


VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234

POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT11	Programme:	B. Sc., Zoology	CIA:	III
	Date:	22.12.2021	Part:	III	Semester:	I
	Duration:	2 Hours	Academic Year:	2021-22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	INVERTEBRATES - I				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Write down the characteristic features of phylum protozoa. CO1
(OR)
- b. Discuss briefly about the mode of transmission and causes of *Trypanosoma*. CO1
2. a. Give a brief account on spicules of sponges. CO2
(OR)
- b. Describe the structure of ascon sponge. CO2
3. a. Discuss the affinities of phylum coelenterata. CO3
(OR)
- b. Explain the morphology of Obelia. CO3
4. a. Comment on the excretory system of *Fasciola hepatica*. CO4
(OR)
- b. Discuss any two theories on origin of metazoa. CO4
5. a. List down the general characters of Aschelminthes. CO5
(OR)
- b. Explain the parasitic adaptations of helminthes. CO5

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Describe the morphological structure and development of *Paramecium*. CO1
(OR)
- b. Write an essay on the life cycle of *Plasmodium*. CO1
7. a. Elucidate the methods of reproduction in sponges. CO2
(OR)
- b. Write a detailed account on canal system of sponges. CO2
8. a. What are coral reefs? Explain their types and formation. CO3
(OR)
- b. Discuss about the polymorphism in hydrozoa. CO3
9. a. Bring out the general characters of the phylum Platyhelminthes. CO4
(OR)
- b. Give a detailed account on life cycle of liver fluke. CO4
10. a. With neat sketch, explain the reproductive system of round worm. CO5
(OR)
- b. Elaborate the life cycle of *Ascaris lumbricoides*. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT12	Programme:	B.Sc., Zoology	CIA:	III
	Date:	27.12.2021	Part:	III	Semester:	I
	Duration:	2 Hours	Academic Year:	2021- 2022	Max.Marks:	75
	Study Component:	Core				
	Course Title:	INVERTEBRATES-II				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Write account on the origin of metamerism in Annelida. CO1
(OR)
- b. Discuss in brief the adaptive radiation in polychaetes. CO1
2. a. Sketch and comment on the structure and affinities of Peripatus. CO2
(OR)
- b. Enlist the larval forms of *Crustacea* and comment on it. CO2
3. a. List out the external characteristic features of scorpion. CO3
(OR)
- b. Enumerate the salient features of centipedes. CO3
4. a. Give an account on the digestive system of Pila. CO4
(OR)
- b. Discuss about the cephalopods are considered as an advanced Molluscs. CO4
5. a. Mention the affinities of echinoderms. CO5
(OR)
- b. Describe briefly any five larval forms of echinodermata. CO5

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Give a detailed account on general characteristic features of phylum Annelida. CO1
(OR)
- b. Enlist the morphological features of Nereis with labelled diagram. CO1
7. a. Write down the general characteristic features of phylum Arthropoda. CO2
(OR)
- b. Discuss the external structure of Prawn with suitable labelled diagram. CO2
8. a. Write an essay on beneficial insects with example. CO3
(OR)
- b. Give an account on social life of insect with example. CO3
9. a. Critically comment on the mechanism of torsion in gastropods. CO4
(OR)
- b. With a neat sketch describe the structure and body organization of pila. CO4
10. a. Give a details account on the general characters and classification of echinodermata upto class level with examples. CO5
(OR)
- b. Give an account of water vascular system in star fish with suitable diagram. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT31	Programme:	B.Sc., Zoology	CIA:	III
	Date:	22.12.2021	Part:	III	Semester:	III
	Duration:	2 Hours	Academic Year:	2021-22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	CELL BIOLOGY				

SECTION – A

Answer **ALL** the Questions in short:

(5 X 5 = 25 Marks)

