PG–AN–1050 MZON–11

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

First Year

STRUCTURE AND FUNCTION OF INVERTEBRATES

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Discuss about symmetry in animal organization and its types.

2. Demonstrate the locomotion movement in protozoa.

3. Explain and list the respiratory pigments in Invertebrates.

4. Illustrate the primitive nervous system of Echinodermata.

5. Write the evolutionary significance of Invertebrate larval forms.

6. List out the respiratory organs of Invertebrates.

7. Describe the filter feeding mechanism in Molluscs.

8. Explain the hydrostatic movement in Annelida.

PART B — ($3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Explain the evolution of coelom and its types with their significance.

10. Describe the patterns of feeding and digestion in lower metazoan.

11. What is excretion? What are the organs of excretion and explain in detail?

12. Elaborate the advanced nervous system of Annelida, Arthropoda and Mollusca.

13. Demonstrate the larval forms of free living invertebrates.

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PG-AN-1051 **MZON-12**

P.G. DEGREE EXAMINATION – JULY 2024.

Zoology

First Year

COMPARATIVE ANATOMY OF CHORDATA AND VERTEBRATA

Time : 3 hours Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Discuss about the general characters of phylum chordata.

2. Explain the classification of vertebrates in detail.

3. Elaborate the chambers of the vertebrate heart.

4. Describe the evolution of neurocranium and dermatocranium.

5. Explain about the Comparative anatomy of vertebrate limbs.

6. Demonstrate the types of blood cells, blood groups with their functions.

7. Write a brief note on the evolutionary significance of Aortic arches.

8. Differentiate the external and internal respiration.

PART B — (3 × 15 = 45 marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Write a brief note on classification of phylum chordata.

10. Elaborate the development, structure and functions of skin and its derivatives.

11. Explain about the basic structure of the vertebrate heart.

12. Write a detailed account on appendicular skeleton and locomotion.

13. Give a detailed description on comparative histology of nervous system.

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PG-AN-1052 **MZON-13**

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

First Year

GENETICS

Time : 3 hours Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Discuss about semi conservative replication of DNA.

2. List out the types of linkage with their examples and its significance.

3. Define polyploidy? Discuss about types of polyploidy with their importance.

4. Discuss about mapping of bacterial chromosome.

5. Write a short note on one gene one polypeptide theory.

6. Demonstrate Rh blood group and Mechanism of Erythroblastosis Fetalis.

7. Write a short note on Biological Repair pathways in DNA.

8. Explain about Genetic counseling.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Write a detailed account on DNA damage and repair mechanisms.

10. Explain principle of segregation monohybrid and dihybrid cross.

11. Elaborate the inherited disorders sickle cell anemia and Thalassaemia.

12. Define conjugation? Explain the mechanism of conjugation with the steps of bacterial conjugation.

13. Explain the defects of amino acid, lipid and sugar metabolism.

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PG-AN-1053 **MZON-14**

P.G. DEGREE EXAMINATION — JULY 2024.

First Year

Zoology

CELL AND MOLECULAR BIOLOGY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Differentiate prokaryotes from eukaryotes.

2. Comment on oxidative phosphorylation.

3. Give the chromatin structure and function.

4. Explain the process of the cell cycle.

5. Brief on the process of DNA transcription.

6. Draw the structure and functions of microfilaments.

7. Give the types of endoplasmic reticulum with the necessary diagram.

8. Provide the chromosomal changes of cancer cells.

PART B — ($3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Draw and explain the plasma membrane structure and function.

10. Explain the process of Kreb's cycle.

11. Describe in detail on Polytene and lampbrush chromosomes.

12. Illustrate the stages of meiosis with suitable diagrams.

13. Write an essay on protein synthesis.

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PG-AN-1054 **MZON-15**

P.G. DEGREE EXAMINATION —
JULY 2024.

Zoology

First Year

ANIMAL PHYSIOLOGY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Comment on haemopoiesis.

2. Give brief note on myogenic heart.

3. Draw and explain about the structure of neuron.

4. Brief note on hearing process.

5. How the process of thermoregulation and body temperature maintained? Explain.

6. Draw the structure of kidney.

7. Write short account on neural regulation.

8. Define cardiac cycle in detail.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Write short account on the following

   (a) Plasma functions

   (b) Haemostasis

   (c) BMR

10. Describe the mechanism, principle and significance of ECG.

11. Explain in detail on the anatomy of brain and spinal cord.

12. Illustrate on the structure of human eye.

13. Describe in detail on endocrine glands and hormone action.

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PG–AN-1055 MZON–16

P.G. DEGREE EXAMINATION —
JULY 2024.

Zoology

First Year

BIOCHEMISTRY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain the properties of steroids.

