F–1351

Sub. Code
7MZO2C1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Zoology

ANIMAL PHYSIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is digestion? Define.
2. Name any two respiratory pigments.
3. Define Haematopoiesis.
4. What acid-base balance?
5. Differentiate skeletal and smooth muscle.
6. What is synapse?
7. Define aestivation.
8. What is buoyancy?
9. List out endocrine glands.
10. What is Circadian rhythm?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are gastrointestinal hormones? Explain their functions.

Or

(b) Explain the mechanism of transport of oxygen and carbondioxide, in internal respiration.

12. (a) Write the composition of blood.

Or

(b) How do the kidney regulate the water balance? Explain.

13. (a) Explain the types of muscles. Give the general structure of muscle.

Or

(b) Give an account on the mechanism of synaptic impulse transmission.

14. (a) How do the animals tolerate the high and cold temperatures? Explain.

Or

(b) Write a note on physiology of hibernation.

15. (a) Explain the mechanism of action of hormones.

Or

(b) Explain the biological clock with examples.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the mechanism of digestion and absorption of food in small intestine.

17. Give a detailed account on formation of urine and electrolyte balances.

18. Explain the mechanism of muscle contraction.

19. Explain the structure and functions of rod and cone cells of human eye.

20. Discuss on hyper and hypo secretions of hormones and their diseases.

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F–1352

Sub. Code
7MZO2C2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Zoology

GENETICS

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Name any one mendelian traits in humans.
2. What is pedigree analysis?
3. Define crossing over.
4. List any two types of mutation.
5. Classify the types of linkage.
6. What is QTL mapping?
7. What is phage?
8. State transcription factors.
9. Define gene pool.
10. What is Eugenics?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Outline the mendelian principles of inheritance.

Or

(b) Explain the types of sex linked inheritance.

12. (a) Give the structure of a chromosome with neat sketch.

Or

(b) State the types of chromosomal abnormalities.

13. (a) Define Genetic-linkage maps and physical maps.

Or

(b) What is the advantages of tetrad analysis? Explain.

14. (a) Explain the functions of gene.

Or

(b) Give an account on sequential expression of gene with an example.

15. (a) What is twin study? Explain with example.

Or

(b) Write the applications of hardy Weinberg Principles.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the characteristics of multiple allele with an example

17. Explain the mutation and its types in detail.

18. Discuss on the applications of molecular markers in gene mapping.

19. Summarize the mechanism of gene expression in eukaryotes.

20. How population genetics helps to study the distribution and changes of allele frequency? Explain.

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F–1353

Sub. Code
7MZO2C3

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Zoology

IMMUNOLOGY AND MICROBIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

Write a short answer on the following :

1. Tonsils
2. Macrophages
3. Prophylaxis
4. Auto antibodies
5. MHC molecules
6. ELISA
7. Name any two types of culture media
8. List any four molecular tools
9. Pathogen
10. Botulism

Part B (5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Write about the cells of the immune system.

Or

(b) What is innate and acquired immunity? Explain in detail.

12. (a) How do immune system responses to infections? Explain.

Or

(b) Give the immunization schedule of new born children.

13. (a) What are the different types of grafts? Explain the role of MHC molecules.

Or

(b) Write the principle and applications of RIA technology.

14. (a) Differentiate gram positive and gram negative bacteria with example.

Or

(b) Write about the types of culture media and its uses.

15. (a) Write a note on mycotic infections.

Or

(b) Give an account on Pasteurization and food preservation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the antibody dependent cell mediated cytotoxicity.

17. Give an account on types of Hypersensitivity and gene regulations.

18. Describe any one immune technique for the detection of antibodies.

19. Discuss the applications of molecular tools in identification of microbes with an example.

20. How do microbes helps in milk and food industries? Explain.

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F–1355

Sub. Code
7MZO3C1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Zoology

DEVELOPMENTAL BIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

Write a short answer to the following :

1. What is Acrosome?
2. List the types of eggs.
3. Define Invagination.
4. What is fate map?
5. What is blastulation?
6. Define cell differentiation.
7. What is regeneration?
8. Name the hormones control insect metamorphosis.
9. Define ART.
10. What is induced breeding?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Differentiate spermatogenesis and Oogenesis.

Or

(b) Give an account on egg reorganization and activation.

12. (a) Explain the morphogenetic movements in chick embryo.

Or

(b) Discuss on primitive steak formation and their significance.

13. (a) Explain the mechanism of organ formation.

Or

(b) Write about the development of eye lens in chick.

14. (a) Discuss on the ability of regeneration in vertebrates with an example.

Or

(b) Write about the mechanism of metamorphosis in Amphibian.

15. (a) What is artificial insemination? Write the advantages.

Or

(b) What is cryopreservation? Explain their applications.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the structure and physiology of sperm.

17. Explain the fate map of frog.

18. Give an account on cell aggregation and differentiation in Chick.

19. Discuss the mechanism of hormonal control of metamorphosis.

20. Describe the extra embryonic membrane development in Chick.

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F–1356

Sub. Code
7MZO3C2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Zoology

ECOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Parasitism
2. Mortality
3. Food chain
4. Decomposers
5. Denitrification
6. Non essential elements
7. Seagrass
8. Renewable resources
9. Climate change
10. Biosensors

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write down the biological effects of light.

Or

(b) Comment on age distribution.

12. (a) Write short notes on trophic levels of an ecosystem.

