S–4253

Sub. Code
23MZO1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

STRUCTURE AND FUNCTION OF INVERTEBRATES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Evolutionary species concept.

2. Taxonomic hierarchy.

3. Schizocoelom.

4. Dinoflagellate.

5. Nematocyst.

6. Chlorocruorin.

7. Protonephridia.

8. Contractile vacuole.

9. Miracidia larva.

10. Entoproct larva.

Part B (5 × 5 = 25)

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

11. (a) What is species concept? Explain with suitable example Mayr's biological species concept.

Or

(b) With examples, explain alpha and beta taxonomy and their importance in biological nomenclature.

12. (a) Discuss the mechanism of hydrostatic movements in an earthworm.

Or

(b) Describe the characteristics and structure of a pseudocoelomate animal citing suitable example.

13. (a) Discuss the various adaptations of filter feeding polychaetes and importance of filter feeding.

Or

(b) Explain the physiology of respiration in the fresh water mussel.

14. (a) Give a brief account on osmoregulation in Echinoderms.

Or

(b) With a diagram, describe the structure of a flame cell.

15. (a) Describe the general characteristics of Trochophore larva and its significance.

Or

(b) Discuss the structure and general characteristics of Acanthocephala with suitable example.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. What is systematic? Explain how phylogenetic classification in constructed and comment on the importance of taxonomy.

17. Discuss the various type of hydrostatic movements exhibited by Hydra.

18. Describe the mechanism of feeding and digestion in sponges.

19. Explain the structure of the nervous system of squid and describe its significance in terms of invertebrate evolution.

20. Describe the structure of Protozoaea and Zoaea larva and commend on its significance.

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S–4254

Sub. Code
23MZO1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

COMPARATIVE ANATOMY OF VERTEBRATES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Urochordata
2. Centrum
3. Scent gland
4. Ctenoid scale
5. Epicardium
6. Conus arteriosus
7. Vertebral foramen
8. Mesonephros
9. Lateral line
10. Fungiform papillae

Part B (5 × 5 = 25)

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

11. (a) Write short notes on the characteristic features of Chondrichthyes with suitable examples.

Or

(b) With a diagram explain the morphology and significance of Ascidia.

12. (a) Explain the structure and types of hair as an epidermal derivative.

Or

(b) Explain the development, types and functions of feathers in vertebrates.

13. (a) Discuss with a neat diagram the structure and adaptive radiation of heart in reptiles.

Or

(b) Explain the mechanism of respiration in amphibian lungs.

14. (a) Give a brief account on comparative anatomy of limbs in mammals citing suitable examples.

Or

(b) With a diagram describe the evolution of urinary bladder in a teleost and a frog.

15. (a) Describe the structure and general characteristics of olfactory receptor in mammals.

Or

(b) Comment on the structure and function of Ampullae of Lorenzini

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Give an account on the phylogenetic relationship and adaptive radiations in Protochordates.

17. Discuss in detail the various types, function and adaptive radiation of epidermal glands in vertebrates.

18. Describe the structure and evolution of heart in mammals.

19. Discuss with diagrams the comparative anatomy and development of Mullerian duct in mammals.

20. What is cephatization? Give a comparative account on the evolution of metencephalon in vertebrates.

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S–4255

Sub. Code
23MZO1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

Elective – MOLECULES AND THEIR INTERACTION RELEVANT TO BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions

1. Define atom and molecules chemistry.
2. Chemical reaction kinetics.
3. How isothermal process is different from isobaric process?
4. Glycosidic bond.
5. Isoelectric points.
6. High energy compounds.
7. Enlist the six major class of enzymes.
8. Isozymes.
9. Z-DNA
10. Disulphide linkage.

Part B (5 × 5 = 25)

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

11. (a) Describe the salient features of Dalton's atomic theory.

Or

(b) Write the significance of atomic interaction.

12. (a) Explain the protein folding.

Or

(b) Describe the salient features of Glycolysis.

13. (a) Explain in detail the inhibitors of oxidative phosphorylation.

Or

(b) Classify the high energy compounds.

14. (a) Write the significance of Km and Vmax values.

Or

(b) Explain the kinetic behaviour of allosteric enzymes.

15. (a) Explain the formation and processing of miRNA.

Or

(b) Explain the role of chaperon in protein folding.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the structure of atoms, molecules and chemical bonds.

