

**D-5616**

**Sub. Code**

**35011**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

First Semester

Zoology

ANIMAL DIVERSITY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Psudocoelomata
2. Cephalization
3. Ascon canal system
4. Cysticercosis
5. Book lung
6. Pedicellariae
7. Platypus
8. Squamata
9. Flying frog
10. Fang

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on Linnaeus classification.  
Or  
(b) Explain the phylogeny and adaptive radiation of Acoelomates.
12. (a) Discuss the Plasmodium life cycle.  
Or  
(b) Comment on the diversity of corals.
13. (a) Give an account on larval forms of Echinodermata.  
Or  
(b) Describe the life history of *Taenia solium*.
14. (a) Write an essay on Oyster culture.  
Or  
(b) Write short notes on structural and functional adaptations of reptiles.
15. (a) Give a brief account on general characteristics of metatheria.  
Or  
(b) Write an essay on Egg laying mammals.

PART C — (3 × 10 = 30 marks)

Answer any THREE question.

All questions carry equal marks.

16. Describe the polymorphism in coelenterates.
17. Describe the life history and parasitic adaptations of *Ascaris*.

18. Give a brief account of structural and functional adaptations of Amphibians.
  19. Explain the Migration in birds.
  20. Write an essay on adaptive radiation in mammals.
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**D-5617**

**Sub. Code**

**35012**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

First Semester

Zoology

**BIOCHEMISTRY**

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What is the disaccharide?
2. What are the benefits of lipids?
3. What do you understand by secondary structure of proteins?
4. Define nucleic acids.
5. What is nomenclature of organic compounds?
6. Explain ES complex.
7. How are vitamins classified?
8. Write any two important functions of pituitary hormones.
9. How are purine nucleotides degraded?
10. What are signs and symptoms of Niemann-Pick disease?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the structure of monosaccharides.

Or

- (b) Discuss essential fatty acids.

12. (a) Write in details structure of amino acids.

Or

- (b) Write a short note on types of DNA replication.

13. (a) Briefly explain about factors affecting enzyme activity.

Or

- (b) Write down the enzyme kinetics.

14. (a) Give account on symptoms of hyper vitaminosis.

Or

- (b) Illustrate the gonadal gland malfunction.

15. (a) Mention briefly about biosynthesis of purines.

Or

- (b) Describe the metabolism of ammonia.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. How are polysaccharides classified – Explain with examples.

17. Write in detail about mechanism of enzyme action.

18. Elaborately explain classification of lipids.
  19. Describe biosynthesis and degradation of pyrimidine.
  20. Discuss the urea cycle.
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**D-5618**

**Sub. Code**

**35013**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

First Semester

Zoology

CELL AND MOLECULAR BIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Define nucleoid.
2. Give the functions of Golgi bodies
3. What are Purines?
4. Explain euchromatin
5. What is “cut and patch” repair of DNA.
6. Define termination.
7. What is the role of releasing factors?
8. Distinguish codon from anticodon.
9. Write down the central dogma of protein synthesis.
10. Reverse transcriptase.

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) What did Singer and Nicolson say about the structure of Plasma membrane?

Or

- (b) Summarize the events of the first mitotic prophase.

12. (a) Explain the mechanism of DNA replication.

Or

- (b) Give a brief account on the polymorphism in Lysosomes.

13. (a) How is an m-RNA formed from DNA molecule.

Or

- (b) Compare and contrast prokaryotic and eukaryotic gene regulatory systems.

14. (a) Define transcriptional control, transcriptional termination control and post-translation control.

Or

- (b) Describe the basic structure of chromatin. What is the role of histones in this structure?

15. (a) What are the microbodies? Describe the symbiotic origin theory of the micro bodies.

Or

- (b) Describe the two systems of glycosylation for the proteins.



PART C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

All questions carry equal marks.

16. Define cell? How will you differentiate between the prokaryotic and eukaryotic cells?
  17. With neat labeled diagrams, describe the process of protein synthesis in detail.
  18. Write an account on the different types of non-genetic RNA and their functions.
  19. Do you expect operons to occur in eukaryotes? Explain.
  20. Explain how an amino acid is activated and then attached to its specific tRNA.
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**D-5619**

**Sub. Code**

**35021**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Second Semester

Zoology

DEVELOPMENTAL BIOLOGY AND EVOLUTION

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Polarity
2. Symmetry
3. Monospermy
4. Chemodifferentiation
5. Blastulation
6. Organizer
7. Cryopreservation
8. Gene Knockout and Knockin
9. Speciation
10. Phylogenetic tree

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain about Spermatogenesis in detail.