1. a. Write a short note on cell theory and add its significance. CO1
(OR)
- b. Discriminate TEM and SEM. CO1
2. a. Enumerate the functions of endoplasmic reticulum. CO2
(OR)
- b. Narrate the types and specific functions of endoplasmic reticulum. CO2
3. a. Describe the structure of ribosome. CO3
(OR)
- b. Give an account on the origin and functions ribosome. CO3
4. a. Elucidate the functions of nucleolus. CO4
(OR)
- b. Comment on the types of cancer cells. CO4
5. a. Describe the fine structure of DNA with reference to Watson – Crick model with a labelled ske CO5
(OR)
- b. Explain the role of RNA. CO5

SECTION – B

Answer **ALL** the Questions in detail:


(5 X 10 = 50 Marks)

6. a. Explain the principle, components, and working mechanism of electron microscope. CO1
(OR)
- b. Give a detailed account on the fundamentals of fixation and staining methods. CO1
7. a. Elaborate the functional significance of lysosomes. CO2
(OR)
- b. Write an essay on the structural and functional aspects of Golgi complex. CO2
8. a. Discuss in detail about Krebs cycle. CO3
(OR)
- b. “Mitochondria is the power house of the cell” – Discuss. CO3
9. a. Elaborate the mitotic cell division. CO4
(OR)
- b. Describe the structure of giant chromosomes. CO4
10. a. Discuss the mechanism of DNA replication with representative figures. CO5
(OR)
- b. Explain the regulatory mechanism involved in the *lac* operon system in *E.coli*. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT32	Programme:	B. Sc., Zoology	CIA:	III
	Date:	27.12.2021	Part:	III	Semester:	III
	Duration:	2 Hours	Academic Year:	2021 - 22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	GENETICS				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Explain the following (i) Pleiotropism (ii) Expressivity CO1
(OR)
- b. Write short notes on lethal genes CO1
2. a. Give an account of genetic basis of Rh blood group and its significance. CO2
(OR)
- b. How do the skin colour in man is controlled by polygenes? CO2
3. a. Define linkage and give its significance CO3
(OR)
- b. Explain the process of construction of chromosomal map. CO3
4. a. Describe sex determination in *Bonellia* CO4
(OR)
- b. Write short notes on sex influenced genes CO4
5. a. Briefly explain any two human genetic syndromes CO5
(OR)
- b. Write an account on eugenics CO5

SECTION – B

Answer **ALL** the Questions:

(5 X 10 = 50 Marks)

6. a. State Mendel's laws. Give the reasons for his success CO1
(OR)
- b. Discuss the phenomenon of epistasis by citing an example CO1
7. a. How the ABO blood group is controlled by multiple alleles? CO2
(OR)
- b. Elaborate the mode of inheritance of coat colour in rabbit CO2
8. a. Illustrate the cytological evidences for crossing over CO3
(OR)
- b. Discuss coupling and repulsion with suitable experiment CO3
9. a. Describe the chromosomal theory of sex determination. CO4
(OR)
- b. Explain sex linked inheritance in man with an example CO4
10. a. Give a detailed account on extra chromosomal inheritance of shell coiling in *Limnaea* CO5
(OR)
- b. Write an essay on inborn errors of metabolism CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY



Course Code:	09SB31	Programme:	B. Sc., Zoology	CIA:	III
Date:	21.12.2021	Part:	IV	Semester:	III
Duration:	1 Hour	Academic Year:	2021-22	Max.Marks:	25
Study Component:	Skill Based				
Course Title:	PUBLIC HEALTH AND HYGIENE				

SECTION – A

Answer **ALL** the Questions:


(5 X 5 = 25 Marks)

1. a. Write a brief account on vitamin deficiencies symptoms and preventive measures. **CO1**
(OR)
- b. Explain the physiological role of protein and carbohydrate **CO1**
2. a. Explain the various types of water sources. **CO2**
(OR)
- b. Discuss the solid waste and excreta disposal in rural areas. **CO2**
3. a. Comment on poliomyelitis. **CO3**
(OR)
- b. Elaborate the transmission, diagnosis, clinical symptoms and treatment of AIDS. **CO3**
4. a. Give a short note on obesity. **CO4**
(OR)
- b. Discuss the diabetes disease. **CO4**
5. a. Highlight the role of NGOs in public health education. **CO5**
(OR)
- b. Discuss the role of WHO. **CO5**

