D–2295	Sub. Code
	35011

DISTANCE EDUCATION

M.Sc.(Zoology) DEGREE EXAMINATION, DECEMBER 2023.

First Semester

ANIMAL DIVERSITY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Binomial nomenclature
2. Species concept
3. Trypanosoma
4. Flukes
5. Centipedes
6. Ophiuroidea
7. Tunicata
8. Anadromous
9. Eutheria
10. Flightless birds

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the role of molecular data in taxonomy?

Or

(b) What is the biological species concept, and how does it define a species based on reproductive isolation?

12. (a) Elucidate the life cycle of Plasmodium.

Or

(b) Write an essay on spicules in sponges.

13. (a) Give an elaborate account on harmful and beneficial insects.

Or

(b) What are the major classes of molluscs, and what are the examples of organisms within each class?

14. (a) Give a comparative study of Hemichordata, Urochordata and Cephalochordata.

Or

(b) Write a brief account on functional adaptation of fishes.

15. (a) Explain the salient features of migration of birds.

Or

(b) Write an essay on Eutheria.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Different types of coelomic animals. Explain.

17. Write an essay on the Corals and Coral reefs.

18. Give a brief account on larval forms of Echinodermata.

19. Explain water vascular system in Echinoderms.

20. Write detailed notes on the major groups of birds, and what are some examples of organisms within each group?

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D–2296

Sub. Code
35012

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

First Semester

BIOCHEMISTRY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Isomers

2. Rancidity

3. Isoelectric point

4. Nucleotides

5. Holoenzymes

6. Lock and key hypothesis

7. Niacin

8. Thyroxin

9. Glyconeogenesis

10. Diabetes mellitus

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss the structure of any two disaccharides.

Or

(b) Describe the structure of DNA.

12. (a) Explain the Mechanism of Enzyme action.

Or

(b) Classify Vitamins with examples.

13. (a) Describe the major functions of Gonadal hormones.

Or

(b) Explain Citric acid cycle.

14. (a) Write a short notes on Ketogenesis.

Or

(b) Describe the Transamination.

15. (a) Write a short notes on Glycogen storage diseases.

Or

(b) Describe the carbamoyl phosphate synthetase I deficiency.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Give a detail account on Classification of Carbohydrates.

17. Describe the classification and chemical properties of Aminoacids.

18. Explain Vitamins, biochemical functions and their deficiency.

19. Write an essay on the Hexose Mono phosphate shunt.

20. Explain Artherosclerosis symptoms, causes, diagnosis and treatment.

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D–2297

Sub. Code
35013

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

First Semester

CELL AND MOLECULAR BIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Eukaryotes
2. Ribosomes
3. Endonuclease
4. Okazaki fragments
5. Polymerase-III
6. DNA gyrase
7. Inducer
8. Nucleoid
9. Lysosomes
10. Steroid receptor

PART B — (5 × 5 = 25 marks)

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

11. (a) Structural organization of prokaryotes.

Or

(b) Structural organization of Eukaryotes.

12. (a) Ultrastructure of Chromosome.

Or

(b) Structure of Endoplasmic reticulum.

13. (a) Explain the different stages of Mitosis.

Or

(b) Explain the different stages of Meiosis.

14. (a) Describe the Prokaryotic transcription.

Or

(b) Describe the Eukaryotic transcription.

15. (a) Describe the DNA binding motifs in Prokaryotes.

Or

(b) Describe the DNA binding motifs in Eukaryotes.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the ultrastructure of Mitochondria.

17. Explain the different types of RNA and their functions.

18. Describe about protein synthesis in detail.

19. Explain Lac operon in detail.

20. Describe the hormonal regulations of gene expression.

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D–2298	Sub. Code
	35021

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

DEVELOPMENTAL BIOLOGY AND EVOLUTION

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Polarity of Egg
2. Polyspermy
3. Chemo differentiation
4. Embryonic Induction
5. Cryopreservation
6. Sperm banking
7. Species
8. Lamarckism
9. Phylogenetic tree
10. Genetic variations

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the process of Spermatogenesis.

Or

(b) Describe the process of Oogenesis.

12. (a) Describe the types of Cleavage.

Or

(b) Describe the types of Blastula.

13. (a) Write an account of foetal membrane in chick.

Or

(b) Write an account on the placenta in Mammals.

14. (a) Explain Nuclear transplantation.

Or

(b) Explain the concept of "Assisted Reproductive Technology" (ART).

15. (a) Human origin and Migration —Explain.

Or

(b) Describe the theory of Natural selection.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about fertilization in mammals with reference to Activation of egg and egg metabolism.

17. Write a detailed account on Gastrulation in vertebrates.

18. Differential gene activation -Explain in detail.

19. Darwinism and Neo Darwinism- Explain.

20. Describe the patterns of behavioural adaptations.

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D–2299

Sub. Code
35022

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

GENETICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Monohybrid Cross
2. Epistatic interaction
3. Heterochromatization
4. QLT mapping
5. Acrocentric chromosomes
6. Population genetics
7. Eugenics
8. Splicing
9. Gene
10. Apoptosis

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What is the difference between a dominant and recessive trait?

