

SECOND SEMESTER M.Sc. DEGREE (SPECIAL SUPPLEMENTARY)
EXAMINATION, APRIL 2018

Zoology

MZL 201—PHYSIOLOGY

(2001 to 2009 Admissions–Non-CUCSS)

Time : Three Hours

Maximum : 80 Marks

I. Answer any *two* of the following questions :

- 1 Name the adrenal cortical hormones. Describe the actions of glucocorticoid. How is it regulated ?
- 2 Describe how the structure of the small intestine facilitates optimum digestion and absorption of nutrients.
- 3 Describe the brain regions that constitute the limbic system, indicating the functional role of each.
- 4 Explain the difference between the three types of neurons. Describe a neurotransmitter.
(2 × 15 = 30 marks)

II. Answer any *three* of the following questions :

- 5 What are the hormones involving in the functioning of the kidney ?
- 6 Describe in detail the mechanism of blood clotting.
- 7 Explain how cardiac output is regulated.
- 8 Give the structure and functions of platelets. Add a note on the role of white blood cells in immunity.
- 9 Describe the structures that are important in the physical protection of the brain.
(3 × 10 = 30 marks)

III. Answer any *five* of the following questions :

- 10 Acidification.
- 11 Homeostasis.
- 12 Poikilotherms.
- 13 Hibernation.
- 14 Emphysema.
- 15 Apnea.
- 16 Deep sea diving.

(5 × 4 = 20 marks)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Zoology

ZOL 2C 06—SYSTEMATICS AND EVOLUTION

(2019 Admission onwards)

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. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A (SYSTEMATICS)

- I. Answer any *three* of the following : (Weightage 2)
- 1 Morphospecies.
 - 2 Molecular systematics.
 - 3 Advantages of binomial system of nomenclature.
 - 4 ICZN.
 - 5 Levels of taxonomy.
- (3 × 2 = 6 weightage)
- II. Answer any *three* of the following : (Weightage 3)
- 6 Type method and different kinds of types.
 - 7 Dichotomous key.
 - 8 Explain various goals of taxonomy.
 - 9 Undesirable features of taxonomic papers.
 - 10 Biological species concept.
- (3 × 3 = 9 weightage)

Turn over

- III. Answer any *one* of the following (Essay type) : (Weightage 5)
- 11 Elaborate the new trends in systematics with special reference to chemotaxonomy and serotaxonomy
 - 12 Explain taxonomic impediments. Add a note on solutions to overcome the impediments.
- (1 × 5 = 5 weightage)

Part B (EVOLUTION)

- IV. Answer any *one* of the following : (Weightage 2)
- 13 Molecular clock.
 - 14 Gradualism.
- (1 × 2 = 2 weightage)
- V. Answer any *one* of the following (Short Essay type) : (Weightage 3)
- 15 Neutral theory of molecular evolution.
 - 16 Sexual selection.
- (1 × 3 = 3 weightage)
- VI. Answer any *one* of the following : (Weightage- 5)
- 17 Explain biochemical evolution. Add a note on mitochondrial Eve.
 - 18 Explain different types of genetic drift. Add a note on co-evolution.
- (1 × 5 = 5 weightage)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Zoology

ZOL 2C 05—MOLECULAR BIOLOGY

(2019 Admission onwards)

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. Weightage 2 :

- 1 RNA editing.
- 2 Okazaki fragments.
- 3 Wobble hypothesis.
- 4 Satellite DNA.
- 5 mi RNA.
- 6 Globin gene.
- 7 Rec A protein.

(4 × 2 = 8 weightage)

Part B

II. Answer any *four* of the following. Weightage 3 :

- 8 Features of bacterial genome.
- 9 Genetic recombination.

Turn over

- 10 Features of mitochondrial genome.
- 11 Transposons in bacteria.
- 12 Evolution and organization of interrupted genes .
- 13 Organization of rRNA gene in *Xenopus*.
- 14 Biogenesis of ribosomes in eukaryotes.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Weightage 5 :

- 15 Explain post translational modification of mRNA. Add a note on RNA editing.
- 16 Explain the various mechanisms involved in homologous recombination involved in eukaryotic DNA.
- 17 Discuss on different models of DNA replication. Add a note on inhibitors of DNA replication.
- 18 Explain the features of genetic code with special reference to *Mycoplasma* and *Tetrahymena*. Add a note on point mutations that alter genetic code.

(2 × 5 = 10 weightage)

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EXAMINATION, APRIL 2022

(CBCSS)

Zoology

ZOL 2C 04—PHYSIOLOGY

(2019 Admission onwards)

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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3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

I. Answer any *four* of the following. Weightage 2 :

- 1 Vital capacity.
- 2 Mechanism of sweat secretion.
- 3 Types of memory.
- 4 Peristalsis.
- 5 Pain receptor.
- 6 SA node.
- 7 Nephron.

(4 × 2 = 8 weightage)

II. Answer any *four* of the following. Weightage 3 :

- 8 Functions of amygdala.
- 9 Fluid system of the eye.

Turn over

- 10 Composition and formation of lymph.
- 11 Oxygen-haemoglobin dissociation curve.
- 12 Stimulation of mechanoreceptors.
- 13 Composition of glomerular filtrate.
- 14 Anatomical functional areas of cerebellum.

(4 × 3 = 12 weightage)

III. Answer any *two* of the following. Weightage 5 :

- 15 Explain the counter-current mechanism in urine formation.
- 16 Describe temperature regulating mechanisms. Add a note on role of hypothalamus in temperature regulation.
- 17 Briefly explain the neural and hormonal regulation of gastro-intestinal motility.
- 18 Write an essay on cardiac cycle and its regulation.

(2 × 5 = 10 weightage)