17. Explain the structural organisation of respiratory chain.

18. Explain in detail the regulation of enzymatic activity.

19. Describe the Ramachandran plot.

20. Describe the structural polymorphism of RNA and 3D structure of tRNA.

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S–4256

Sub. Code
23MZO1E2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

Elective: BIOSTATISTICS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Primary data.
2. Frequency distribution
3. Arithmetic mean
4. Mean deviation.
5. Kurtosis
6. Additional theorems
7. Coefficient of variation.
8. Regression
9. ANOVA.
10. SPSS

Part B (5 × 5 = 25)

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

11. (a) What is normal distribution? Explain its properties.

Or

(b) Explain the concept of cumulative frequency. Provide a step-by-step explanation of how to construct an ogive curve.

12. (a) Define coefficient of variation and explain its significance in comparing variability across different datasets.

Or

(b) Define measures of central tendency and dispersion. Provide examples illustrating their calculation and interpretation.

13. (a) What are the additional and multiplication theorem of probability?

Or

(b) A coin is flipped 5 times. What is the probability of getting exactly 3 heads? Analyse using binomial distribution.

14. (a) How do you interpret a t-test? What is its significance?

Or

(b) Compare and contrast Karl pearson's coeffecient and rank correlation. Briefly explain how each correlation coefficient is computed and interpreted.

15. (a) Discuss the importance of ANOVA in statistical analysis. Explain how one-way and two-way classification differ in ANOVA.

Or

(b) Describe the basic steps involved in conducting data analysis with SPSS. Explain how to import data, perform descriptive statistics and conduct hypothesis tests using SPSS.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Draw a typical histogram and give its advantages and disadvantages with suitable examples.

17. Mean distribution is 22 and standard deviation is 10. What is the value of variance coefficient?

18. Find the correlation coefficient for the following data.

X	12	8	16	15	12	10	20	17
Y	6	10	9	8	9	8	12	10

19. Find the t-test value for the following two sets of values: 7,2,9,8 and 1,2,3,4

20. What is SPSS? Elaborate on its advantages and disadvantages. State what is data view and variable view?

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S–4257

Sub. Code
23MZO1S1

M.Sc., DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

INTELLECTUAL PROPERTY RIGHTS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** the questions

1. Define intellectual Property.

2. Comment on WIPO.

3. When and why to celebrate the world intellectual property day?

4. What is a design patent?

5. When does the Copyright and Trade mark's act were passed in India?

6. Comment on Geographical Indications.

7. Expand:
   (a) INTA
   (b) PCT

8. What is trade dress?

9. What is innocent infringement?

10. What are the emerging threats to IPR?

Section B ($5 \times 5 = 25$)

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

11. (a) Write a note on types of intellectual property rights.

Or

(b) Give a short note on indications of WIPO.

12. (a) Brief on geographical indications and its benefits.

Or

(b) Write briefly on the reasons for registration refusal

13. (a) Narrate the genesis of Patent act of India.

Or

(b) Brief on protectable matter of trademark.

14. (a) Briefly discuss some common types of unfair competition.

Or

(b) Write shortly on digital innovations.

15. (a) Brief on patent infringement

Or

(b) Write a note on challenges of IPR with regard to technology development.

Section C (3 × 10 = 30)

Answer any **three** questions.

16. Elaborate on international agencies that promotes and protects IPR.

17. Write a detailed note on various aspects of registration of Industrial design

18. Discuss the importance of treaties and conventions on IPR.

19. Give your general outlook on digital IPR in detail.

20. Discuss on enforcement measures to combat infringement of IPR.

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S-4258

Sub. Code
23MZO1A1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Zoology

SERICULTURE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions

1. Egger Moth fiber.
2. CSTRI.
3. Check basin.
4. Tukra in mulberries.
5. Ecdysis.
6. Bombykol.
7. How does shelf rearing differ from floor rearing?
8. Sotto Disease.
9. Rendita.
10. lattice cocoons.

Part B $(5 \times 5 = 25)$

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

11. (a) Brief note on natural and synthetic fibers.

Or

(b) Comment on the Organizational set up of CSB.

12. (a) What is Pruning? Explain the types of Pruning.

Or

(b) Explain the recommended IPM package against Bihar hairy caterpillar.

13. (a) Give an account different indigenous races of the silkworm.