2. Determine the mechanism of enzyme action.

3. Brief note on properties and functions of thyroid gland.

4. Comment on oxidative phosphorylation.

5. Write an account on aminoacid metabolism.

6. State about biosynthesis of purines and pyrimidines.

7. Prepare a note on vitamin deficiency syndrome.

8. Explain the ammonia cycle.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Describe the classification of aminoacids with examples.

10. Illustrate on the molecular structure and properties of DNA.

11. Give the classification and salient features of hormones.

12. Deduce a detail note on Kreb's cycle.

13. Formulate an essay on fatty acid oxidation.

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PG–AN-1056 MZONE–11

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

First Year

ECONOMIC ZOOLOGY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain the economic importance and control methods for pest *Achaea janata.*

2. Discuss the present status and future scope of Indian aquaculture.

3. Explain the types and division of labour in honey bee colony.

4. Describe the lifecycle of mulberry silkworm and mention the feeding habits.

5. Give an account on causative agent, symptoms and preventive steps for any two viral diseases in poultry.

6. Write the medical importance of mosquitoes and lice.

7. Explain the suitable method for culture of prawn.

8. Write the economical and medical importance of honeybee products.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1,000 words.

All questions carry equal marks.

9. Write the systematic position, economic importance and control methods for the sugar cane pest *Pyrilla perpusilla.*

10. Discuss the setup and advantages of integrated faming practice in aquaculture.

11. Explain the structure of modern hives and list out bee-keeping equipment.

12. Explain the process, steps and equipment's involved in silk reeling.

13. Write the principles for the construction of poultry house and explain the deep litter system.

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PG-AN-1057 **MZON-21**

P.G. DEGREE EXAMINATION –
JULY, 2024.

Zoology

Second Year

DEVELOPMENTAL BIOLOGY

Time : 3 hours Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight questions in 300 words

All questions carry equal marks

1. Describe the morphology of mammalian spermatozoan with diagram.

2. Write the types and significance of morphogenic movements.

3. Define aging and explain the role of genes in aging process.

4. Explain the applications of stem cells in human health.

5. List out the leading causes of impotency and sterility in the male.

6. Explain the different patterns of cleavage with suitable diagram.

7. Give a detailed account on metamorphosis in Insects.

8. Explain the usage, benefits and disadvantages of Intrauterine devices during birth control.

PART B — ($3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words

All questions carry equal marks

9. Discuss the steps and biochemical events involved in fertilization reaction.

10. Explain the blastulation process and fate map of frog.

11. Describe the sequence of events leads to eye development.

12. (a) Explain the use of chemical factors in stem cell differentiation. (10)

    (b) Give an account on use of flow cytometry in stem cell research. (5)

13. Discuss the process and advantages of ICSI and GIFT methods.

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PG–AN-1058 MZON–22

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

Second Year

BIOPHYSICS, BIOSTATISTICS AND COMPUTER APPLICATIONS

Time : 3 hours Maximum marks : 70

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain the thermodynamic laws and its real-world applications.

2. Write the principles of electrophoresis and list out chemicals used in SDS-PAGE.

3. Differentiate discrete and continuous series with examples.

4. Comment on regression and its types.

5. Write the usage and importance of explorer and Mozilla.

6. Write the working principle and applications of atomic absorption spectroscopy.

7. Describe the components and applications of thin layer chromatography.

8. Explain the concept of central tendency and measurement methods.

PART B — ($3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1,000 words.

All questions carry equal marks.

9. (a) Explain the parts and working mechanism of Geiger Muller counter. (10)

   (b) Write the usage of isotopes in medicine. (5)

10. Discuss the working mechanism and applications of ion exchange and affinity chromatography.

11. Give a detailed account on importance and use of frequency polygon and histogram.

12. Calculate the mean and standard deviation from the given problem.

The weight (kg) of first year Zoology students were given in the table. Calculate the mean and standard deviation from the data.

54	55	70	51	64
62	65	60	69	71

13. (a) Discuss the types and components of computer. (10)

(b) Define computer memory and types. (5)

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PG–AN–1059 MZON–23

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

Second Year

BIOTECHNOLOGY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Discuss the role of electroporator in biotechnology.

2. Explain the steps involved in the production of genetically modified organisms (GMOs).

3. Enlighten the concept of cloning vectors and their role in gene cloning.

4. Compare and contrast transduction and transformation in gene transfer.

5. Illuminate the basic steps involved in the DNA fingerprinting process.

6. What is Bt cotton and how does biotechnology contribute to its development?

7. Compare and contrast the techniques used in stem cell culture and preservation.

8. Describe batch, fed-batch, and continuous fermentation in microbial scale-up.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Illustrate the advantages and disadvantages of using bacterial artificial chromosomes (BACs) and yeast artificial chromosomes (YACs) as cloning vectors.

10. Explain the process of transduction in bacterial genetics and explain its significance.

11. Describe in detail the different types of fermentation processes with suitable examples.

12. Converse in detail the principles, procedures, and applications of Western blotting, providing a specific example of its use in molecular biology research.

