

D 31228

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Name.....

Reg. No.....

**THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2022**

(CBCSS)

Zoology

ZOL 3C 07—IMMUNOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A

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

- 1 Endogenous pathway of antigen processing.
- 2 Properties of B-cell and T-cell epitopes.
- 3 Lymphoid cancer.
- 4 Cross reactivity.
- 5 Antibody engineering.
- 6 Mention the factors that influence immunogenicity.
- 7 Distinguish between isotypes and allotypes.

(4 × 2 = 8 weightage)

Part B

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

- 8 Compare humoral and cellular immunity.
- 9 Describe the structure of a typical immunoglobulin. Write a short note on different types of immunoglobulins.
- 10 Write a short essay on important cytokines in immune mechanisms.
- 11 Write a short essay on systemic autoimmune diseases.
- 12 Write a short essay on the processes of activation, maturation and differentiation of B-cells.

Turn over

- 13 Explain the immunological basis of graft rejection.
- 14 Compare Radioimmunoassay and Immunoelectrophoresis.

(4 × 3 = 12 weightage)

Part C

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

- 15 Write an essay on different types of vaccines. Briefly describe their merits and demerit.
- 16 Write an essay on the structure of MHC-I and MHC-II molecules. What are their functions ?
- 17 Write an essay on immune deficiency diseases.
- 18 Write an essay on complement system in human.

(2 × 5 = 10 weightage)

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**THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
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(CBCSS)

Zoology

ZOL 3C 08—DEVELOPMENTAL BIOLOGY AND ENDOCRINOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A

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

- 1 What is grey crescent ?
- 2 What are cytoplasmic determinants ?
- 3 What are embryonic fields ?
- 4 Explain the relation between aging and insulin signaling cascade.
- 5 Elucidate the role of kidney as an endocrine organ.
- 6 Write on the hormones involved in lactation.
- 7 Give an account on endorphins and their physiological roles.

(4 × 2 = 8 weightage)

Part B

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

- 8 Write on the anterior posterior axis formation in *Drosophila*.
- 9 What is meant by determination, commitment and specification in developmental biology ?
- 10 Explain the process of eye lens induction.
- 11 Describe the strategies involved in the prevention of polyspermy.
- 12 Explain the impact of teratogens on normal development.
- 13 Give an account on the structure, functions and disorders of hypothalamus.
- 14 Write an account on the second messengers of hormone action.

(4 × 3 = 12 weightage)

Turn over

Part C

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

- 15 Describe the synthesis, chemistry, metabolism and functions of androgens.
- 16 Write an essay on metamorphosis and its hormonal control in insects.
- 17 Explain the process of gametogenesis. Give a brief summary of events leading to fusion of egg and sperm cell membranes in sea urchin and mammals.
- 18 Write on the mechanisms involved in differential gene transcription.

(2 × 5 = 10 weightage)

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(CBCSS)

Zoology

ZOL 3E 09 (01)—ENTOMOLOGY I : MORPHOLOGY AND TAXONOMY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A

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

- 1 Enlist the salient features of the order Thysanoptera.
- 2 Write the swimming adaptations of aquatic insects.
- 3 Give an account of the stridulatory organs in orthopterans.
- 4 What is tentorium ? Explain the structure.
- 5 Write the characters of the order Siphonaptera.
- 6 What are the adaptations of parasitic insects ?
- 7 Explain polymorphism in aphids.

(4 × 2 = 8 weightage)

Part B

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

- 8 Describe the physiology of gall formation.
- 9 Explain the modifications of insect head capsule.
- 10 Describe the wing coupling mechanisms in insects.
- 11 What are the different forms of leaf mines ? Add a note on the economic importance of leaf mining.
- 12 Describe the salient features of the order Hymenoptera.
- 13 Briefly explain the mating behaviour in odonates.
- 14 Explain chemical communication in insects.

