

D-3223

Sub. Code

35011

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

First Semester

Zoology

ANIMAL DIVERSITY

(CBCS – 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Carolus Linnaeus
2. Radial Symmetry
3. Amoebiasis
4. Scolex
5. Nauplius larva
6. Malpighian tubles
7. Tube feet
8. Metamorphosis
9. Dipnoi
10. Prototheria

PART B — (5 × 5 = 25 marks)

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

11. (a) Give a brief account on the different level of organization in animals.

Or

- (b) Note on different types of coelom.

12. (a) List out the general characteristic features of phylum Porifera.

Or

- (b) Draw a labelled diagram of Obelia colony.

13. (a) Write any five important parasitic adaptations of helminthes parasites.

Or

- (b) Brief note on metamerism in Annelids.

14. (a) What are the general characteristic feature of phylum Mollusca?

Or

- (b) Give a brief note on any five flight adaptations in birds.

15. (a) What are the important characterises of prochordates.

Or

- (b) Give a brief account on the evolutionary significance of Archaeopteryx.

PART C — (3 × 10 = 30 marks)

Answer THREE questions.

All questions carry equal marks.

16. Describe the major division and subdivision of animal kingdom.
 17. Write an essay on coral reefs and its importance.
 18. Describe the Structure of water vascular system in Echinoderms.
 19. Write an elaborate account on the structural and functional adaptation of fishes.
 20. Give an elaborate account on migration of birds and its importance.
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D-3224

Sub. Code

35012

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2019.

First Semester

BIO CHEMISTRY

(CBCS 2018-19 Academic year onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What are the main types of carbohydrates?
2. What are the functions of lipids?
3. Why is DNA considered a nucleic acid?
4. What is an example of a phospholipid?
5. What are the 13 vitamins?.
6. What happens if a normal person injects insulin?
7. How carbohydrates are metabolized in the body?
8. Why is cholesterol important to metabolism?
9. What is the main cause of atherosclerosis?
10. Is a fatty liver dangerous?

PART B — (5 × 5 = 25 marks)

Answer ALL questions

11. (a) What are the characteristics of carbohydrates?
What are the 3 types of carbohydrates?

Or

- (b) What are the components of lipids? What elements make up steroids?

12. (a) What is the main function of DNA and RNA? What are the 3 differences between DNA and RNA?

Or

- (b) Write the nomenclature and classification of enzymes.

13. (a) Mention briefly about the biochemical functions and Recommended Dietary Allowances (RDA) of Vitamins.

Or

- (b) What causes the pituitary gland to malfunction?

14. (a) Explain in detail about Uronic acid pathway.

Or

- (b) Mention briefly about fatty acid biosynthesis.

15. (a) Describe about glycogen storage diseases.

Or

- (b) Explain in brief about alkaptonuria and Lesc-Nyhan syndrome.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What molecules make up disaccharides? Write the structural aspects of disaccharides.

17. Write the structure and nomenclature of nucleotides.
 18. Describe about the mechanism of enzyme action.
 19. Explain in detail about Glycolysis.
 20. Describe about the cholesterol biosynthesis pathway.
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D-3225

Sub. Code

35013

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2019.

First Semester

CELL AND MOLECULAR BIOLOGY

(CBCS 2018–19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks

1. Cell
2. Cytoplasmic inclusion
3. Nucleus
4. Peroxisomes
5. Mitosis
6. Enlist any four enzymes used in DNA replication
7. Okazaki fragments
8. Transcription
9. What is function of promoters?
10. Enlist components of Lac - operon.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions

All questions carry equal marks

11. (a) Write short account on cell theory.

Or

- (b) Give brief note on Mitochondria.

12. (a) Give an account on structure and function of DNA.

Or

- (b) Explain the mechanism of prokaryotic replication.

13. (a) What are the types of DNA polymerase?

Or

- (b) Explain Reverse transcription. What are the different activities shown by Reverse Transcriptase enzyme?

14. (a) Brief note on post-translational modifications.

Or

- (b) Compare the protein synthesis in prokaryotes and eukaryotes.

15. (a) Give short note on concept of operon.

Or

- (b) Write short note on DNA binding proteins.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

All questions carry equal marks

16. Explain the cell organelles with structure and function.
 17. Write in detail about enzymes involved in Molecular Biology.
 18. Explain the steps of Transcription.
 19. Give detailed account on protein synthesis.
 20. Describe the process of regulation of gene expression.
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D-3226

Sub. Code

35021

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

Second Semester

Zoology

DEVELOPMENTAL BIOLOGY AND EVOLUTION

(CBCS 2018–19 Academic Year onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks

1. Blastopore
2. Zona radiate
3. Meroblastic discoidal cleavage
4. Amphimixis
5. Allantois
6. Cryoprotectant
7. Super ovulation
8. Panniculus camosus
9. Lamarckism
10. Genetic equilibrium

PART B — (5 × 5 = 25 marks)

Answer ALL questions

All questions carry equal marks

11. (a) Give an account on spermatogenesis

Or

- (b) Explain the egg membrane with neat diagram and example

12. (a) Define blastula, Enumerate their types with neat diagram.

