

M.SC. DEGREE EXAMINATION – DECEMBER - 2020**FIRST YEAR****ZOOLOGY****FUNCTIONAL MORPHOLOGY, PHYLOGENY****& PALAEOLOGY OF INVERTEBRATES AND CHORDATES****Time: 3 Hours****Maximum Marks: 75****Part - A****(5 x 5 = 25 Marks)****Answer any FIVE Questions**

1. What is locomotion? Compare about the locomotion movement in annelids, molluscs and echinoderms.
2. Write short note on circulation in Arthropods and Molluscs.
3. Describe the nervous system in Coelenterates and formation of nerve net and advanced types.
4. Brief description about the evolutionary trends and phylogenetic importance of Trilobites, Ammonoids.
5. Write note on accessory reproductive glands with diagrams.
6. Describe the evolutionary significance of vertebrate fossils of Ostracoderms, Placoderms spleen and bursa of Fabricius.
7. Comment on the evolutionary significance of Dinosaurs, Archaeopteryx and Mesozoic mammals.
8. Write short notes on pseudometamerism, cyclometamerism, corn theory and embryological theory.

Part - B**(5 x 10 = 50 Marks)****Answer any FIVE Questions**

9. What is symmetry? Explain in detail about the organization, types, and significance of symmetry.
10. Explain the pattern of respiration Arthropods (Gills and Trachea) and Molluscs.
11. Describe in detail about the structures and functions of excretory organs in invertebrates.

12. Write an essay on pattern of sexual reproduction in Invertebrate larval forms and their phylogenic significance with diagrammatic representation.
13. Give a detail account on structure and functions of excretory system types and evolution of kidneys.
14. Write detail account on gill respiration in cyclostomes and fishes.
15. Give a detail account on the diagrammatic representation of cranial nerves, spinal nerves and visceral nerves and its functions.
16. Write an essay on origin and adaptive radiation in Reptiles.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020**FIRST YEAR****ZOOLOGY****GENETICS****Time: 3 Hours****Maximum Marks: 75****PART - A****(5 × 5 = 25 Marks)****Answer any FIVE questions**

1. Describe about the experimental evidences for genetic material.
2. Write short note on ABO blood groups in man and Mn blood group.
3. Comment on one gene – one enzyme theory.
4. What is chromosomal aberration? Comment on ploidy and euploidy.
5. Describe the karyotype study and identification of diseases.
6. Write short note on Rh blood group and erythroblastosis foetalis.
7. Comment on polyploidy and aneuploidy.
8. Write short note on transposons and IS elements.

PART - B**(5 × 10 = 50 Marks)****Answer any FIVE questions**

9. What is DNA damage? Explain in detail about the repair mechanism of DNA.
10. Explain the principles of segregation and independent assortment and how the principles deviated from Mendel's findings.
11. Write an account on Turner's Klinefelter's and Down's syndromes.
12. What is sexduction? Discuss about the mapping of bacterial chromosomes.
13. Give a detail account on human metabolic disorders and diseases.
14. What is mutation? Describe the molecular basis of spontaneous and induced mutations.

15. Define the following: Linkage and crossing over, genetic mapping and polygenic inheritance.
16. Write an account on inherited disorders such as Sickle cell anemia, Thalassaemia and genetic counseling.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020**FIRST YEAR****ZOOLOGY****CELL AND MOLECULAR BIOLOGY****Time: 3 Hours****Maximum Marks: 75****PART - A****(5 × 5 = 25 Marks)****Answer any FIVE questions**

1. Explain briefly about the differences between prokaryotes and eukaryotes.
2. Discuss about microfilaments and microtubules.
3. Write about Glycolysis.
4. Briefly explain Lysosome and its function.
5. What is synchronization of cell division?
6. Discuss about the spindle organization during cell cycle.
7. Write about Watson and Crick Model.
8. What is DNA replication?

PART - B**(5 × 10 = 50 Marks)****Answer any FIVE questions**

9. Discuss about cell adhesion and intercellular junctions.
10. Write in detail about cytoskeletons of prokaryotes and eukaryotes with examples.
11. What is the structure, types and function of endoplasmic reticulum?
12. Explain in detail about respiratory chain and oxidative phosphorylation?
13. Explain in detail about chromatin: structure and function; euchromatin; heterochromatin; unusual chromosomes?
14. Give an explanation of the mechanism of chromosome formation.
15. What are the differences between mitosis and meiosis?
16. Discuss how RNA is converted to protein.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020
FIRST YEAR
ZOOLOGY
ANIMAL PHYSIOLOGY & BIOCHEMISTRY

Time: 3 Hours

Maximum Marks: 75

PART - A

(5 × 5 = 25 Marks)

Answer any FIVE questions

1. Explain the types of osmotic exchange between fish and its environment.
2. What is the sliding filament theory of muscle contraction?
3. Explain the role of neurohormones in the molting process of insects.
4. Explain the regulation of carbohydrates by endocrine system in vertebrates.
5. Explain the role of semicircular canals on body balance.
6. Explain the photochemical activity in retina.
7. Explain the difference between globular proteins and fibrous proteins.
8. Explain the structure and physical properties of triglycerides.