(4 × 3 = 12 weightage)

Turn over

Part C

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

15 Explain the structure of insect head.

16 Write an essay on the various structural modifications of thoracic legs in insects.

17 Write an essay on the social behaviour of termites.

18 Classify the order Coleoptera down to families with descriptions and examples.

(2 × 5 = 10 weightage)

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**THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2022**

(CBCSS)

Zoology

**ZOL 3E 09 (03)—FISHERY SCIENCE-I : TAXONOMY BIOLOGY, PHYSIOLOGY AND
ECOLOGY**

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A

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

- 1 What are mirror cells ?
- 2 Which are the calcified structures analyzed in fish growth studies ?
- 3 Differentiate lotic and lentic ecosystems.
- 4 Give the adaptations of the family Tetraodontidae.
- 5 What are shelf seas ?
- 6 What is a paratype specimen ?
- 7 Briefly explain the adaptations of cave dwelling fishes.

(4 × 2 = 8 weightage)

Part B

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

- 8 Discuss the importance of keys in taxonomic studies.
- 9 Explain different types of scales in fishes.
- 10 Explain the mechanism of salt regulation among freshwater fishes.
- 11 Discuss the major threats to coral reefs.
- 12 Enlist the characteristics of an estuarine ecosystem.
- 13 Describe different types of reproductive behavior among fishes with examples.
- 14 Describe X-organ sinus gland complex.

(4 × 3 = 12 weightage)

Turn over

Part C

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

- 15 Discuss the physico-chemical properties of sea water.
- 16 Write an essay on different types of fish migration.
- 17 Explain different types of accessory respiratory organs in fishes.
- 18 Discuss the economic importance of the family Cyprinidae.

(2 × 5 = 10 weightage)

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(CBCSS)

Zoology

ZOL 3E 09 (04)—HUMAN GENETICS—I—CLINICAL GENETICS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Part A

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

- 1 Lethal genes.
- 2 HRB.
- 3 Ring chromosome.
- 4 Osteogenesis imperfecta.
- 5 Asthma.
- 6 Somatic cell gene therapy.
- 7 Proteomics.

(4 × 2 = 8 weightage)

Part B

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

- 8 Write notes on different sequence submission tools.
- 9 Write notes on endocrine disorders in human.
- 10 Give a note on mitochondrial inheritance.
- 11 Write on different hematological disorders in human.
- 12 Explain the steps in PCR. Add notes on different types of PCRs.

Turn over

- 13 Nucleic acid sequence is used as a diagnostic tool. Substantiate the statement.
- 14 Comment on the methods and types of gene therapy.

(4 × 3 = 12 weightage)

Part C

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

- 15 Write an essay on different abnormalities of chromosome structure in human.
- 16 How signal transduction is important in normal cell function. Add notes on components involved in cell signaling.
- 17 Write an account on different types of databases. Add note on entrez.
- 18 Give note on the steps involved in recombinant DNA technology. Add note on its applications for treating human diseases.

(2 × 5 = 10 weightage)

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(CBCSS)

Zoology

ZOL 3E 09—CLASSIFICATION AND STRUCTURAL ORGANIZATION OF ANIMALS

(2020 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

I. Answer any *four* of the following. Short Answer Type Questions :

- 1 Amphioxus.
- 2 Phylocode.
- 3 Water Vascular System of Sycon.
- 4 RAPD.
- 5 Taxonomy.
- 6 Hippocampus.
- 7 Giant Ant Eater.

(4 × 2 = 8 weightage)

II. Answer any *four* of the following. Short Essay Type Questions :

- 8 Write a note on Metagenesis with examples.
- 9 Affinities and systematic position of Lopophorates.
- 10 Give an account on the phylogeny of mammalian orders.
- 11 Write a note on Phylogenetic relationship of Archeopteryx (Reptilia - Aves).
- 12 With schematic representation explain DNA Fingerprinting.
- 13 Write the rules of Binomial Nomenclature.
- 14 Explain the external morphology of Narcine with a neat labeled diagram.

(4 × 3 = 12 weightage)

Turn over

III. Answer any *two* of the following. Long Essay Type Questions :

- 15 Write general characters of Phylum Arthropoda and classify the phylum upto classes with examples.
- 16 What is a Species ? Discuss the merits and demerits of different definitions of species. Comment on the taxonomic diversity within species.
- 17 Elucidate the phylogenetic relationship between Pisces and land vertebrates with a suitable example
- 18 Enumerate the difference between Wetland birds and Aquatic birds with example.

(2 × 5 = 10 weightage)

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