

**F-3013****Sub. Code****7MZO2C3**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS  
Second Semester**

**Zoology**

**IMMUNOLOGY AND MICROBIOLOGY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Antibody
2. Epitope
3. Vaccines
4. Rheumatoid Arthritis
5. BRCA gene
6. ELISA
7. Fungi
8. Growth curve
9. Papovaviridae
10. Pasteurization

**Part B****(5 × 5 = 25)**

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

11. (a) Write an account on natural killer cells.

Or

- (b) Give an account on structure and functions of primary lymphoid organs.

12. (a) Comment on vaccines and immunization shedule.

Or

- (b) Write an account on Humoral immune response.

13. (a) Write short note on ELISA

Or

- (b) Explain Hybridoma technology

14. (a) Explain the different shape and size of bacteria.

Or

- (b) Explain growth curve with a suitable diagram.

15. (a) Comment on cutaneous infections.

Or

- (b) Write short note on food preservation.

**Part C****(3 × 10 = 30)**

Answer any **three** questions.

16. Briefly explain antigen antibody interaction.
17. Write an essay on immuno deficiency diseases.

18. Explain Major Histocompatibility complex
  19. Explain the ultra structure of a Bacteria.
  20. Write down the pathogenecity and diseases of Adenoviridae and poxviridae.
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**F-3014****Sub. Code****7MZO2E1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS  
Second Semester**

**Zoology**

**Elective – SERICULTURE**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. CSB.
2. Silk gland.
3. Pruning.
4. Mulberry leaf mosaic disease.
5. Moulting.
6. Bed cleaning.
7. Nosema bombycis
8. Gattine.
9. Defective cocoon.
10. Steam stifling.

**Part B****(5 × 5 = 25)**

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

11. (a) Write the sex differences in larva and adult silk moth.

Or

- (b) Write a brief account on non - mulberry silkworm.

12. (a) Explain bacterial root and leaf disease of mulberry.

Or

- (b) Explain the methods of irrigation.

13. (a) Write about the frequency and quality of feeding.

Or

- (b) What is the optimum condition of rearing of silkworm? Explain.

14. (a) Explain the causative organism, mode of transmission and control of Muscardine.

Or

- (b) Write about any three pest which affects the silkworm.

15. (a) Give an account on the mode? transport of cocoon.

Or

- (b) Write about physical characters of cocoon considered for commercial purpose.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on history of sericulture in India? Discuss its future scope.
  17. Describe different types of planting system for mulberry cultivation.
  18. Explain the advantages of rearing appliances.
  19. Give an account on bacterial disease of silkworm.
  20. Discuss the application reeling appliances.
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**F-4675**

**Sub. Code**

**7MZO4C1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Fourth Semester**

**Zoology**

**ANIMAL BIOTECHNOLOGY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

Write a short note on :

1. NBTB
2. Biotechnology
3. Selectable markers
4. Phage vectors
5. Molecular markets
6. RT-PCR
7. Mono layer
8. He La cells
9. Super ovulation
10. Microinjection method

**Part B**

(5 × 5 = 25)

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

11. (a) Briefly explain principles of r-DNA technology.

Or

- (b) Write the scope of biotechnology.

12. (a) Explain the plasmid isolation and purification method.

Or

- (b) Write about the gene cloning vectors for yeast.

13. (a) Write notes on screening of recombinant clones.

Or

- (b) Briefly explain the nucleic acid hybridization technique.

14. (a) Write about cell lines and its applications.

Or

- (b) Write about the cell culture products and their applications.

15. (a) Write a note on embryo transfer.

Or

- (b) Discuss the ethical implications on transgenic animals.



**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write an account on application of genetic engineering.
  17. Write an account on isolation and purification of DNA.
  18. Write an essay on molecular markers and their applications in PCR.
  19. Write an account on Stem cell types and its culture methods.
  20. Give an account on gene knock out technology.
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**F-4676**

**Sub. Code**

**7MZO4E1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**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.

Write a short notes on:

1. Trap nets
2. Cod liver oil
3. *Ex situ* conservation
4. Smoking
5. Pen culture
6. *Catla catla*
7. Rotifer
8. pH
9. Race culture
10. Gill rot

**Part B**

(5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note on economic importance of marine fishes.

Or

- (b) Give a brief note on morphometric characters of fishes.

12. (a) How will you differentiate *In situ* conservation from *Ex situ* conservation?

Or

- (b) What are the biochemical methods used to examine the freshness of the fish?