Or

(b) Brief about Cold Storage?

14. (a) What is Showa? Details of methods on Showa?

Or

(b) Comment on Gattine.

15. (a) Write a note on Physical and Commercial characteristics of cocoon.

Or

(b) Brief about the classification of defective cocoons.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the sources of silk fibers in detail.

17. Write an essay on Morphology of *Morus alba*.

18. Enumerate an account on Holometabola of *Bombyx mori*.

19. Explain the various types of bacterial diseases that infect silkworm.

20. Elaborate a note on the byproducts of silk reeling.

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S–4259

Sub. Code
23MZO2C1

M.Sc. DEGREE E XAMINATION, NOVEMBER 2024

Second Semester

Zoology

CELLULAR AND MOLECULAR BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Glycocalyx.
2. Peroxisomes.
3. Facilitated diffusion.
4. Tight junctions.
5. Cell cycle.
6. Endomitosis.
7. Receptor.
8. Paracrine signal.
9. Malignant tumors.
10. Metastasis.

Part B (5 × 5 = 25)

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

11. (a) Describe fluid mosaic model. Mention important functions of cell membrane.

Or

(b) What is a cell? Explain cell theory?

12. (a) Write a short note on role of rough endoplasmic reticulum.

Or

(b) Justify the statement? Mitochondria are the powerhouse of the cell.

13. (a) Give an account on meiosis in animal cells with suitable diagram.

Or

(b) Explain the various stages of prophase 1 of meiosis 1 with suitable illustration.

14. (a) Write a note on structure and mechanism of action of RTK and Ras-dependent pathway of cell signaling.

Or

(b) Give an account on mechanism of action of cross-talk pathway.

15. (a) What are carcinogens? Explain different types of carcinogens.

Or

(b) Explain the properties of cancer cells and its biological significance.

Part C (3 ×10 = 30)

Answer any **three** questions.

16. Explain the difference between eukaryotic and prokaryotic cell with suitable diagrams.

17. Elucidate the various membrane models proposed with suitable evidence and diagrams.

18. What is cell cycle? Describe the process of cell cycle and the importance of cell cycle regulation.

19. Define receptors. Explain the different type of receptors with suitable examples.

20. Write an essay on tumor suppressor genes.

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S–4260

Sub. Code
23MZO2C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Zoology

DEVELOPMENTAL BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Morphogenesis
2. Determination
3. Chemotaxis
4. Fertilization.
5. Fate map
6. Primary grem layer
7. Henson's node
8. Neurulation
9. Trophoblast
10. Cytoplasmic segregation

Part B (5 × 5 = 25)

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

11. (a) Compare and contrast spermatogenesis and Oogenisis.

Or

(b) Describe the specificity sperm egg interaction.

12. (a) Give an account on post fertilization metabolic activation.

Or

(b) Explain with neat diagram the acrosomal reaction.

13. (a) Make a note on influence of yolk in embryonic cleavage.

Or

(b) Elucidate the factor affecting gastrulation in amphioxus.

14. (a) Describe the role of ECM in mammalian development.

Or

(b) How does neurulation occurs?

15. (a) Brief account on formation of ectodermal cap and regeneration.

Or

(b) Explain the mechanism involved in apoptosis and aging.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the genetic control of vitellogenin synthesis in amphibian.

17. Illustrate the intracellular calcium release cortical reaction.

18. Compare and contrast the fate of amphibian and chick.

19. Explain the molecular mechanism of primary embryonic organizer.

20. Enumerate the process of Oocyte and embryo freezing.

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S–4261

Sub. Code
23MZO2E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Zoology

Elective : ECONOMIC ENTOMOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Thysanoptera.
2. Trichoptera.
3. Parasitoids.
4. Chawki rearing.
5. Economic threshold level.
6. Thrips
7. Give any 4 naturally available pesticide for controlling insect pest.
8. IPM
9. Non-biting flies.
10. Mansonia mosquitoes.

Part B (5 × 5 = 25)

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

11. (a) Brief about the biological success of insects.

Or

(b) Give an account on insect taxonomy.

12. (a) How does predators differ from parasitoids? Explain.

Or

(b) Draw a neat diagram on the lifecycle of lac insects.

13. (a) Write about the biology of pests affecting cotton.

Or

(b) Brief about the economic threshold level.