Or

- (b) Explain about Oogenesis in detail.

12. (a) Explain about the classification of eggs.

Or

- (b) Describe the activation of egg briefly.

13. (a) What is cleavage? Describe the types of cleavage.

Or

- (b) Describe the fate map of chick with diagram.

14. (a) Explain the placenta in mammals.

Or

- (b) Describe the foetal membranes in chick.

15. (a) Explain the theory of natural selection.

Or

- (b) Explain about Lamarckism and Neo-Lamarckism in detail.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe about Egg membranes.

17. What is polyspermy? How the polyspermy is prevented?

18. What is Gastrulation? Describe the mechanism of morphogenetic movement.
  19. Explain in detail about the concept of assisted reproductive technology. (ART)
  20. What is teratogenesis? Explain the factors involved in Teratogenesis.
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**D-5620**

**Sub. Code**

**35022**

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, MAY 2022.

Second Semester

GENETICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Define multiple alleles.
2. What is co-dominance?
3. In peas, seeds may be round (R) or wrinkled (r). What proportion of the offspring in the following crosses would be expected to be wrinkled?
  - (a)  $RR \times rr$
  - (b)  $Rr \times Rr$
  - (c)  $Rr \times rr$
4. Define Tetrad analysis.
5. Distinguish between hereditary variations and environmental variations.
6. Write about chemical mutagenic agents.

7. Explain Isochromosomes.
8. What is meant by outbreeding?
9. Give two examples for sex linked inheritance.
10. What is the cause, symptoms of Turner's syndrome?

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Discuss the scope and applications of genetics in the various fields of science.

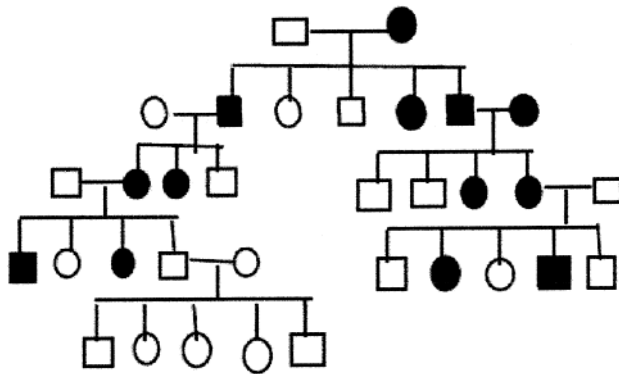
Or

- (b) Describe how sex is determined in human being.

12. (a) Explain the role of chromosomes in heredity.

Or

- (b) The following pedigree shows the presence of individuals bearing extra fingers and toes – exhibiting “polydactyly”.



What is the correct mechanism of inheritance for this abnormality, and how can you tell?

- (i) X-linked dominant
- (ii) autosomal dominant
- (iii) y-linked
- (iv) x-linked recessive
- (v) autosomal recessive.

13. (a) In fruit flies (*Drosophila*), one eye color gene is X-linked, with a recessive white allele and a dominant red allele. If white-eyed female flies are bred to red-eyed male flies, describe the expected offspring (assume all parental flies are true-breeding). What results do you expect if you do the reciprocal cross (reverse the phenotypes of the parent flies).

Or

- (b) Describe gene regulation in development and cell death.
14. (a) About 80% of the human population can taste the chemical phenolthiocarbamide (PTC), while the other 20% can't. This characteristic is governed by a single gene with two alleles, a tasting allele and a non-tasting allele. What does this statistic tell us about which allele (tasting or non-tasting) is dominant?

Or

- (b) What are the effects and significance of ploidy in man?

15. (a) Describe the genetic effects of inbreeding and their relation to the viability of offspring.

Or

- (b) Explain Eugenics, Euthenics and Euphenics.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give a detailed account on blood grouping in man.
17. Explain the inheritance of color blindness in the marriage between normal man and color blind woman.
18. Discuss gene expression control in prokaryotes and eukaryotes.
19. Explain differential and sequential expression of genes with reference to drosophila.
20. What is Mutation? Explain its various types with examples. Explain chromosomal abnormalities in detail.