13. (a) List out the important cultivable species of freshwater fishes.

Or

- (b) Write a note on cage culture system.

14. (a) Give a brief account on larval production.

Or

- (b) Give a brief account on bio – security.

15. (a) Write a note on integrated fish farming.

Or

- (b) Give a brief account on open culture system.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the fish reproduction and spawning.
  17. Give an elaborate account on fish processing methods.
  18. Explain in detail about the design and construction of fish culture pond.
  19. Write an essay on live feed production.
  20. Give an account on water quality management in freshwater fish culture.
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**F-5451**

**Sub. Code**

**7MZO1C1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**First Semester**

**Zoology**

**ANIMAL DIVERSITY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

Write a short note on:

1. Binomial nomenclature
2. Species
3. Burrowing Polychaetes
4. Radiolaria
5. Pedicellaria
6. Harmful Insects
7. Agnatha
8. Catadromous migration.
9. Prototheria
10. Mesozoic era

**Part B**

(5 × 5 = 25)

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

11. (a) Comment on Natural classification.

Or

- (b) Classify major and sub divisions of animal kingdom.

12. (a) Describe the general characters of phylum Aschelminthes.

Or

- (b) Write any the parasitic adaptations of helminth parasites.

13. (a) Give an account on adaptive radiations in Arthropoda.

Or

- (b) List out the general characters of Mollusca.

14. (a) Describe fins and their locomotory functions.

Or

- (b) Comment on the organization of Prochordates.

15. (a) Explain the Phylogeny of birds.

Or

- (b) Discuss the classification of Amphibia.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write a detailed account on general characters and classifications of Porifera.
  17. Describe the polymorphism in Coelenterates.
  18. Cephalopods as an advanced Mollusc - Justify.
  19. Write an essay on economic importance of fishes.
  20. Explain the flight adaptation of birds.
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**F-5453**

**Sub. Code**

**7MZO1C3**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**First Semester**

**Zoology**

**BIOCHEMISTRY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define oligosaccharides
2. What is oxidation?
3. What is peptide bond?
4. Define deamination.
5. What is cholesterol?
6. What are the types of RNA?
7. Name any two types of enzymes.
8. List out water soluble vitamins.
9. What is secondary messenger?
10. Write the types of hormones.



**Part B**

(5 × 5 = 25)

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

11. (a) Write the chemical structure of glucose and its biological importance.

Or

- (b) How glucose is converted into Acetyl Co-A? explain

12. (a) Explain the primary structure of proteins.

Or

- (b) Explain the mechanism of transamination process.

13. (a) Write the chemical properties of fatty acids.

Or

- (b) Draw the structure of tRNA and write the functions of tRNA.

14. (a) How enzymes are classified? Write a brief account on it.

Or

- (b) Give the biological functions of Carotinoids.

15. (a) What are amino acids derived hormones? Write their functions.

Or

- (b) Write the synthesis and functions of testosterone hormone.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Give a detailed account on biological importance of Carbohydrates.
  17. Describe Urea cycle.
  18. Discuss the functions of nucleic acids and Draw the structure of any one nucleic acid.
  19. What are enzyme inhibitors? Explain their role with example .
  20. Explain the mechanism of enzyme action.
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**F-5455**

**Sub. Code**

**7MZO2C1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**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 CCK?
2. Define Bohr effect.
3. What is erythropoiesis?
4. Where is SA node?
5. List the types of muscle
6. What is synaptic cleft?
7. Define the term homeotherm
8. What is hibernation?
9. Name the types of hormones.
10. What is biological clock?

**Part B**

(5 × 5 = 25)

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

11. (a) Explain the mechanism of digestion of food in cattle.

Or

- (b) Give an account on aquatic animal respiration

12. (a) What are formed elements? Explain the composition.

Or

- (b) Write the structure and functions of human heart.

13. (a) Write the general structure of a muscle.

Or

- (b) Draw the structure of a neuron and explain its function.

14. (a) What is tactile? Write their functions.

Or

- (b) Write a note on osmo ionic regulation in fish

15. (a) Give an account on the functions of thyroid gland.

Or

- (b) Brief a note on Circadian rhythm.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the mechanism of Gaseous exchanges in man.