14. (a) Explain about the natural and artificial control of pests.

Or

(b) Give an account on practices of IPM.

15. (a) Brief a note on insect bacterial vectors.

Or

(b) Write a note on the public health importance.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Elaborate an account on the classification of insects.

17. Enumerate in detail about the life cycle and types of honey bees.

18. Elucidate an account on bionomics and management of insect's pest in the sugarcane

19. Discuss about the development and uses of pest resistant plant varieties with examples.

20. Mosquitoes are potential vectors of human diseases. Explain.

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S–4262	Sub. Code
	23MZO2E2

M.Sc., DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Zoology

Elective: RESEARCH METHODOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Combination electrode.
2. Beer-Lambert law
3. Micro tome
4. Eosin
5. Condenser
6. Magnification
7. Stationary phase
8. Centrifugal force
9. Suspension culture
10. NCCS

Part B (5 × 5 = 25)

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

11. (a) Describe the different types of electrodes.

Or

(b) Explain the principle of spectrophotometer.

12. (a) Give an account on staining process involved in hematoxylin and eosin staining.

Or

(b) Describe the features of typical electron microscopy.

13. (a) Brief note on the concept of confocal microscopy and its applications.

Or

(b) How do you differentiate in magnification and resolution in microscopy.

14. (a) What is Ion exchange chromatography? Describe the applications and process.

Or

(b) Explain the principle and type of centrifuges.

15. (a) Describe different types of equipment's required for cell culture.

Or

(b) Make a note on process and application of cryopreservation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. What is pH? Explain the principle, types and application of pH meter?

17. Explain how transmission electron microscopy differs from scanning electron microscopy.

18. Detail account on structure and function of the bright-field microscope.

19. Describe the types and applications of electrophoresis.

20. What are isotopes? Explain the application of isotopes in medicine, agriculture and industries.

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S–4263

Sub. Code
23MZO2S1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Zoology

POULTRY FARMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

PART A (10 × 2 = 20)

Answer **all** the questions

1. Feed hoppers.
2. Dual breed.
3. Layer birds.
4. Polutry sukshma policy.
5. Differentiate probiotic and prebiotic.
6. Fish meal.
7. Bumblefoot.
8. Attenuate vaccine.
9. Culling.
10. Usage of acidifers.

PART B (5 × 5 = 25)

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

11. (a) How the poultry provide the economic prosperity to farmers-Explain

Or

(b) Explain the advantages and disadvantages of free-range system.

12. (a) Describe the ideal conditions for management of broilers.

Or

(b) Write the importance poultry farm insurance.

13. (a) List out the principles of poultry feeding.

Or

(b) Write the ingredients and importance of starter poultry feeds.

14. (a) Give an account on marek's disease.

Or

(b) List out the vaccination schedule for layer birds.

15. (a) Explain the colour sexing methods used for chicks

Or

(b) Differentiate natural and artificial brooding methods used in poultry.

PART C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss the structure and characteristics of intensive poultry housing system

17. Explain the types and importance of restricted feeding in grower management.

18. Write the essential nutritional requirements for chickens and mentions the importance of cereal grains and their by-products in poultry feeds.

19. Describe the symptoms, treatment and prevention methods for botulism and fowl cholera.

20. Explain the egg handling procedure and ideal hatching conditions followed in poultry.

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S–4264

Sub. Code
23MZO2A1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Zoology

APICULTURE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Temporal polyethism.
2. Waggle dance.
3. Primitive hives.
4. Queen gate.
5. Nosema disease.
6. Wax moths.
7. Pollen.
8. AGMARK.
9. National Bee Board.
10. Khadi and Village Industries Sector.

Part B (5 × 5 = 25)

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

11. (a) Write the systematic position of rock honeybee up to the species level.

Or

(b) Describe the life cycle of Indian honeybee.

12. (a) List out the desirable traits for honeybee and mention the importance of site selection in beekeeping.

Or

(b) Write the usage of comb foundation sheet and swarm trap in apiculture.

13. (a) How wasps and mites damage the honeybee colony –Explain.

Or

(b) Explain the causative agent, symptoms and preventive measures for American foulbrood disease.

14. (a) Explain the production and medical usage of bee venom.

Or

(b) How the beeswax extracted from the comb-Explain.

15. (a) Write the research and farmer supportive roles of Central Bee Research Institute.