**D-5621**

**Sub. Code**

**35023**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Second Semester

Zoology

MICROBIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Lichens
2. Confocal Microscopes
3. Sterilization
4. Nucleiod
5. Macroalgae
6. Data analysis
7. Cell wall
8. Aerobic culture media
9. Capsule
10. Phylogenetic tree

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Describe the general characteristics of fungi.

Or

- (b) Describe the ultra structure of RNA virus.

12. (a) Describe the industrial uses of yeast and moulds.

Or

- (b) Classify bacteria according to bergey's manual.

13. (a) Describe the principles and applications of compound microscope.

Or

- (b) Describe the principles and applications of fluorescent microscope.

14. (a) What is a differential staining method? Describe the different types of differential staining methods.

Or

- (b) What is "structural staining"? Briefly describe the structural staining methods.

15. (a) Describe the molecular techniques for the identification of microbes.

Or

- (b) What is metagenomics? Explain briefly.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. List down general properties of virus?
  17. What are the different methods of bacterial culture?  
Describe it.
  18. Describe the Prokaryotic cell structure.
  19. Describe the biological and economic importance of Micro and Macroalgae.
  20. Explain the molecular tools in assessing microbial diversity.
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**D-5622**

**Sub. Code**

**35031**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Third Semester

Zoology

ANIMAL PHYSIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Pepsin
2. Chyme
3. Salivary glands
4. Haemopoiesis
5. Blood pressure
6. Kymograph
7. Aestivation
8. Thermoregulation
9. Pancreas
10. Biological clock

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Describe the structure of human digestive system.

Or

- (b) Explain the absorption and assimilation of food in human digestive system.

12. (a) Describe the Mechanism of respiration in man.

Or

- (b) How the transport of gases takes place? Explain briefly.

13. (a) What is normal blood pressure? Explain its abnormal level.

Or

- (b) What are the different types of heart? Explain briefly.

14. (a) Describe the structure of human eye.

Or

- (b) Explain the types of muscles.

15. (a) What are the importance of pituitary gland and explain them.

Or

- (b) Explain Osmo-ionic regulation in freshwater and marine fishes.

PART C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

All questions carry equal marks.

16. What are the functions of Heparin? Explain it in detail.
  17. Describe the structure of human heart.
  18. Describe the ultra structure of skeletal muscle.
  19. Describe the organ of hearing in man.
  20. Describe adrenal gland in detail.
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**D-5623**

**Sub. Code**

**35032**

DISTANCE EDUCATION

M.SC. DEGREE EXAMINATION, MAY 2022.

Third Semester

Zoology

IMMUNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. B-lymphocyte
2. Cytokines
3. Interferons
4. Memory cell
5. Vaccines
6. Mast cells
7. Transplants
8. Immunotherapy
9. ImmunoBlot Technique
10. Hybridoma technology

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Give a brief account on types of immune cells.

Or

- (b) Write short account on complements.

12. (a) Give a brief account on antigens.

Or

- (b) Explain “Major histocompatibility complex (MHC)” briefly.

13. (a) Discuss about innate immunity.

Or

- (b) Explain adaptive immunity.

14. (a) Explain B lymphocytes in details.

Or

- (b) Explain T lymphocytes in details.

15. (a) Explain briefly about Immunoprophylaxis.

Or

- (b) What is immunization? List out the immunization schedule.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain primary lymphoid organs in detail.
17. What are antibodies? Explain the different types of antibodies.



18. Write a details account on "Delayed type hypersensitivity".
  19. What are "Auto immune disorders" – Explain in details.
  20. Give a details account on "AIDS"
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**D-5624**

**Sub. Code**

**35033**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Third Semester

Zoology

ENVIRONMENTAL BIOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

Define/Explain ALL of the following:

1. Food chain
2. Biological effect of light
3. Minor elements
4. Red tide
5. Hydrosphere
6. Gaseous cycle
7. Mortality
8. Edge effect
9. Air pollution
10. Endangered species

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly explain Food web?

Or

- (b) Explain about Shelford's law of tolerance.

12. (a) Give a brief account on Division of Marine environment.

Or

- (b) Describe the Seaweed ecosystem.

13. (a) Give general account on Oxygen cycle.

Or

- (b) Describe Biosphere and explain any one of it.

