBI – BLAST tool CO4
5. a. Enumerate the secondary structures of protein and how they are predicted? CO5  
(OR)
- b. Give a note on the various methods of protein structure prediction CO5

**SECTION – B**

Answer **ALL** the Questions:


**(5 X 10 = 50 Marks)**

6. a. Describe the various types of computers and their characteristics CO1  
(OR)
- b. Write a detailed account on windows operating system CO1
7. a. Give an account on electronic mail. CO2  
(OR)
- b. Enumerate the steps involved in the creation of a web page using HTML CO2
8. a. Elucidate the various types of biological databases CO3  
(OR)
- b. Discuss the sequence submission tools and technique in NCBI and in EMBL CO3
9. a. How sequence comparison for nucleotide to nucleotide is done using NCBI – BLAST? CO4  
(OR)
- b. Explain how gene prediction is done using bioinformatics tools (OR) Explain the parts and types of phylogenetic tree CO4
10. a. Give a detailed account on protein 3D structure prediction using homology modelling CO5  
(OR)
- b. Describe the Ramachandran plot in detail and how it helps in evaluation of predicted protein structure? CO5

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31CT31	<b>Programme:</b>	M.Sc., Zoology	<b>CIA:</b>	III
	<b>Date:</b>	23.12.2021	<b>Part:</b>	III	<b>Semester:</b>	I
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	75
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	<b>GENETICS</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Describe briefly about the classical and modern gene concept. CO1  
(OR)
- b. How does the DNA play a role in the molecular basis of inheritance? CO1
2. a. Critically comment on the genetic organization and hereditary pattern in haploid organisms with reference to honeybee. CO2  
(OR)
- b. Write a protocol for the isolation of plasmid. CO2
3. a. Exemplify the genetic organization of viruses. CO3  
(OR)
- b. Write a brief note on DNA replication. CO3
4. a. Discuss in brief the mechanism of suppressor mutations with suitable example. CO4  
(OR)
- b. Describe the mechanism of site-specific recombination. CO4
5. a. Enumerate the characteristics features of oncoproteins. CO5  
(OR)
- b. Through light on human genome project and its implications. CO5

**SECTION – B**

Answer **ALL** the Questions:


**(5 X 10 = 50 Marks)**

6. a. Illustrate the fine structure of gene and list out its functions. CO1  
(OR)
- b. Write a brief note on restriction mapping with a diagrammatic representation. CO1
7. a. Explain the mechanism of gene transfer during conjugation with reference to 'Hfr' strain. CO2  
(OR)
- b. How can the transformed bacterial cells be detected? CO2
8. a. Compare and contrast the generalized and specialized transduction. CO3  
(OR)
- b. Give a detailed account on transposable elements. CO3
9. a. Explain the different methods of DNA repair mechanisms. CO4  
(OR)
- b. Explain in detail the molecular mechanism of genetic recombination with suitable diagram CO4
10. a. Write a detailed account on congenial malformation. CO5  
(OR)
- b. Discuss the genetic counselling advocacies of eugenics, euthenics, and euphenics to improve the human races. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	<b>Course Code:</b>	31CT32	<b>Programme:</b>	M.Sc., Zoology	<b>CIA :</b>	III
	<b>Date:</b>	24.12.2021	<b>Part:</b>	III	<b>Semester :</b>	III
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021 - 2022	<b>Max.Marks:</b>	75
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	PHYSIOLOGY				

SECTION – A

Answer ALL the Questions:

(5 X 5 = 25 Marks)

1. a. Discuss in brief the respiratory organs and their ventilation. CO1  
(OR)
- b. Through suitable diagram expound the mechanism of transport of gases in animal respiration. CO1
2. a. Present the structure of human eye. CO2  
(OR)
- b. What is bioluminescence? Explain the mechanism and functions of bioluminescence. CO2
3. a. Define and explain Haemodynamics. CO3  
(OR)
- b. Examine the counter current mechanism with illustration. CO3
4. a. Enlist the properties of inter neuron. CO4  
(OR)
- b. Explain the physiology of behaviour in animals. CO4
5. a. Give a brief account on body fluids. CO5  
(OR)
- b. What is cardiac cycle? How it is measured? CO5

SECTION – B

Answer ALL the Questions:


(5 X 10 = 50 Marks)

6. a. Highlight the role of hormones for osmoregulation in animals. CO1  
(OR)
- b. Describe the role of hormones in invertebrate reproduction. CO1
7. a. Discuss elaborately the physiology of receptors. CO2  
(OR)
- b. Elucidate the physiology of heat therapy and physiotherapy. CO2
8. a. Discuss the mechanism of muscle contraction. CO3  
(OR)
- b. Give a details account on pulmonary ventilation. CO3
9. a. Describe the structure and functions of central nervous system. CO4  
(OR)
- b. Write a detailed account on reflex to planned action. CO4
10. a. Write an essay on blood and its formed elements. CO5  
(OR)
- b. Give an elaborate account on blood flow and blood pressure. CO5