Or

- (b) Describe the gastrulation of frog.

13. (a) Give account of development of brain in chick

Or

- (b) Describe the sperm banking and its limitations

14. (a) Explain the functions of placenta.

Or

- (b) Give account on physiological and Biochemical evidence for evolution with suitable example.

15. (a) Describe phylogenetic tree: Explain the technique which involving to construct tree.

Or

- (b) Explain the merit and demerit of Lamarckism and neo lamarckism.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

All questions carry equal marks

16. Give detailed account on egg classification with suitable examples
 17. Describe the cleavage. Enumerate the types with neat diagram.
 18. Define ART. Explain the various technologies used for ART
 19. What is organizer explain its types and importance with example
 20. Give detailed account on Lamarckism with suitable examples
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DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2019.

Second Semester

GENETICS

(CBCS 2018-19 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 X-inactivation.
2. Describe crossing over.
3. About 70 percent of all white North Americans can taste the chemical phenylthiocarbamide, and the remainder cannot. The ability to taste is determined by the dominant allele *T* and the inability to taste is determined by the recessive allele *t*. If the population is assumed to be in Hardy-Weinberg equilibrium, what are the genotypic and allelic frequencies in this population?
4. Define microRNA.
5. What is eugenics?
6. What is nondisjunction? Give examples.
7. Compare an enhancer vs. a promoter.
8. What are the effects of inbreeding?

9. How is an SNP used as a molecular marker?
10. Define the terms dominant and recessive.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) 1 in 1700 US Caucasian newborns have cystic fibrosis. C is the normal allele, dominant over the recessive c. Individuals must be homozygous for the recessive allele to have the disease.
 - (i) What percent of the above population have cystic fibrosis (cc or q^2)?
 - (ii) Assuming a Hardy-Weinberg Equilibrium, how many newborns would have cystic fibrosis in a population of 10,000 people?

Or

- (b) Describe the catabolite repression of the lac-operon.
12. (a) Discuss with example :
 - (i) Tautomerization
 - (ii) Deamination.

Or

- (b) Explain QTL mapping.
13. (a) Compare and contrast monohybrid and dihybrid cross.

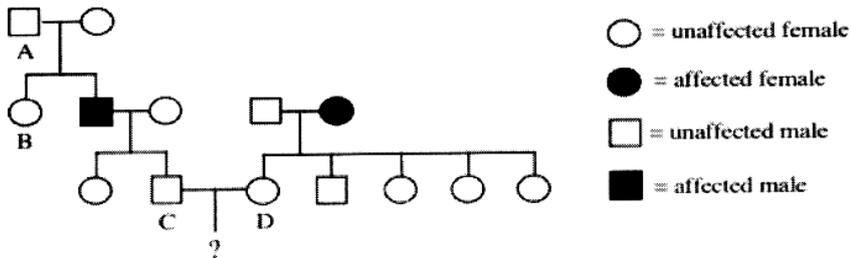
Or

- (b) Explain the genetics of monozygotic and dizygotic twins.

14. (a) Discuss in brief about the structure and different types of chromosomes.

Or

- (b) Below is the pedigree for a family with an autosomal recessive disease, disease X.



- (i) What is the genotype of individual A at the disease X locus? Use “+” to indicate the wild type allele and “-“ to indicate the mutant allele.
- (ii) What is the probability that individual B is a carrier of disease X?
- (iii) Individuals C and D decide to have a child. What is the probability that the child will have disease X?
- (iv) What is the probability that the child of individuals C and D will be a carrier of disease X?
15. (a) Explain complementary interaction of genes with an example.

Or

- (b) Explain the role of gene regulation in embryonic development.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Describe regulation of gene expression in prokaryotes.
17. Describe in general terms the functions of each class of maternal (anterior, posterior and terminal) and zygotic genes (gap, pair-rule, segment polarity, homeotic selector) in the development of *Drosophila*.
18. Explain using a named example why many sex-linked diseases occur more frequently in men than women.
19. Discuss in detail about the various chromosomal abnormalities.
20. Describe the Mendelian patterns of inheritance.

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35023

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

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. Metabolism
2. Conjugation
3. SEM
4. Macromolecules
5. Prions
6. Archaeabacteria
7. Thermopiles
8. Pili
9. Autotrophs
10. STD

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Discuss the kingdoms organisms and phylogenetic tree.

Or

- (b) Write an essay on the commonly used methods for isolation of pure culture of bacterium.