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09AT01	Programme:	B. Sc., Che./Bot.	CIA:	III
	Date:	28.12.2021	Part:	III	Semester:	III
	Duration:	2 Hours	Academic Year:	2021- 22	Max.Marks:	75
	Study Component:	Allied				
	Course Title:	ANIMAL ORGANISATION				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. What is symmetry? Describe the different types of symmetry in animals with suitable example. **CO1**
(OR)
- b. Define coelom. Classify the animals based on the coelom. **CO1**
2. a. Explain the different mode of nutrition in protozoa. **CO2**
(OR)
- b. Give an account on structure of gill in fish with labelled sketch. **CO2**
3. a. Explain the feeding mechanism and food digestion in paramecium. **CO3**
(OR)
- b. Describe the flight adaptation in birds with neat diagram. **CO3**
4. a. Discuss in brief the nervous system of earthworm with neat sketch. **CO4**
(OR)
- b. Describe the structure of compound eye with neat sketch. **CO4**
5. a. Draw the labeled diagram of male reproductive system of rabbit and explain. **CO5**
(OR)
- b. Sketch and comment on excretory system of earthworm. **CO5**

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Mention salient features of binomial and trinomial nomenclature. **CO1**
(OR)
- b. Outline the salient features of a phylum with suitable examples. **CO1**
7. a. Discuss elaborately the process of feeding and digestion in frog. **CO2**
(OR)
- b. Sketch the labelled structure of respiratory system of cockroach and comment on it. **CO2**
8. a. Describe in detail the circulatory system of earthworm with neat diagram. **CO3**
(OR)
- b. With a neat sketch describe the circulatory system of Calotes. **CO3**
9. a. Explain in detail the structure and functions of human brain. **CO4**
(OR)
- b. Draw the structure of human ear with neat labels and explain the mechanism of hearing. **CO4**
10. a. Give a detailed account on the excretory system of frog with labeled diagram. **CO5**
(OR)
- b. Describe the female reproductive system of rabbit with neat labelled sketch. **CO5**

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT51	Programme:	B. Sc., Zoology	CIA:	III
	Date:	23.12.2021	Part:	III	Semester:	V
	Duration:	2 Hours	Academic Year:	2021 - 22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	BIOCHEMISTRY AND BIOPHYSICS				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Define isomerism. Explain its types with suitable examples. **CO1**
(OR)
- b. List down the properties of carbohydrates. **CO1**
2. a. Write the structure and functions of cholesterol. **CO2**
(OR)
- b. Describe the mechanism of enzyme action. **CO2**
3. a. Write a short note on urea cycle. **CO3**
(OR)
- b. Brief the process of glycogenolysis. **CO3**
4. a. Give a brief account on respiratory chain. **CO4**
(OR)
- b. Explain the biologically important high energy compounds. **CO4**
5. a. State the laws of thermodynamics. **CO5**
(OR)
- b. Write a short note on exothermic and endothermic reactions. **CO5**

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Explain the following: (i) Buffers (ii) Dissociation constant **CO1**
(OR)
- b. Classify protein and mention its properties. **CO1**
7. a. Describe the biosynthesis of cholesterol. **CO2**
(OR)
- b. Elucidate the factors affecting enzyme action. **CO2**
8. a. Write down the metabolic steps in glycolysis. **CO3**
(OR)
- b. Discuss in detail about β -oxidation of fatty acids. **CO3**
9. a. Define and discuss oxidative phosphorylation **CO4**
(OR)
- b. Outline the energy budget in the metabolism of major nutrients. **CO4**
10. a. Describe the types and general properties of colloidal solution. **CO5**
(OR)
- b. Explain the following: (i) Action potential (ii) Redox potential **CO5**