Or

(b) Discuss the initial capital investment required for starting small scale apiary.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the colony organization and division of labour in honeybees

17. Describe the structural features and advantages of Langstroth hive.

18. Discuss the possible causes and effects of colony collapse disorder.

19. Explain the honey extraction steps and mention the nutritional composition of fully ripened honey.

20. Prepare detailed honeybee farming project report and mention the government sanctioned loan details.

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S–4265

Sub. Code
23MZO3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Zoology

GENETICS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

Define / Comment

1. Z-form of DNA.
2. Tm value.
3. Wobble hypothesis.
4. Inversion
5. Capsid
6. Bacterial chromosomal DNA.
7. pBR322.
8. DNA ligases.
9. Blue-White colony screening.
10. Herbicide Resistance.

Part B (5 × 5 = 25)

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

11. (a) Explain the structure of deoxyribonucleic acid with Watson-Crick view.

Or

(b) Discuss the importance of Blender experiment in identification of genetic material.

12. (a) Explain the working mechanism of *In Vitro* Codon Assignment method used for deciphering the genetic code.

Or

(b) Define aneuploidy and describe three commonly occurring autosomal aneuploid syndrome in human beings.

13. (a) Write the properties of viral genome.

Or

(b) Explain the steps of lysogenic cycle.

14. (a) Give an account on Cosmid and Phagemid vectors.

Or

(b) Explain the properties of type II restriction enzymes and the nomenclature.

15. (a) Write the role of vir genes in Agrobacterium mediated gene transfer method.

Or

(b) How rDNA technology used in environmental cleanup – Explain.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the structure of mRNA and tRNA with suitable diagrams.

17. Describe the ultrastructure of eukaryotic chromosome and mention the importance of telomerase enzyme.

18. Discuss the importance of conjugation and transformation mediated gene transfer methods.

19. Write the steps and enzymes used in insulin gene cloning procedure.

20. Explain the importance of calcium chloride in gene transfer and list out applications of rDNA technology in medicines.

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S–4266

Sub. Code
23MZO3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Zoology

EVOLUTION

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Mendelism
2. Natural selection
3. Archaebacteria
4. Spontaneous generation
5. Triassic
6. Eras
7. Molecular clock
8. Gene duplication
9. Speciation
10. Altruism

Part B (5 × 5 = 25)

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

11. (a) Discuss the role of mendelian concepts and laws in evolution.

Or

(b) Discuss the role of mutation in evolution.

12. (a) Comment on the evolution of prokaryotes with suitable examples.

Or

(b) Elaborate on the abiotic synthesis of organic monomers and polymers with suitable examples.

13. (a) Explain geological time scale and add on their eras importance.

Or

(b) Describe with suitable examples the origins of unicellular organisms.

14. (a) How will you apply amino acid sequencing in phylogenetic analysis? Elaborate.

Or

(b) Highlight the importance and consequence of gene conversion in evolution.

15. (a) Comment on the role of migration on speciation.

Or

(b) Discuss the importance of convergent and divergent evolution on speciation with suitable examples.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Citing example highlight the importance of adaptation in natural selection.

17. Describe the Haldane-Oparin concept and its relation to origin of primitive life. Add a note on evolution of aerobic metabolism.

18. Give an account on the major events in the evolutionary time scale.

19. What is Hardy-Weinberg law? Substantiate its principle and application in relation to population gene frequency changes.

20. Describe in detail the role and types of isolating mechanism in speciation.

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S–4267

Sub. Code
23MZO3C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Zoology

ANIMAL PHYSIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. ECG
2. Myoglobin
3. Cellular respiration
4. Diffusion
5. Receptor
6. Myopia
7. Mechanoreceptors
8. Steps involved in Digestion
9. Endotherm
10. Grave's Disease

Part B (5 × 5 = 25)

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

11. (a) Write an account on blood plasma?

Or

(b) Describe the principle of ECG.

12. (a) Write a short note on organization of lungs in mammals?

Or

(b) Give an account on respiratory centres.

13. (a) Discuss about the types of neuron.

Or

(b) Give an account on sense organs.

14. (a) What are all the factors influencing BMR?

Or

(b) Discuss about the structure of nephron.

15. (a) Give an account on adaptations in ectothermic animals.

Or

(b) Write a short note on thermoregulation?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the comparative anatomy of structure of heart.