12. (a) Write short note on spore formation in bacteria.

Or

- (b) Write the principles of Electron microscopy and their applications.

13. (a) Explain the biochemical methods used for measurement of microbial growth.

Or

- (b) Briefly explain the morphological features protozoa.

14. (a) Give an account on 18S rRNAs and its importance in identification of microorganisms.

Or

- (b) Write short note on Tuberculosis.

15. (a) Write an account of Phylogenetic tree.

Or

- (b) Describe briefly on HIV.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Explain the importance of Bergey's Manual in bacterial taxonomy.
 17. Explain the importance of selective, differential and maintenance Microbiology.
 18. Write an outline of classification of algae proposed by Fritsch.
 19. Write a detailed essay on the 16S rRNA gene sequencing for bacterial identification.
 20. Describe metagenomics and its applications.
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D-3229

Sub. Code

35031

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2019.

Third Semester

ANIMAL PHYSIOLOGY

(CBCS 2018 – 19 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. Extracellular digestion
2. Ventilatory lungs
3. Hemerythrin
4. Hemopoiesis
5. Acetyl choline
6. Neuro-muscular junction
7. Rhodopsin
8. FSH
9. Active transport
10. Brown fat

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly describe digestion of fats.

Or

- (b) Mention different types of respiratory structures in animals. Explain briefly.

12. (a) What is Henle's loop? Explain its role in urine formation.

Or

- (b) List out the major functions of blood.

13. (a) Explain different types of neurons and their functions.

Or

- (b) Draw the structure of an mammalian eye and explain the specific role of each component in physiology of vision.

14. (a) What are the different types of thyroid hormones? Mention their physiological role.

Or

- (b) Give an account on the hormonal control of thermoregulation.

15. (a) Give a brief account on the adaptation of animals living in brackish water environment.

Or

- (b) Briefly explain the metabolic adaptation during hibernation.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the various types of respiratory pigments and their distributions in animals.
 17. Explain the process of blood coagulation in mammals.
 18. Give a detailed account on theories of muscle contraction.
 19. Give a detailed account on various hormones of pituitary gland.
 20. What is biological clock? Explain various types of rhythms that are found in animals.
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D-3230

Sub. Code

35032

DISTANCE EDUCATION

M.Sc. (Zoology) DEGREE EXAMINATION, DECEMBER 2019.

Third Semester

IMMUNOLOGY

(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. Thymus
2. Lymph node
3. Mast cells
4. Lymphocyte
5. Helper cells
6. Dendritic cells
7. Antigen
8. Innate immunity
9. Specificity
10. Light chain

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) Differences between MALT and GALT.

Or

- (b) Explain antigenic epitopes.

12. (a) Define adjuvant and its action mechanism.

Or

- (b) Distinguish between primary and secondary lymphoid organ.

13. (a) Define autoimmune disease and the treatment involved in treating disease.

Or

- (b) Give an account on IgG antibody with its sub-types.

14. (a) Explain the rheumatoid arthritis.

Or

- (b) Give an account on T cell receptors.

15. (a) Define vaccine and explain passive immunization.

Or

- (b) Give a brief account on mechanism of action of anaphylaxis.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

All questions carry equal marks.

16. Explain the different types of cells involved in immune response.
 17. Discuss in detail about the molecules involved in immune response.
 18. Give an account on monoclonal antibodies.
 19. Give a detailed account on lymphocyte specificity and diversity.
 20. Discuss immunodeficiency disease in detail.
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D-3231

Sub. Code

35033

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2019.

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.

All questions carry equal marks.

Define/Explain ALL of the following :

1. Pyramid of Biomass
2. Thermal stratification
3. Nekton
4. Troposphere
5. Natality
6. Age structure
7. Ecotone
8. Acid rain

9. Endangered species
10. Biodiversity.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

All questions carry equal marks.

11. (a) What is a food chain? Briefly explain two major types of food chain.

Or

- (b) Briefly describe Biological effects of light.

12. (a) Give a brief account on vertical zonation in the sea.

Or

- (b) Enumerate the factors influencing productivity.

13. (a) Describe a grassland ecosystem.

Or

- (b) Briefly describe the characteristics of a Population.

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

Or

- (b) What is greenhouse effect? Briefly explain factors contributing to global warming.

15. (a) Describe briefly the biological effects of soil pollution.

Or

- (b) What is conservation? Explain briefly the two main categories of conservation.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

16. Describe energy flow in a typical ecosystem with a suitable diagram.
 17. Give an account of physical and chemical properties of sea water.
 18. What is sedimentary cycle? Explain phosphorous or sulphur cycle with a suitable diagram
 19. Define a community, Describe various features that characterize a community,
 20. Give a detailed account on causes and effects of air Pollution in India.
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