

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM
M.Sc. ZOOLOGY SEMESTER (2024-25)

MODEL QUESTION PAPER: PAPER-I
CORE-1: BIOSYSTEMATICS & NATURAL RESOURCE MANAGEMENT

TIME: 3 Hrs

MAX MARKS: 60M

Answer ALL questions All questions carry equal marks .4 x 10 = 40M

SECTION A

1. Define biosystematics. Explain the importance and applications of biosystematics.
(OR)
2. What is the material basis for biosystematics?
3. Explain the various new aspects adopted in biosystematics.
(OR)
4. Explain the diversity and ecosystem processes involved in the conservation of biodiversity.
5. What is speciation? Explain the mechanism of speciation.
(OR)
6. What is ICZN? Explain the operative principles and its role in zoological nomenclature.
7. Write about the biogeographical regions of India and their salient features.
(OR)
8. Give a detailed account of overexploitation, deforestation, water table depletion, and land degradation.

SECTION B

Answer any FOUR of the following:

4x5=20M

9. Taxonomy
10. Phylogenetic relationships
11. Chemo taxonomy
12. Lineage
13. Biodiversity acts
14. Conservation movements
15. Scope of biodiversity
16. ICZN

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M.Sc. ZOOLOGY

I SEMESTER (2024-25)

CORE-2: MOLECULAR CELL BIOLOGY

TIME: 3 Hrs

MAX MARKS: 60M

Answer ALL questions. All questions carry equal marks.

4 x 10 = 40M

SECTION – A

1. Describe in detail the transport of ions across the cell membrane.
(OR)
2. What is membrane potential? Explain co-transport by symporters.
3. Write in detail about cell adhesion and communication mechanisms.
(OR)
4. Elaborate on the second messenger system in cell signaling.
5. Describe the regulation of CDK-cyclin activity in the cell cycle.
(OR)
6. Write an essay on semi-conservative DNA replication.
7. Explain the translation process in prokaryotes and eukaryotes.
(OR)
8. Explain DNA repair mechanisms.

SECTION – B

Answer any FOUR of the following:

4 x 5 = 20M

9. Ant porters
10. Active transport
11. Cell surface receptors
12. Eukaryotic chromosomes
13. Golgi sorting
14. Mitochondria
15. Wobbles concept
16. Golgi sorting

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M.Sc. ZOOLOGY
I SEMESTER (2024-25) MODEL
QUESTION PAPER: PAPER-III
CORE-3: GENERAL AND COMPARATIVE PHYSIOLOGY

TIME: 3 Hrs

MAX MARKS: 60M

Instructions:

Answer ALL questions. All questions carry equal marks. 4 x 10 = 40M

SECTION-A

1. Describe the molecular structure of striated muscle and explain muscle contraction with the sliding filament theory.
(OR)
2. Explain synaptic transmission of nerve impulse.
3. Define osmoregulation. Give an account of osmoregulation in different animals.
(OR)
4. Write an essay on thermoregulation with suitable examples.
5. What are the enzymes involved in the process of digestion, and how are carbohydrates absorbed?
(OR)
6. Write about the various respiratory organs in vertebrates and invertebrates.
7. Write a brief note on the physiological adaptations to the marine environment.
(OR)
8. Describe the physiological adaptations in the terrestrial environment.

SECTION-B

Answer any FOUR of the following: 4 x 5 = 20M

9. Action potential
10. Nerve structure
11. Blood clotting
12. Chloride shift
13. Hibernation and aestivation
14. Yoga and meditation
15. Chemoreceptors
16. Osmosis

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M.Sc. ZOOLOGY

I SEMESTER - 2024-25 MODEL

QUESTION PAPER: PAPER-II

SEC-1 (A) TOOLS, TECHNIQUES & RESEARCH BIOLOGY

TIME: 3 Hrs

MAX MARKS: 60 M

Answer ALL questions.

All questions carry equal marks

4 x 10 = 40 M

SECTION-A

Describe the principles and applications of spectrophotometer.

(OR)

2. Describe various types of chromatographic techniques to separate molecules.
3. Write the principles and types of microscopy and elaborate on dark field microscopy.

(OR)

4. Describe the process of inoculation and growth monitoring.
5. Write an essay on laboratory facilities required for cell cultures.

(OR)

6. Give an account of various culture media required for the growth of animal cells.
7. Define research. Explain its applications and its importance.

(OR)

8. Describe data collection methods for primary data: observation and experiments.

SECTION-B

Answer any FOUR of the following

9. pH meter

4 x 5 = 20 M

10. Density gradient centrifugation
11. Biochemical mutants and their uses
12. Feeder layer
13. Secondary data
14. Field study
15. Substrate on which cell
16. Auto radiography

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM
M.Sc. ZOOLOGY IV SEMESTER

SEC-2 METABOLIC CELL FUNCTION AND REGULATION

Time: 3 hours

Max. Marks: 60M

Answer ALL questions. All questions carry equal marks.

Section-A

4X10=40M

1. Describe the thermodynamic principles suitable for living organisms.

(OR)

2. Write notes on degradation of glucose.

3. Explain the electron transport chain in mitochondria.

(OR)

4. Explain the biosynthesis of prostaglandins.

5. Write an account on classification and nomenclature of enzymes.

(OR)

6. Discuss on the metabolic profile of neural tissue.

7. Explain the process of immobilization of enzymes.

(OR)

8. What is metabolic engineering? Elaborate.

Section-B

Answer any FOUR of the following: 4X5=20M

9. Methods to study metabolism.

10. Oxidative phosphorylation.

11. Kinetic analysis of enzymes.

12. Degradation of palmitic acid.

13. Metabolic profile of tissue.

15.Applications of immobilized enzymes.

16. Redox potential

17.Oleic acid