17. Explain the principle and advantages of ECG.

18. Enumerate the mechanism of muscle contraction.
  19. Explain the structure and functions of human eye.
  20. Give a detailed account on Hypothalamus and their functions.
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**F-5456**

**Sub. Code**

**7MZO2C2**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Second Semester**

**Zoology**

**GENETICS**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Epistatsis
2. Mosaics
3. Point mutation
4. Euchromatins
5. Restriction Fragment Length Polymorphisms
6. VNTRs
7. Inducers
8. Mono-cistronic gene
9. Migration
10. Eugenics

**Part B**

(5 × 5 = 25)

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

11. (a) Give an account on sex determination in *Drosophila*.

Or

- (b) Brief about pedigree analysis.

12. (a) Explain the structure and functions of sex chromosomes.

Or

- (b) Give a short account on heterochromatinization.

13. (a) Brief the Sanger method of Gene sequencing.

Or

- (b) Brief the construction and applications of linkage maps.

14. (a) Explain the mechanism of gene expression in prokaryotes.

Or

- (b) Brief the control mechanism of a eukaryotic gene.

15. (a) Explain the impact of a gene pool in a population.

Or

- (b) Write a short account on the role of gene frequency in a population.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Give a detailed essay on sex linked inheritance with examples.
  17. Describe the structural and numerical abnormalities of chromosome with examples.
  18. Elaborate on gene mapping methods with molecular markers.
  19. Give a detailed account on genetic regulation, development and differentiation
  20. Give an account on eugenics and Euthenics with their impact on society
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**F-5457**

**Sub. Code**

**7MZO2E2**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Second Semester**

**Zoology**

**Elective – WILDLIFE CONSERVATION AND  
MANAGEMENT**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Genetic drift
2. Diversity indices
3. Mining
4. Gene banks
5. National parks
6. CITES
7. GPS
8. Animal census
9. Pug Marks
10. Sigmoid curve

**Part B**

(5 × 5 = 25)

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

11. (a) Enumerate the values of biodiversity.

Or

- (b) Write a note on biodiversity Global level.

12. (a) Enlist the endangered species of India.

Or

- (b) Write short account on threats to biodiversity.

13. (a) Discuss the status of forest in India.

Or

- (b) What is national parks? Give brief account on any three national parks.

14. (a) Enlist the funding agencies for wildlife research.

Or

- (b) Give an account on activities of central Zoo authority of India.

15. (a) Write an account on habit analysis and design.

Or

- (b) Give about the impact of human interferences in animal population.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Justify “India as megadiversity zone”.
  17. Elaborate discuss on *in-situ* and *ex-situ* biodiversity conservation.
  18. Give a detailed account on biological and ecological management of wildlife.
  19. Discuss on Zoological classification of wild animals. Add on note on survey and animals maps.
  20. Describe the breeding characteristics of wild animals.
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**F-5459**

**Sub. Code**

**7MZO3C1**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**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 note on:

1. Vitellogenesis
2. Morula
3. Involution
4. Totipotency
5. Primitive streak
6. Chorda mesoderm
7. Autotomy
8. JH
9. Azoospermia
10. Yolk sac

**Part B**

(5 × 5 = 25)

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

11. (a) Enlist the types of blastula.

Or

- (b) Give the process of Oogenesis.

12. (a) Describe gastrulation in fish.

Or

- (b) Write the cellular basis of morphogenetic movements.

13. (a) Give an account on development of heart in chick.

Or

- (b) Explain the levels of differentiation in Amphibians.

14. (a) Give an account on types of regeneration.

Or

- (b) Describe metamorphosis of insects.

15. (a) Write an account on artificial insemination.

Or

- (b) Describe in detail about placentation in mammals.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the events that occur during fertilization.

17. Explain the process of gastrulation in mammals.

18. Write a detailed account on development of ear in Chick.
  19. Discuss Speman and Mangold experiment with reference to organizer concept.
  20. Give a detailed account on foetal membranes in chick.
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**F-5460**

**Sub. Code**

**7MZO3C2**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Third Semester**

**Zoology**

**ECOLOGY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

Write a short note on:

1. Ecotone
2. Natality
3. Food chain
4. Lentic zone
5. Nitrification
6. Sulfur cycle
7. Mangroves
8. Oligotrophic lake
9. Global warming
10. Pesticides

**Part B**

(5 × 5 = 25)

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

11. (a) Give an account on ecological succession.

Or

- (b) Write note on the characters of a community.

12. (a) Explain the structure of an ecosystem.

Or

- (b) Comment on the trophic levels of an ecosystem.

13. (a) Explain phosphorous cycle.

Or

- (b) Explain denitrification.

14. (a) Explain the biotic features of terrestrial habitat.