PART - B

(5 × 10 = 50 Marks)

Answer any FIVE questions

9. Explain the three biological activities of prostaglandins.
10. Explain briefly about the osmoregulatory organs in terrestrial animals.
11. Explain briefly about the control of hormone action on menstrual cycle with positive and negative feedback mechanism.
12. Briefly describe the structure of human ear with a neat sketch.
13. Explain briefly about the classification and formation of lipoprotein with neat pathway structure.
14. Write a brief notes on the theories explaining the mechanism of enzyme action.
15. Write briefly about the salt and water balance in fish.
16. Write a brief note on the endocrine glands and its role on homeostasis.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020

FIRST YEAR

ZOOLOGY

ECONOMIC ZOOLOGY

Time: 3 Hours

Maximum Marks: 75

Part - A

(5 x 5 = 25 Marks)

Answer any FIVE Questions

1. Discuss about the control measures of rice pest *Sitophilus oryzae*.
2. Give an account on pearl culture.
3. Write down the advantages of modern methods of Apiculture.
4. Explain the life cycle of *Bombyx mori*.
5. Narrate the different breeds of chicken.
6. Describe the scope of Aquaculture.
7. Discuss the problems in Apiculture.
8. Write a short note on pre and post cocoon processing.

Part - B

(5 x 10 = 50 Marks)

Answer any FIVE Questions

9. Briefly explain the diseases caused by insect vectors in humans.
10. Write an account on the advantages of Integrated fish farming.
11. Explain the various types of honey bees.
12. Describe the steps involved in silk reeling.
13. Explain the rearing of broilers.
14. Give a brief note on beneficial insects.
15. Give an account on the merits and demerits of Exotic fishes.
16. Elucidate the uses of honey in Indian medicine.

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**M.Sc DEGREE EXAMINATION —
DECEMBER - 2020**

Second Year

Zoology

DEVELOPMENTAL BIOLOGY AND IMMUNOLOGY

Time: 3 Hours

Maximum Marks: 75

PART A (5 × 5 = 25 Marks)

Answer the following question of either/or type.

Each answers should not exceed 300 words.

1. (a) Draw a structure of mammalian Ovum and explain.

Or

- (b) Explain the role of cytoplasm in Differentiation.

2. (a) Describe various types of Cleavage occur during plane of cell division.

Or

- (b) Write short note on Fat Map.

3. (a) What are the major induction events during Eye development?

Or

- (b) Give note on main hormone and their involvement in insect Metamorphosis.

4. (a) Comment on the Secondary lymphoid organs.

Or

- (b) Explain Reactive sites and Receptor site.

5. (a) Brief note on immune response to Bacterial disease.

Or

- (b) Narrate the Immuno Deficiency.

PART B — (5 × 10 = 50)

Answer the following question of either/or type.

Each answers should not exceed 1000 words.

6. (a) Describe the event of Sperm transport in various animals.

Or

- (b) What is Specification? Discuss various types of Specification observed in development of animals.

7. (a) Discuss different patterns of Cleavage accourting to amount and distribution of yolk.

Or

- (b) Briefly explain how dorsal- ventral, anterior, posterior and left and right axes are formed.

8. (a) Write an account on morphallaxis regeneration in Hydra with suitable diagram.

Or

- (b) Give brief notes on Proximate cause of aging.

9. (a) Give an account on types of Immunity.

Or

- (b) Distinguish between Primary and Secondary lymphoid organs.

10. (a) Write an essay on Major Histocompatibility Complex.

Or

- (b) Explain the concept and mechanisms of autoimmune diseases.

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**M.Sc. DEGREE EXAMINATION —
DECEMBER - 2020**

ZOOLOGY

Second Year

**BIOPHYSICS, BIOSTATISTICS AND COMPUTER
APPLICATIONS**

Time: 3 Hours

Maximum Marks: 75

PART A ($3 \times 5 = 15$ Marks)

Answer any **THREE** questions out of **FIVE** questions.

1. Write a brief account on various Tracer isotopes.
2. Explain the principle and applications of Thin Layer Chromatography.
3. What is Primary data? Write briefly on the sources of Primary data.
4. Calculate the median for the given data.