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT52	Programme:	B. Sc., Zoology	CIA:	III
	Date:	24.12.2021	Part:	III	Semester:	V
	Duration:	2 Hours	Academic Year:	2021-22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	BIOTECHNOLOGY				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. What is IPR? Why it is important in present day's context? CO1
(OR)
- b. Highlight the scope of biotechnology in India. CO1
2. a. Write a short note on genomic library. CO2
(OR)
- b. What is DNA sequencing? Explain in detail the Sanger method of DNA sequencing. CO2
3. a. Give a brief account on principle and applications in Southern blotting technique. CO3
(OR)
- b. Describe briefly about the process of animal cell culture techniques. CO3
4. a. Discuss in brief the applications of plant cell culture techniques. CO3
(OR)
- b. Narrate the procedure for large scale cultivation of edible mushrooms. CO4
5. a. Write comments on diagnostic applications of DNA probes. CO4
(OR)
- b. Describe about the biodegradation of waste products with respect to microbes. CO5

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Write an essay on types and applications of restriction endonucleases. CO1
(OR)
- b. Describe the characteristic features and applications of pBR³²². CO1
7. a. Discuss in detail various methods of gene transfer. CO2
(OR)
- b. What is cDNA? How will you construct a cDNA library? CO2
8. a. Discuss elaborately the principle and applications of PCR. CO3
(OR)
- b. Discuss the following techniques: CO3
 i. RFLP
 ii. RAPD
9. a. Explain the principle and applications of following: CO4
 i. Animal bioreactor
 ii. Molecular farming.
(OR)
- b. Give an account on biogas production from industrial waste. CO4
10. a. Critically evaluate the process and applications of recombinant DNA vaccines. CO5
(OR)
- b. Define xenobiotics. Give an account on biodegradation of xenobiotics. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09CT53	Programme:	B. Sc., Zoology	CIA :	III
	Date:	27.12.2021	Part:	III	Semester :	V
	Duration:	2 Hours	Academic Year:	2021 - 22	Max.Marks:	75
	Study Component:	Core				
	Course Title:	MICROBIOLOGY AND IMMUNOLOGY				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. What are the structural features of bacteria? CO1
(OR)
- b. Write any two methods of culturing bacteria. CO1
2. a. Discuss about faecal streptococci as indicator microbes. CO2
(OR)
- b. Define fermentation. List out the fermented food stuffs. CO2
3. a. Write the causative organism and symptoms of the disease TB. CO3
(OR)
- b. Elucidate the pathology, symptoms and treatment for cholera disease. CO3
4. a. Explain the physical factors that govern innate immunity. CO4
(OR)
- b. Describe the structure and functions of Lymph node with neat sketch. CO4
5. a. Write a brief account on Humoral immune response. CO5
(OR)
- b. Describe the ELISA test and their applications. CO5

SECTION – B

Answer **ALL** the Questions:


(5 X 10 = 50 Marks)

6. a. Elaborate the life cycle of T₄ Bacteriophage. CO1
(OR)
- b. Distinguish and differentiate the various types of culture media. CO1
7. a. Give an account on the symbiotic and non-symbiotic of nitrogen fixation. CO2
(OR)
- b. Analyse in detail the various methods of food preservation. CO2
8. a. Explain the transmission, diagnosis, clinical symptoms and preventive measures of polio. CO3
(OR)
- b. Describe the transmission, diagnosis, clinical symptoms and treatment of AIDS. CO3
9. a. Give a detailed account on structure, properties and functions of Immunoglobulins. CO4
(OR)
- b. Define vaccine and tabulate the immunization schedule. CO4
10. a. Write an essay on cell mediated immunity. CO5
(OR)
- b. Critically comment on the principle and applications of immunoelectrophoresis. CO5

