

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4E 12—HUMAN GENETICS—III CANCER GENETICS AND GENETIC SERVICES
(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 Chromosome walking
- 2 Rh incompatibility.
- 3 Gel electrophoresis.
- 4 LOD score.
- 5 Apoptosis.
- 6 MTP Act.
- 7 Tumorigenesis.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage.

- 8 Write notes on genetic basis of cancer.
- 9 Write an account on telomerase and its functions.

Turn over

- 10 Briefly explain the types of lymphomas.
- 11 Write note on the tools employed in genetic engineering.
- 12 Briefly explain the objectives and achievements of Human Genome Project.
- 13 Discuss the status of medical ethics in India.
- 14 Briefly explain the clinical applications of Radiation Biology.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 Write an essay on oncogene families.
- 16 Give an account on genomic instability and mutation in neoplastic cells. Add note on DNA damaging agents.
- 17 Write an essay on genetic counseling.
- 18 Explain gene cloning strategies used in genetic engineering.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021****(CBCSS)****Zoology****ZOL 4E 12—FISHERY SCIENCE—III HARVESTING, POST-HARVESTING TECHNOLOGY
AND MARKETING****(2019 Admissions)****Time : Three Hours****Maximum : 30 Weightage****General Instructions**

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A**I. Answer any four of the following. Each question carries 2 weightage :**

- 1 What is IQF technology ?
- 2 Briefly explain the concept of HACCP.
- 3 What is jigging ?
- 4 What is Tony Scoring Scheme ?
- 5 What are the major activities of MPEDA ?
- 6 How fishing effort is calculated ?
- 7 What is kench salting ?

(4 × 2 = 8 weightage)**Part B****II. Answer any four of the following. Each question carries 3 weightage :**

- 8 Explain different types of materials used for constructing fishing nets and ropes.
- 9 Discuss the nutrient profile of fish.

Turn over

- 10 Describe the role of fisherman co-operatives in fishery management.
- 11 Explain different methods of packing and transportation of processed sea foods.
- 12 Explain the influence of rigor mortis on the quality of fish.
- 13 Discuss onboard fresh fish handling protocol.
- 14 Briefly explain the significance of dredging.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 Discuss the major methods for microbial quality assessment in seafood industry.
- 16 Explain the principle and steps involved in smoking method of fish preservation.
- 17 Write an essay on different types of fish by-products.
- 18 Explain different methods of trawling operations.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4E 12—ENTOMOLOGY—III : AGRICULTURAL, MEDICAL AND FORENSIC
ENTOMOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 Write the damages caused by any *two* major pests of sugarcane. Add a note on their control.
- 2 Give an account of injuries caused by chewing insects.
- 3 What are insect antifeedants ? Mention their advantages.
- 4 Describe the role of dipterans in forensic entomology.
- 5 Define insecticide synergists. Comment on types of synergism.
- 6 Write notes on poisonous insects.
- 7 Enlist the morphological adaptations of insect vectors.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage.

- 8 Give a brief account of major insect pests of mango.
- 9 Briefly describe the mechanical control of insect pests.

Turn over

- 10 Explain autocidal control of pests. Add a note on its advantages and disadvantages.
- 11 Write the damages caused by a) *Oryctes rhinoceros* ; b) *Rhynchophorus ferrugineus* ; and c) *Opisina arenosella*.
- 12 Give an account of synthetic pyrethroids.
- 13 Describe the advantages and disadvantages of biological control.
- 14 Write a brief account of different types of pests.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 Explain pheromonal control of insect pests. Comment on the advantages and disadvantages of the method.
- 16 Write an account of the chemistry, toxicology and mode of action of synthetic organic insecticides.
- 17 Give an account of insect vectors of human diseases.
- 18 Write an essay on insect pests of stored grain products.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4E 11—HUMAN GENETICS—II : DIAGNOSTIC GENETICS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
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Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 In-situ hybridisation.
- 2 DNA finger printing.
- 3 Leish nyhan Syndrome.
- 4 CASA.
- 5 Metabolic disorder.
- 6 Goucher's disease.
- 7 Peroxisomal disorders.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage :

- 8 Write notes on carbohydrate metabolism disorders.
- 9 Comment on molecular diagnostic tools.
- 10 Give an account on various treatments available for genetic disorders.