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31CT33	<b>Programme:</b>	M.Sc., Zoology	<b>CIA:</b>	<b>III</b>
	<b>Date:</b>	27.12.2021	<b>Part:</b>	III	<b>Semester:</b>	<b>III</b>
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	<b>75</b>
	<b>Study Component:</b>	Core				
	<b>Course Title:</b>	<b>PRINCIPLES OF BIOTECHNOLOGY</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Highlight the status and scope of biotechnology in India. CO1  
(OR)
- b. What is biosafety? Discuss its importance in DNA research. CO1
2. a. Describe the restriction modification system CO2  
(OR)
- b. Explain the action of alkaline phosphatase and polynucleotide enzymes CO2
3. a. Describe the characteristics of plasmid vector. CO3  
(OR)
- b. Enumerate the types and characters of R-I plasmid vector. CO3
4. a. Write a short note on the principle and applications of Southern blotting technique. CO4  
(OR)
- b. Write a brief account on mapping of DNA fragments. CO4
5. a. Discuss the direct selection, insertion inactivation and Blue – White screening methods of selection of recombinants CO5  
(OR)
- b. Briefly discuss the method of gene cloning and its strategies. CO5

**SECTION – B**

Answer **ALL** the Questions:


**(5 X 10 = 50 Marks)**

6. a. What is IPR? Explain its types and significance. CO1  
(OR)
- b. What is patent? How do you file an invention? CO1
7. a. Give an account on type I,II and III restriction endonucleases CO2  
(OR)
- b. Discuss in detail the types and mode of action of DNA ligases CO2
8. a. Describe the role of vectors in gene therapy CO3  
(OR)
- b. Elucidate the types, characters and applications of bacteriophage and cosmid vectors CO3
9. a. Write a detailed account on methods and principles in DNA sequencing. CO4  
(OR)
- b. Discuss elaborately the principle and applications of micro array. CO4
10. a. Describe the methods of gene transfer in detail. CO5  
(OR)
- b. What is cDNA? How will you construct cDNA libraries? CO5

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**POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY**

	<b>Course Code:</b>	31NE31	<b>Programme:</b>	M.Sc., Chemistry & M.Com.	<b>CIA:</b>	<b>III</b>
	<b>Date:</b>	28.12.2021	<b>Part:</b>	III	<b>Semester:</b>	<b>III</b>
	<b>Duration:</b>	2 Hours	<b>Academic Year:</b>	2021-22	<b>Max.Marks:</b>	<b>75</b>
	<b>Study Component:</b>	Non Major Elective				
	<b>Course Title:</b>	<b>ECONOMIC ZOOLOGY</b>				

**SECTION – A**

Answer **ALL** the Questions:

**(5 X 5 = 25 Marks)**

1. a. Discuss the process of Vermicomposting CO1  
(OR)
- b. Explain the characteristic features of *Eisenia foetida*. CO1
2. a. Comment on the different species of Honey bee. CO2  
(OR)
- b. Enumerate the economic importance of bee wax and venom CO2
3. a. Discuss the life cycle of *Bombyx mori* with suitable diagrams CO3  
(OR)
- b. Write about the pebrine disease in silkworm CO3
4. a. Enumerate the characteristics of culturable species CO4  
(OR)
- b. Enlist the salient features of *Catla* CO4
5. a. Explain the characteristics of Holstein Friesian breed. CO5  
(OR)
- b. Narrate the nutritive value of milk. CO5

**SECTION – B**

Answer **ALL** the Questions:

**(5 X 10 = 50 Marks)**

6. a. Define Vermiwash. Discuss the method of preparation, composition and applications of vermiwash CO1  
(OR)
- b. Analyse the role of vermitechnology in organic farming. CO1
7. a. Explain the structure of Newton's bee hive and comment on its advantages. CO2  
(OR)
- b. Discuss the nutritive and medicinal value of Honey. CO2
8. a. Explain the methods of propagation in mulberry CO3  
(OR)
- b. Illustrate the appliances used in silkworm rearing CO3
9. a. Describe induced spawning technique in Indian Major Carps CO4  
(OR)
- b. Write an essay on ornamental fish culture CO4
10. a. Give an account of Housing and managerial aspects of a Dairy farm. CO5  
(OR)
- b. Discuss mastitis and foot and mouth disease in cow CO5

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