17. Illustrate the action of exchange of gases.

18. Describe the structure of ear.

19. Explain the physiology of excretion in man.

20. Write an essay on pancreas role and its disorders.

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S–4268

Sub. Code
23MZO3E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Course-1 Elective-V Zoology

Elective : STEM CELL BIOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What do you mean by adult stem cell?
2. State any two characters of a stem cell.
3. Define hematopoietic stem cell.
4. What are the five derivatives of ectoderm?
5. What is stem cell engraftment?
6. Define yamanaka factor.
7. Define Cell cycle.
8. What is ageing?
9. State the cell therapy for cardiovascular diseases.
10. What is Shwachman Diamond Syndrome?

Part B (5 × 5 = 25)

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

11. (a) Briefly describe the origin of stem cell biology.

Or

(b) Explain the future perspectives of stem cell biology.

12. (a) State the progressive differentiation of embryonic stem cells.

Or

(b) Write short notes on the self-renewal of embryonic stem cell.

13. (a) Briefly describe the properties of mesenchymal stem cells.

Or

(b) State the important sources and characterization of hematopoietic stem cells.

14. (a) Briefly describe the various phases of cell cycle.

Or

(b) Explain the role of stem cells in senescence.

15. (a) State the ethical concerns of stem cell therapy.

Or

(b) Explain about the clinical applications of adult stem cells.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write a detailed account of various kinds of stem cells.

17. Give a detailed account of organs of endoderm lineages.

18. Explain the various properties and sources of mesenchymal stem cells.

19. Write an essay on senescence of stem cell.

20. Explain how various diseases can be treated with stem cell therapies.

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S–4269

Sub. Code
23MZO3S1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Zoology

DAIRY FARMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Mention any two varieties of high-yield cows.
2. What are the types of breeding?
3. What is the most common type of dairy housing?
4. How to manage heat stress in dairy cattle?
5. What is a feed additive?
6. Write the vitamin supplements in feedstuffs?
7. What is the main composition of milk?
8. Define pasteurization.
9. Mention few bacterial diseases of cattle.
10. Define vaccination.

Part B (5 × 5 = 25)

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

11. (a) Write a short note on the advantages of dairy farming?

Or

(b) Explain the artificial method of breeding.

12. (a) Write a short note on the management parameters in dairy farming?

Or

(b) Explain model layout for dairy house.

13. (a) Explain energy rich concentrates of feedstuffs.

Or

(b) Enumerate the supplements available in the feedstuffs.

14. (a) What are the nutritional benefits of milk products?

Or

(b) How to prevent milk from spoilage?

15. (a) Explain the components of bio security in dairy farming.

Or

(b) Illustrate the viral diseases in cattle.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on important indigenous breeds of cattle and their characteristics?

17. Explain the management methods of milch animals during winter season.

18. Give an account on feeding management of livestock.

19. Discuss how dairying is an additional income and employment.

20. Write an essay on protozoan diseases of cattle?

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S–4270

Sub. Code
23MZO3A1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Zoology

VERMICULTURE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Prostomium
2. Penial setae
3. *Eudriluseugeniae*
4. Wormery
5. Vermibed
6. Tank method
7. Vermicastings
8. Organic farming
9. Annecic earthworm
10. Vermiwash

Part B (5 × 5 = 25)

Answer **all** questions

11. (a) Describe the male reproductive system in earthworm.

Or

(b) Highlight the significance of vermitechnology.

12. (a) Write about the common earthworm species used for vermitechnology.

Or

(b) Briefly explain the indoor and outdoor culture techniques of earthworms.

13. (a) Give an account on the requirements of vermicomposting.

Or

(b) Explain the procedure for the preparation of vermibed.

14. (a) Explain the use of vemicastings in horticultural gardens.

Or

(b) Narrate the role of earthworms for the mangement selected biomedical wastes.

15. (a) Give a brief account on packaging of vermicompost for marketing.

Or

(b) Highlight the economic importance of earthworms.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the excretory system of earthworm with suitable diagrams

17. Write an account on monoculture and polyculture method of rearing of earthworm. Add a note on its merits and demerits.

18. Explain the steps involved in heap method of vermicompostig.

19. Earthworm as a feed or bait for capture and culture fisheries – Discuss.

20. Discuss the potentials and constraints for vermiculture in India.

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