14. (a) Briefly explain the characteristics of population.

Or

- (b) Describe the Ecological niche.

15. (a) What is climax community? Explain briefly poly-climax theory.

Or

- (b) Briefly explain about environmental laws.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain structure and function of Ecosystem with suitable diagram.

17. Give an account on physical and chemical properties of sea water.

18. What is gaseous cycle? Explain carbon and nitrogen cycle.
  19. Give a detail account on Global warming.
  20. What is conservation? Explain any two categories.
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**D-5625**

**Sub. Code**

**35041**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

Zoology

FISHERIES AND AQUACULTURE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

Define/Explain ALL of the following:

1. Modern craft
2. Meristic character
3. Invasive species
4. Stocking
5. Shell fishes
6. Spawning
7. Canning
8. HACCP
9. Isinglass
10. Fish silage

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly explain economic importance of marine fishes?

Or

- (b) Explain about food and feeding habits of fish culture.

12. (a) Give a brief account on Invasive species with example.

Or

- (b) Describe the structure and construction of pond preparation with diagram.

13. (a) Give general account on cage and pen culture.

Or

- (b) Briefly explain the economic importance of hatchery.

14. (a) Briefly explain the SPF seed production.

Or

- (b) What are the physical methods to examine freshness of fish.

15. (a) Briefly explain about fishery by-products.

Or

- (b) Briefly explain about quality control.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain the morphometric and meristic character of fishes with diagram.
  17. Give detail account on important fin fishes and shell fishes disease and its control measures.
  18. Define the aquaculture? Explain the type of aquaculture and their current status?
  19. Give a detail account on fish processing methods.
  20. Give a detail account on physical and bio chemical methods to examine freshness of fish.
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**D-5626**

**Sub. Code**

**35042**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

Zoology

ANIMAL BIOTECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What is meant by gene cloning?
2. Write the salient features of good vector.
3. Are bacteriophages harmful to humans?
4. Is gene therapy a permanent cure?
5. What is a vaccine?
6. What is the use of organ culture?
7. Why artificial media is needed for animal cell culture?
8. What is immortalization of cells?
9. Write the principle of PCR.
10. Why is molecular imaging important?



PART B — (5 × 5 = 25 marks)

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

11. (a) Summarize about yeast artificial chromosomes.

Or

- (b) State the role of genetic engineering in animal system.

12. (a) Describe about natural media in animal cell culture.

Or

- (b) Write the methods of cell preservation.

13. (a) Elaborate about restriction fragment length polymorphism.

Or

- (b) Enumerate pheromones in animal breeding.

14. (a) Outline about embryonic stem cells.

Or

- (b) Illustrate about somatic gene therapy.

15. (a) Describe about molecular imaging.

Or

- (b) Mention briefly about random amplified polymorphic DNA.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Discuss about retrovirus mediated gene transfer and protoplast fusion.
  17. Describe about primary and established cell lines.
  18. Distinguish between shuttle vector and yeast vector.
  19. Explain in detail about Sanger's di-de-deoxy DNA sequencing.
  20. Specify about conservation and management of indigenous tiger and elephant.
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**D-5627**

**Sub. Code**

**35043**

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

Zoology

BIOPHYSICS, BIOSTATISTICS AND BIOINFORMATICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. Define molecule?
2. What is thermodynamics?
3. What are the types of natural radiation?
4. How does autoradiography affect the body?
5. Define biostatistics.
6. What are the main five types of samples?
7. What is polygon?
8. What do you mean by dispersion?
9. What are the four characteristics of a normal distribution.
10. When chi-square test is applicable?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the structure and properties of atoms.

Or

- (b) Discuss the bioenergetics.

12. (a) Write in details the effects of biomolecules.

Or

- (b) Write a short note on measurement of radioactivity.

13. (a) Briefly explain about collections of data.

Or

- (b) Write down the qualitative and quantitative variables.

14. (a) Write a note on bar and line diagram.

Or

- (b) Describe the range and variance.

15. (a) Mention briefly about probability with example.

Or

- (b) Give account the statistical 't' test with example.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Write in detail about polymerization of organic molecules?

17. Elaborately explain ground state and excited state of atoms.

18. Explain the types of sampling.
  19. Describe measure of central tendency.
  20. Discuss about the ANOVA.
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