Or

(b) How is ABO blood group inheritance determined?

12. (a) Explain the theories of linkage?

Or

(b) Comment on Tetrad analysis.

13. (a) Explain Barr bodies.

Or

(b) Explain the purpose of pedigree analysis.

14. (a) Comment on Twin Study.

Or

(b) What are chromosomal abnormalities?

15. (a) Explain in short transcription factor.

Or

(b) What is the central dogma of molecular biology?

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the concept of epistasis and explain how it can influence the expression of genes in a genetic pathway?

17. Explain the relationship between crossing over and genetic distance and how it can be used to construct genetic maps of chromosomes.

18. Describe the different types of mutations that can occur in DNA and explain how they can affect the function of genes.

19. Describe the different levels of gene expression control in eukaryotes.

20. Explain in detail the regulation of programmed cell death.

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D–2300	Sub. Code
	35023

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

MICROBIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

Draw diagram if necessary.

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Industrial uses of yeast
2. Simple microscope
3. Grams staining
4. Sterilization
5. Synchronous culture
6. Cytoplasmic matrix
7. Distinguish micro and macroalgae
8. 18S rRNA
9. MEGA
10. Short-gun metagenomics

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain Haeckel's three-kingdom concept?

Or

(b) Draw the ultra-structure of virus and comment

12. (a) Explain the principles and application of fluorescent microscope.

Or

(b) Comment on the preservation methods used in microbes for storage?

13. (a) Comment on (i) Pili; (ii) Flagella.

Or

(b) Write the biological importance of macroalgae?

14. (a) Write the general ch3racteristics of *Entamoeba histolylica*?

Or

(b) Explain the steps involved in construction of phylogenetic tree?

15. (a) What are the properties of metagenomics?

Or

(b) Explain the factors influencing microbial growth.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the role of Bergey's Manual in the identification of bacteria, and describe the methods used.

17. Explain the differences between TEM and S[M in terms of resolution, magnification, and sample preparation.

18. Write in detail on general characteristics of protozoa?

19. Elaborate in detail the structure and organization of prokaryotic cell structures with neat diagrams?

20. Write an essay on the identification of microorganisms utilizing molecular taxonomy.

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D–2301

Sub. Code
35031

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION,
DECEMBER 2023.

Third Semester

ANIMAL PHYSIOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Gastric juice.
2. Absorption.
3. Haemopoiesis.
4. Neuro-muscular junction.
5. Blood plasma.
6. Types of Neuron.
7. Hibernation
8. Pancrease
9. Biological clock.
10. Circannual periodicity

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write an account on Exchange of gases in human respiratory system.

Or

(b) Describe the Structure of Nephron.

12. (a) Describe the Mechanism of respiration.

Or

(b) Explain the Respiratory system in Man.

13. (a) Write a detailed account on blood volume and its regulation.

Or

(b) Explain the Structure of Human Heart.

14. (a) Write a note on chemical changes during muscular contraction.

Or

(b) Describe Kymograph.

15. (a) Write a note on Hypothyroidism.

Or

(b) Write a note on Hyperthyroidism.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write an essay on Gastrointestinal hormones and their control in digestion.

17. Write a detailed account on "Composition of Blood".

18. Explain the Mechanism of muscular contraction.

19. Write detailed account on Thermoregulations in animals.

20. Write detailed account on Endocrine glands and their hormones.

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D–2302

Sub. Code
35032

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION,
DECEMBER 2023.

Third Semester

IMMUNOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Spleen.

2. Memory cell.

3. Adaptive Immunity.

4. MHC.

5. Immunization schedule.

6. Antibody Engineering.

7. Vaccines

8. Mantoux test.

9. Types of Cancer.

10. Immunofluorescence Microscopy.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the different types of antibodies.

Or

(b) Classify antigens and Epitopes.

12. (a) Describe about the importance of cytokines and Interferons.

Or

(b) Explain about Antigen processing and presentation.

13. (a) Describe the Effector mechanism of "Humoral Immunity".

Or

(b) 'Describe the Effector mechanism of 'Cell-mediated Immunity".

14. (a) Describe about Auto-Immune disorders.

Or

(b) Organ Transplantation.

15. (a) How do you detect molecules using Immunoblot Techniques? Explain.

Or

(b) What is "ELISA"? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe in detail about Hematopoiesis with reference to T-cell and B-cell.

17. Write a detailed account on Immunoprophylaxis.

18. Explain in detail about the Immediate hypersensitivity.

19. Explain about Infectious diseases in detail.

20. Write a detailed account on "Acquired Immunodeficiency Syndrome" (AIDS).

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D–2303	Sub. Code
	35033

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Third Semester

ENVIRONMENTAL BIOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Ecological pyramids

2. Circadian Rhythm

3. Thermal stratification

4. Neuston

5. Coral reefs

6. Nitrogen cycle

7. Mortality

8. Ecotone

9. Global warming

10. Acid rain

PART B — (5 × 5 = 25 marks)

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

11. (a) Write a brief notes on Energy flow in an Ecosystem.