Or

(b) Comment on energy flow of an ecosystem.

13. (a) Write down the process of sulphur cycle.

Or

(b) Give an account on the importance of nitrogen cycle.

14. (a) Explain the ecology of freshwater habitat.

Or

(b) Write short notes on seaweeds.

15. (a) Write down the applications of biotechnology in environmental studies.

Or

(b) Comment on Germplasm conservation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on animal association.

17. Explain the structure of an ecosystem.

18. Explain carbon cycle in detail.

19. Briefly explain the biotic features of marine habitat.

20. Write an essay on water pollution.

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F–1357

Sub. Code
7MZO3C3

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Third Semester

Zoology

EVOLUTION

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A ($10 \times 2 = 20$)

Answer **all** questions

Write short notes on :

1. Microspheres
2. Natural selection
3. Homologous organ
4. Connecting link
5. Genetic variation
6. Seasonal isolation
7. Species
8. Protective colouration
9. Mesozoic era
10. Fossil records

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the hypothesis of "Inheritance of acquired characters".

Or

(b) Describe the mutation theory of DeVries.

12. (a) Describe the morphological evidences for organic evolution.

Or

(b) Explain organic evolution with physiological and biochemical evidences.

13. (a) Mention some examples which support the phenomenon of natural selection.

Or

(b) Explain the role of isolation in the process of organic evolution.

14. (a) Define mimicry and add note on protective mimicry.

Or

(b) Write an account on co-evolution.

15. (a) Define fossils. Write about their importance in organic evolution.

Or

(b) Give an account on Geological time scale.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe Lamarckism with various evidences in support and criticism.

17. What is organic evolution? Describe various evidences from comparative anatomy.

18. Describe the role of genetic variation in a population.

19. Define species. Describe in detail about the process of speciation.

20. Write an essay on "Cultural evolution of Man".

F–1358

Sub. Code
7MZO3E2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Zoology

Elective – ANIMAL CELL CULTURE TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define primary cell line.
2. List any two simple growth medium.
3. Give any two composition of medium.
4. Name any two natural media for culture.
5. What is cytotoxicity?
6. Define in vitro culture.
7. What is stem cell?
8. Define embryonic stem cell.
9. What is apoptosis?
10. Outline mass cell cultivation.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the structure of animal cell with a neat sketch.

Or

(b) Distinguish primary and established cell line culture.

12. (a) Give an account on metabolic functions of constituents of culture medium.

Or

(b) Summarize the role of carbon dioxide in cell culture.

13. (a) Outline the characteristic of cultured cell.

Or

(b) Explain the method of maintenance and separation of cell.

14. (a) Define the method of cell cloning and micromanipulation.

Or

(b) Give a detailed account on cell culture based vaccine production.

15. (a) Write a note on organ culture and histotypic cell culture.

Or

(b) Explain the applications of cultured animal cells.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe on equipment and materials required for animal cell culture.

17. Explain the role of serum and other supplements in cell culture medium.

18. Summarize on any one basic techniques of mammalian cell culture and its advantages.

19. Outline the applications of embryonic stem cell culture.

20. Discuss in detail on hybridoma technology and their applications.

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F–1359

Sub. Code
7MZO4C1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Zoology

ANIMAL BIOTECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define recombinant DNA.
2. What is biosensor?
3. Define restriction enzymes.
4. Define gene cloning.
5. What is cDNA library?
6. Define Automatic gene sequencing.
7. Define primary cell culture.
8. What is organ cell culture?
9. Define super ovulation.
10. Define embryo transfer.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write about the preparation of desired gene.

Or

(b) Give an account on importance of biotechnology.

12. (a) Write about the isolation of DNA.

Or

(b) Give an account on Lambda phage vector.

13. (a) Comment on the application of molecular markers in PCR.

Or

(b) Briefly describe the steps in nucleic acid hybridization.

14. (a) Write about different types of animal culture media.

Or

(b) Give an account on monolayer and suspension.

15. (a) Comment on transgenic mice as a model for genetic engineering.

Or

(b) Write about the production of transgenic sheep for growth hormone gene.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on application of genetic engineering.

17. Classify plasmids with suitable examples.

18. Describe DNA finger printing and its application.

19. Give an account on valuable cell culture products.

20. Discuss knock in and knock out technology of targeted gene transfer.

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F–1360

Sub. Code
7MZO4E1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Zoology

Elective — FISHERY BIOLOGY AND AQUACULTURE

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Morphometric characters
2. What is Spawing?
3. Define – Endangered species.
4. Describe – HACCP.
5. *Catla Catla*
6. What is Pen Culture?
7. What is brood stock?
8. Define – Live feed.
9. Pellets
10. Define integrated fish farming

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Describe the general classification of fishes.

Or

(b) Write the Morphometric and meristic characters of fishes.

12. (a) Explain the *In situ* and *Ex situ* conservation of endangered fishes.

Or

(b) Describe the management of fishing operations.

13. (a) Write shortly about the cage culture method.

Or

(b) Explain the cultivable fish species.

14. (a) Briefly explain the various types of hatchery.

Or

(b) Write an account on larval production methods.

15. (a) Write notes on open and closed cultured system.

Or

(b) Write an account on intensive culture system.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on fishery by products.

17. Write an account on post harvesting technology.

18. Write an essay on status of aquaculture in India.

19. Write an account on HACCP systems in hatchery.

20. Give an account on integrated fish farming.

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