Or

- (b) Write short notes on seaweeds ad seagrass.

15. (a) Explain in detail about noise pollution and its impacts.

Or

- (b) Comment on the role of microbes in bioremediation.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on abiotic factors and its ecological role.

17. Explain the energy flows in an ecosystem.



18. Give an account on carbon cycle.
  19. Write about natural resources and their conservation.
  20. Give an account on global warming and its effect on organisms.
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**F-5461**

**Sub. Code**

**7MZO3C3**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Third Semester**

**Zoology**

**EVOLUTION**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

Write a short note on:

1. Abiogenesis.
2. Germplasm Theory.
3. Atavism.
4. Biochemical recapitulation.
5. Genetic variation.
6. Physiological isolation.
7. Sibling Species.
8. Mass extinction.
9. Homo neanderthalensis.
10. Cultural evolution

**Part B**

(5 × 5 = 25)

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

11. (a) What is Neo Darwinism? Explain any two evidences for Neo Darwinism.

Or

- (b) Explain use and disuse theory of Lamarckism with suitable example.

12. (a) Give a note on homology with suitable example.

Or

- (b) Comment on fossil connective link with examples.

13. (a) Write about the sources of variation.

Or

- (b) Differentiate geographic and reproductive isolation.

14. (a) Write about the causes of adaptive radiation.

Or

- (b) Comment on coevolution.

15. (a) Give an account on social evolution of man.

Or

- (b) Explain carbon dating methods and its significance.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Describe modern synthetic theory of evolution.
17. Discuss embryological evidences with suitable example.

18. Give an account on stabilizing and disruptive natural selection.
  19. Explain types of Colouration and its role in evolution.
  20. Write an essay geological time scale.
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**F-5462**

**Sub. Code**

**7MZO3E2**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**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. CO<sub>2</sub> incubator
2. Cell line
3. Supplements
4. Serum free media
5. Cell proliferation
6. Enzymatic disaggregation
7. Stem cell
8. Micromanipulation
9. Organotypic culture
10. Cryopreservation

**Part B**

(5 × 5 = 25)

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

11. (a) Give a brief note on the structure of animal cell.

Or

- (b) Write the balanced salt solutions and its importance in animal cell culture.

12. (a) Highlight the physical and chemical properties of animal cell culture medium.

Or

- (b) Write importance of serum and supplements in cell culture.

13. (a) Write a note on cytotoxicity and viability of cell lines.

Or

- (b) Give a brief account on maintenance of cell culture.

14. (a) Write a note on applications of animal cell culture.

Or

- (b) Give a brief account on cell cloning and micromanipulation.

15. (a) Write a note on hybridoma technology.

Or

- (b) Give a brief account on tissue engineering.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the equipments and materials used for animal cell culture technology.
  17. Give an elaborate account on serum and protein free media and their applications.
  18. Explain in detail about the biology and characterization of the cultured cells.
  19. Give an account on stem cell culture and its applications.
  20. Explain in detail about the genetically engineered cells.
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**F-5464**

**Sub. Code**

**7MZO3E4**

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &  
Supplementary/Improvement/Arrear Examinations**

**Third Semester**

**Zoology**

**Elective: TRANSGENIC TECHNOLOGY**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

Write short notes on:

1. Intra uterine insemination.
2. Hypospermia.
3. Recombinant DNA.
4. IVF.
5. Disease resistance genes.
6. Aseel.
7. R plasmids.
8. Adaptors.
9. Carnoy's fixatives.
10. RPMI 1640.



**Part B**

(5 × 5 = 25)

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

11. (a) What is sterility? Explain its causes and remedies.

Or

- (b) Briefly explain about the preservation process of semen.

12. (a) Give an account on embryo transfer.

Or

- (b) List out the various functions of DNA and RNA.

13. (a) Give an account on the breeding strategies for disease resistance in farm animals.

Or

- (b) Mention some important breeds of rabbits.

14. (a) Write an account on Electroporation and Microinjection.

Or

- (b) Give an account on superovulation and egg collection in pigs.

15. (a) Explain the research applications of cell technology.

Or

- (b) Enlist the merits and demerits of cell technology.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. What is fertility? Describe in detail the male and female fertility.
  17. Explain the chemical nature of DNA and compare it with RNA.
  18. Explain the strategies for improvement of poultry for egg and meat.
  19. Write an account on superovulation, egg collection and fertilization in sheep.
  20. Discuss the application of cell technology in industry.
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