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POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY

	Course Code:	09EP51	Programme:	B. Sc., Zoology	CIA:	III
	Date:	28.12.2021	Part:	III	Semester:	V
	Duration:	2 Hours	Academic Year:	2021-22	Max.Marks:	75
	Study Component:	Elective				
	Course Title:	BIostatistics, Computer Applications & Bioinformatics				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Explain the types of data CO1
 (OR)
- b. Describe classification of data with suitable examples CO1
2. a. Calculate median and mode for the following data CO2

Wt. of fishes (g)	0-5	5-10	10-15	15-20	20-25
No. of fishes	4	3	12	8	10

 (OR)
- b. Enumerate merits and demerits of mean deviation CO2
3. a. Write an account on Chi-square analysis CO3
 (OR)
- b. Describe Student 't' test CO3
4. a. Discuss various generations of computer CO4
 (OR)
- b. Enumerate the advantages and limitations of Ms EXCEL package CO4
5. a. Give a detailed comment on various bioinformatics databases CO5
 (OR)
- b. Explain the proteomic tools available with ExPASy proteomic tools CO5

SECTION – B

Answer **ALL** the Questions:

(5 X 10 = 50 Marks)

6. a. Write an essay on diagrammatic presentation of data CO1
 (OR)
- b. Prepare a frequency table with class intervals of weight of 50 Tilapia in grams collected from a pond CO1
 21,8,17,15,16,12,7,8,12,15,9,10,21,16,35,32,45,48,34,35,9,14,7,6,12,15,24,26,27,30,32,17,18,19,41,43,46,50,40,34,18,14,8,7,10,11,13,14,16,20
7. a. Find out Quartile Deviation for the given frequency distribution CO2

Wt. of chick (g)	0-10	10-20	20-30	30-40	40-50	50-60
No. of chick	7	8	10	3	9	5

 (OR)
- b. Calculate standard deviation and coefficient of variation for the following data which shows the weight of fishes in grams CO2

Weight of fishes (g)	0-10	10-20	20-30	30-40	40-50
No. of fishes	2	4	7	8	3
8. a. In a dihybrid experiment in F₂ generation the following plants appear yellow round 920, yellow wrinkled 280, green round 320 and green wrinkled 80. With the help of χ^2 test, verify that 9:3:3:1 ratio is followed. CO3
 (OR)
- b. Explain the types and theorems of probability CO3

9. a. Distinguish and compare various types of computers over the time and their applications **CO4**
(OR)
- b. How will you create and manage an E-Mail **CO4**
10. a. What is BLAST in NCBI? How sequence comparison for nucleotide to nucleotide is done using NCBI – BLAST **CO5**
(OR)
- b. What is Multiple sequence alignment? What are the methods of predicting the multiple sequence alignment **CO5**

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VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234

POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY



Course Code:	09SB51	Programme:	B.Sc., Zoology	CIA:	III
Date:	21.12.2021	Part:	IV	Semester:	V
Duration:	1 Hour	Academic Year:	2021-22	Max.Marks:	25
Study Component:	Skill Based				
Course Title:	SERICULTURE				

SECTION – A

Answer **ALL** the Questions:

(5 X 5 = 25 Marks)

1. a. Give an account on types of silkworm. **CO1**

(OR)
- b. Expand and list out the functions of CSB. **CO1**
2. a. State the significance of Seedling propagation. **CO2**

(OR)
- b. Describe the different methods of Irrigation for mulberry. **CO2**
3. a. Discuss the life cycle of silkworm. **CO3**

(OR)
- b. Give a note on common pests of silkworm. **CO3**
4. a. Enumerate the physical characteristics of silkworm cocoons. **CO4**

(OR)
- b. Discuss the different types of defective cocoons. **CO4**
5. a. Sketch and comment on the structure of silk gland in silkworm. **CO5**

(OR)
- b. Describe the rearing appliances used in sericulture. **CO5**

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