13. Critically examine the impact of genetic engineering on biodiversity and ecological balance.

PG-AN-1060 **MZON-24**

P.G. DEGREE EXAMINATION — JULY 2024.

Zoology

Second Year

IMMUNOLOGY AND MICROBIOLOGY

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain the different types of T-cells and their functions in the immune response.

2. Describe the structure and function of the thymus gland.

3. Discuss the role of haptens in immune responses.

4. Mention the advantages and disadvantages of mRNA vaccines.

5. Compare and contrast the characteristics of bacteria, archaea, fungi, protozoa, and viruses.

6. Elucidate the measures for controlling the spread of HIV/AIDS in high-prevalence regions.

7. Elaborate the role of nutrients such as carbon and nitrogen sources in bacterial growth and metabolism.

8. State the primary mode of transmission of Cholera. How does it spread within communities?

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Provide a detailed overview of the primary lymphoid organs, including their anatomical location, structure, and function.

10. Describe the structural differences between the five classes of antibodies and explain how these differences relate to their functions.

11. Outline the structural domains of cytokine receptors and their significance in signal transduction.

12. Elaborate on the methods used to measure bacterial growth in culture. Discuss the advantages and limitations of each method.

13. What is the causative agent of Tuberculosis (TB)? Discuss the major challenges in controlling the spread of Tuberculosis globally.

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PG-AN-1061 **MZON-25**

P.G. DEGREE EXAMINATION – JULY 2024.

Zoology

Second Year

ENVIRONMENTAL BIOLOGY

Time : 3 hours Maximum marks : 70

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explain the main differences between biotic and abiotic factors in an ecosystem.

2. Describe the shape and characteristics of an exponential growth curve.

3. Elucidate the three types of ecological pyramids with examples.

4. Define homeostasis and provide an example of a physiological process that is regulated by it.

5. Evaluate the impact of deforestation on the water cycle and carbon cycle within tropical ecosystems.

6. Differentiate between interspecific and intraspecific competition.

7. Mention the role of bioindicators in assessing water quality. Provide examples of bioindicators used for this purpose.

8. Discuss the impact of plastic pollution on marine biodiversity and ecosystem services.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions out of Five questions in 1000 words.
All questions carry equal marks.

9. Analyze the relationship between habitat and niche using a specific ecosystem as an example.

10. Discuss the various strategies organisms use for reproduction and survival in the context of r and K selection theory.

11. Analyse the role of camouflage in the survival of benthic organisms in both sandy and muddy shore environments.

12. Describe the relationship between primary productivity, secondary productivity, and ecological efficiency in a given ecosystem.

13. Evaluate the role of bacteria in the nitrogen cycle, emphasizing nitrogen fixation and denitrification processes.

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PG–AN-1062 **MZON–26**

P.G. DEGREE EXAMINATION — JULY 2024.

Second Year

EVOLUTION

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Explore Scope of Evolution in economically important species.

2. Specify the Evolution of gene families.

3. Write a short note on Major trends in the origin of higher categories.

4. Give an account on Immunological techniques in Phylogenetics.

5. Explore Evolution of antibiotic-producing bacteria.

6. Give short notes on Population genetics.

7. Write an essay on Molecular clocks.

8. Explain the techniques used for Monitoring natural populations.

PART B — ($3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1,000 words.

All questions carry equal marks.

9. Explain Molecular drive process and mention the assessment methods.

10. Explore the Micro- and Macro-evolution.

11. Explain the Nucleic acid phylogeny - DNA-DNA hybridizations.

12. Domestication played a crucial role in the evolution of in meat, milk production efficiency. Explain.

13. Write an essay on Conservation of genetic resources in diverse taxa.

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PG–AN-1063 MZONE–21

P.G. DEGREE EXAMINATION —
JULY 2024.

Second Year

AQUACULTURE

Time : 3 hours Maximum marks : 70

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight questions in 300 words.

All questions carry equal marks.

1. Write an essay on Cultivable species of algae.

2. Describe current status in aquaculture production in world.

3. Write a short note on economic importance of crustaceans with market value.

4. Explain Prospective of ornamental fish culture.

5. Write a short note on bacterial diseases and its symptoms and treatment.

6. Specify the Harvesting and transport of fishes.

7. Explore the advantages of polyculture, monoculture and monosex.

8. Write a detailed account on type of culture system in India.

PART B — $(3 \times 15 = 45$ marks)

Answer any THREE questions out of Five questions in 1000 words.

All questions carry equal marks.

9. Draw and discuss the selection of site and farm design for nursery.

10. What is integrated fish culture and explain with suitable examples.

11. Give an detailed account on Freshwater prawn culture in India.

12. Explain the role and importance of water quality management in aquaculture.

13. Describe in detail about Canning and freezing for marketing.

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