Or

(b) Describe the biological effects of Temperature.

12. (a) Discuss the Physical and chemical properties of seawater.

Or

(b) Write short notes on Adaptation of plankton.

13. (a) Explain-Sulphur cycle.

Or

(b) Give a brief account on Population density.

14. (a) Give a brief notes on Climax community.

Or

(b) Elucidate the hazards and impact of Air pollution.

15. (a) Describe about Global warming.

Or

(b) Discuss the Biodiversity hotspots of India.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the biological effect of light on animals.

17. Elaborate the structure and functions of a pond Ecosystem.

18. Give a detail account on Gaseous cycle.

19. Explain water pollution and their biological effects.

20. Analyse the Endangered and threatened species in India.

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D–2304	Sub. Code
	35041

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Fourth Semester

FISHERIES AND AQUACULTURE

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Fishing craft.

2. Meristic characters of fish.

3. Endangered Species.

4. Cultivable organism.

5. Pen culture.

6. Brood Stock

7. Live feed culture

8. Spawning

9. HACCP.

10. Chitin

PART B — (5 × 5 = 25 marks)

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

11. (a) Classify fishes based on morphology.

Or

(b) Classify fishes based on habitat.

12. (a) Describe the status of Indian aquaculture.

Or

(b) Explain the important Fin fish and shell fish disease and its control measures.

13. (a) Write an account on Race ways culture.

Or

(b) Describe Poly culture.

14. (a) Types of Hatchery in fish management

Or

(b) Write an account on larval rearing in fish management.

15. (a) Explain the Biochemical methods to examine freshness of fish

Or

(b) Describe National and International quality standard for fish and fishery products.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the economic importance of marine and fresh water fishes with regards to fishery potential.

17. Describe the conservation and Management of Fishery resources.

18. How do you construct pond for fisheries- Explain.

19. Write a detailed account on "Live feed culture".

20. Explain the Fishery by products in detail.

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D–2305	Sub. Code
	35042

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Fourth Semester

ANIMAL BIOTECHNOLOGY

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Cosmid.

2. Biolistic method of gene transfer.

3. Natural media for tissue culture.

4. Dolly.

5. Xenotransplantation.

6. Bioreactors.

7. DNA Finger printing.

8. Pheromones.

9. Stem cells.

10. PET-CT.

PART B — (5 × 5 = 25 marks)

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

11. (a) State Basic principles of Genetic Engineering.

Or

(b) Write an account on the Plasmid vector.

12. (a) Explain the preparation of media and sterilization techniques.

Or

(b) Explain Artificial insemination and "Embryo transfer".

13. (a) Describe the monolayer culture of Animal cell.

Or

(b) Hanging drop method of cell culture.

14. (a) Explain the "Maxam and Gilbert Method" of DNA Sequencing.

Or

(b) Explain the Sanger's di-deoxy method of DNA sequencing.

15. (a) Describe embryonic and adult stem cells.

Or

(b) Describe the Knock out and Knock in Technology.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write a detailed account on various types of vectors.

17. Describe the method of production of transgenic animals.

18. Describe Southern and western hybridization in detail.

19. Isolation and Purification of Nucleic acids- Explain.

20. State the Ethical issues in Genetic Engineering and Transgenics

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D–2306

Sub. Code
35043

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2023.

Fourth Semester

BIOPHYSICS, BIOSTATISTICS AND BIOINFORMATICS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Lewis structure

2. Geiger Muller counter

3. Primary data

4. Quantitative variables

5. Histogram

6. Range

7. Probability

8. Cheminformatics

9. DNA repair enzymes

10. Structural bioinformatics

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the law of thermodynamics.

Or

(b) Explain in detail about the isotopes as tracers giving examples.

12. (a) Distinguish between primary and secondary data.

Or

(b) Write short notes on line and bar diagram.

13. (a) What is median? Explain the median value for grouped and ungrouped data with appropriate examples.

Or

(b) Briefly discuss about the p-value giving its merits and demerits.

14. (a) Analyse the CV. Give the appropriate examples.

Or

(b) Discuss in detail the various applications of bioinformatics in cancer detection.

15. (a) Explain the components of protein synthesis.

Or

(b) Write down the significance and concepts in biological databases.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Briefly explain about the Gibbs and Helmholtz free energy.

17. What is sample? Describe the random sample and random number table.

18. What is interval estimation? Describe the interval estimation of the population mean for known and unknown population variance.

19. Explain the concept of gene therapy and drug development with reference to bioinformatics.

20. Briefly discuss the phylogenetic analysis using PHYLIP for rooted frees and unrooted trees.

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