Length of the leaves in cm.	0-10	10-20	20-30	30-40	40-50	50-60
Number of leaves	5	10	15	30	20	10

5. Describe any two input devices of a computer.

PART B ($4 \times 15 = 60$ Marks)

Answer any FOUR questions out of FIVE questions.

6. Write a detailed account on NMR spectroscopy.
7. Describe the principle and applications of
 - (a) SDS-PAGE and
 - (b) Immunoelectrophoresis.
8. Give an account on diagrammatic and graphical representation of data.
9. The price of petrol at petrol stations in City1 and City2. The data, in dollars per litre, are given below.

City1	3.96	3.76	4.00	3.91	3.69	3.72
City2	3.97	3.81	3.52	4.08	3.88	3.68

Find the Standard deviation of each City's prices. Which city has the more consistently priced petrol? Give reasons for your answer.

10. Discuss the applications of computers in biology.

**M.SC. DEGREE EXAMINATION – DECEMBER - 2020
SECOND YEAR**

ZOOLOGY

BIOTECHNOLOGY & MICROBIOLOGY

Time: 3 Hours

Maximum Marks: 75

PART - A

(5 × 5 = 25 Marks)

Answer any FIVE questions

1. Explain briefly about the principles of genetic engineering.
2. Discuss about the enzymes used in gene cloning.
3. Write about Northern Blotting.
4. Briefly explain about DNA finger printing.
5. Write about the application of biotechnology in the field of industry
6. Classify the different microbes.
7. Write about the causative agents of Polio and Leprosy.
8. What are the treatments available for Cholera.

PART - B

(5 × 10 = 50 Marks)

Answer any FIVE questions

9. Discuss about the blotting techniques.
10. Write in detail about gene cloning.
11. What are the different types of gene transfer methods?
12. How is biotechnology used in the field of agriculture, medicine and pollution control?
13. What are the different types of fermentations?
14. Give an explanation of the morphology and ultra-structure of viruses.
15. What are bacterial growth curves and their nutritional requirements?
16. Discuss the causative agent, mode of transmission, prevention and treatment for Tuberculosis.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020
SECOND YEAR

ZOOLOGY

AQUACULTURE

Time : 3 Hours

Maximum Marks : 75

PART - A

(5 × 5 = 25 Marks)

Answer any FIVE questions.

1. Explain the advantages of aquaculture.
2. Describe the advantages and disadvantages of integrated aquaculture.
3. Describe the fish species suitable for culture in undrainable ponds.
4. Describe the major penaeid prawn species cultured in Asia.
5. Name and explain the commercially important ornamental fishes cultured in India.
6. Explain the steps in feed formulation.
7. Name three fungal species which affects fish and describe the symptoms and treatment.
8. Explain the factors that directly influence the fish transport.
9. Describe the two fundamental harvesting methods and list the pros and cons.

PART - B

(5 × 10 = 50 Marks)

Answer any FIVE questions

10. Detail account of the strategies of fish farm design with all basic ideologies and considerations.
11. Write a note on the levels of fish distribution in domestic markets.
12. Add a detailed note on the advantages of polyculture, monoculture and monosex.
13. Explain in detail about the pond design and management for freshwater prawn culture.
14. Write down the norms of MPDEA for the export of fish.
15. Comment on the types of feed and its composition.
16. Explain in detail about the crustacean diseases, symptoms and treatments.

M.SC. DEGREE EXAMINATION – DECEMBER - 2020**SECOND YEAR****ZOOLOGY****ENVIRONMENTAL BIOLOGY AND EVOLUTIONS****Time: 3 Hours****Maximum Marks: 75****Part - A****(5 x 5 = 25 Marks)****Answer any FIVE Questions**

1. Explain the types of Ecological pyramids.
2. Describe the types of community succession.
3. Explain the methods of sewage treatment process.
4. Discuss the criticism of Lamarckism.
5. Explain the types of fossils.
6. Bring out the physic-chemical characteristics of coastal environment.
7. Explain energy flow in an Ecosystem.
8. Describe the biological effects of water pollution.

Part - B**(5 x 10 = 50 Marks)****Answer any FIVE Questions**

9. Explain the types of food chain in an Ecosystem.
10. Describe the process of nitrogen cycle.
11. Write an essay on non-conventional energy sources.
12. Discuss the modern synthetic theory of Evolution.
13. Explain pre-mating and post-mating isolating mechanism.
14. How do organisms adapt to living in the pelagic and benthic zones?
15. Explain the principles of Darwinism..
16. Give an account of peripheral isolates with example.