- 11 Explain different disorders of mineral metabolism in human.
- 12 Comment on human birth defects.
- 13 Write note on development of extra embryonic tissue.
- 14 Comment on various porphyrin defects.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 With suitable diagrams explain early human embryo development.
- 16 Give an account on Assisted Reproductive Techniques. Add note on their demerits.
- 17 Write an essay on different types of prenatal diagnostic methods.
- 18 Write an account on the disorders associated with amino acid metabolism.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4E 11—FISHERY SCIENCE—II : CAPTURE AND CULTURE FISHERIES

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
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Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 What is crab fattening ?
- 2 What are the different types of organic fertilizers used in aquaculture ?
- 3 What is Bouchot culture ?
- 4 Give the scientific names of any *four* weed fishes.
- 5 Enumerate the significance of acclimatization in aquaculture.
- 6 Briefly explain Food Conversion Ratio.
- 7 What is a levee pond ?

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage :

- 8 Give an account on the reservoir fisheries resources of India.
- 9 Discuss the major fungal diseases among freshwater fishes.

Turn over

- 10 Describe the importance of live feed in aquaculture practices.
- 11 Discuss the current status and threats to mahseer fishery of India. Add a note on their conservation and protection strategies.
- 12 Explain different types of liming substances. Add a note on its significance.
- 13 Describe the design and working methodology of a Chinese hatchery.
- 14 Explain the principle and techniques of hypophysation.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 Describe the steps involved in the preparation and maintenance of freshwater aquaria.
- 16 Explain mackerel fisheries of India. Add notes on its prospects and challenges.
- 17 Write an essay on the development of biological techniques in selective breeding of fish.
- 18 Explain different methods of integrated fish farming technique.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4E 11—ENTOMOLOGY—II : ANATOMY AND PHYSIOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 Give an account of plastron respiration.
- 2 Comment on hygroreceptors in insects.
- 3 Explain the composition of haemolymph.
- 4 Briefly explain control of heart beat in insects.
- 5 What is diapause ? Give an account of different types of diapause.
- 6 Write an account of paedogenesis in insects.
- 7 Briefly explain synaptic transmission of impulses in insects.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage :

- 8 Give an account of insect pheromones and their functions.
- 9 Describe the structure of male and female reproductive systems in insects.
- 10 Write an account of neurosecretory cells and endocrine glands in insects.

- 11 Explain, how ventilation is controlled in insects.
- 12 Briefly describe the anatomy and histology of malpighian tubules in Coleoptera.
- 13 Write an account of locomotion in aquatic insects.
- 14 Give an account of histomorphology of insect muscles.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage.

- 15 Give an account of hormonal control of moulting in insects.
- 16 Write an essay on digestive enzymes and physiology of digestion in insects.
- 17 Explain the structure of wings and mechanisms of wing development in insects.
- 18 Write an essay on the structure and functioning of insect photoreceptors.

(2 × 5 = 10 weightage)

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION
MARCH 2021**

(CBCSS)

Zoology

ZOL 4C 10—BIOTECHNOLOGY AND MICROBIOLOGY

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
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Part A

I. Answer any *four* of the following. Each question carries 2 weightage :

- 1 Shuttle vectors.
- 2 Plasmids.
- 3 FISH.
- 4 Inverse PCR.
- 5 Vaccines.
- 6 Continuous culture.
- 7 Microbial bioremediation.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Each question carries 3 weightage :

- 8 Write Bergey's classification with examples.
- 9 Write an account on the methods of control of micro-organisms.

Turn over

- 10 Give an account on the applications of biotechnology in agriculture.
- 11 How molecular markers are important ? Add a note on different markers used.
- 12 Write on transposons used as vectors.
- 13 Explain the steps involved in the cloning of DNA in-vivo.
- 14 Explain in detail the techniques in cell culture.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Each question carries 5 weightage :

- 15 Write an essay on different gene silencing techniques with examples.
- 16 Give an account on the structure of bacterial cell. Write a note on function.
- 17 Write an essay on the ethical issues related to genetic engineering. Add note on its impact on society.
- 18 Write an essay on blotting techniques. Add a note on their applications.

(2 × 5 = 10 weightage)