

**S. V. K. P. & Dr. K. S. RAJU ARTS & SCIENCE
COLLEGE (AUTONOMOUS)**

Accredited by NAAC with grade 'A'
Recognized by UGC as "College with Potential for Excellence"

PENUGONDA-534320,

W. G. Dist., A.P.

(Affiliated to Adikavi Nannaya University)



M.Sc. Zoology

Model Papers

**BOARD OF STUDIES OF
P. G. DEPARTMENT OF ZOOLOGY**

2019-2020

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M.Sc Zoology - I Semester

Model Question Paper: Paper - I

19ZOOT11 Tools and Techniques for Biology

Time: 3 hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) What is an assay? Explain different types of assays.
(OR)
b) Write the principle and types of microscopy and elaborate on dark field microscopy.
2. a) Describe the principle and applications of centrifuges with an emphasis on ultracentrifuge.
(OR)
b) Describe various types of chromatographic techniques to separate molecules.
3. a) Describe the principle and applications of spectrophotometer.
(OR)
b) What is autoradiography? Give an account on its biological applications.
4. a) Describe the process of inoculation and growth monitoring.
(OR)
b) Explain in detail about microbial assays.

Section-B

3X5=15

5. Answer any THREE of the following:

- a) pH meter.
- b) Biochemical mutants and their uses.
- c) TLC.
- d) Spectrofluorimetry.
- e) Density gradient centrifugation.

f) Treatment of substrate surfaces.

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Model Question Paper: Paper - II

19ZOOT12 Biosystematics, Biodiversity & Evolution

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) Define Biosystematics. Explain in detail the importance and applications of Biosystematics
(OR)
b) Discuss about the different taxonomic procedures.
2. a) Discuss in detail about the origin of basic biological molecules.
(OR)
b) Explain about the evolution of eukaryotic genome
3. a) What is the three domain concept of living kingdom. Discuss
(OR)
b) What is Speciation. Explain the mechanism involved in speciation.
4. a) Discuss in detail about the theories of Organic Evolution.
(OR)
b) What is Hardy Weinberg Law. Discuss.

Section-B

3X5=15

5. Answer any THREE of the following:

- a) Chemotaxonomy.
- b) ICZN.
- c) Molecular Clocks.
- d) Eras.
- e) Subspecies.
- f) Hierarchy of categories.

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Model Question Paper: Paper - III

19ZOOT13 Biomolecules

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) Describe the structure, classification and properties of amino acids.
(OR)
b) Explain about structural characterization of proteins.
2. a) Write about the classification, structure, properties and functions of monosaccharides.
(OR)
b) Explain about polysaccharides and their occurrence in nature.
3. a) Discuss about the classification, structures, properties and biological functions of fatty acids.
(OR)
b) Explain about phospholipids, sphingolipids, prostaglandins, and steroids with their biological role.
4. a) Explain about the structure, types and physicochemical properties of Nucleic acids.
(OR)
b) Write in detail about RNA and its functions.

Section-B

3X5=15

5. Answer any THREE of the following:

- a) Peptide bond.
- b) Glycoproteins.
- c) fatty acids.
- d) Chitin.

- e) Ramachandran plot.
- f) Leukotrienes.

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Model Question Paper: Paper - IV

19ZOOT14 Molecular Cell Biology

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) Describe in detail about the transport across the cell membrane.
(OR)
b) Explain the transport of macromolecules across the epithelial layer.
2. a) Explain the role of cytoskeletal elements in defining the structure of a cell.
(OR)
b) Enumerate the role of cytoskeletal elements in mitosis.
3. a) Write in detail about cell adhesion and communication mechanisms.
(OR)
b) Elaborate on the second messenger system in cell signaling.
4. a) Cyclins and cyclin dependent kinases regulate cell cycle, Justify.
(OR)
b) Describe various post-translational mechanisms in protein synthesis.

Section-B

3X5=15

5. Answer any THREE of the following
 - a) Membrane potential.
 - b) Cilia and flagella.
 - c) Integrins and collagen.
 - d) Chromosomal organization of genes.
 - e) Mobile DNA.
 - f) Symporters and antiports.

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Model Question Paper: Paper - I

19ZOOT21 Biostatistics and Bio-informatics

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) What is Sampling. Discuss
(OR)
b) Discuss in detail about the Measures of Central tendency.
2. a) Explain in detail about the bivariate analysis.
(OR)
b) What is test of significance. Discuss in detail.
3. a) Describe about the Basic components of the Computer.
(OR)
b) Explain the use of MS excel in for data presentation.
4. a) What are biological databases? Explain.
(OR)
b. Discuss in detail about sequence alignments.

Section-B

3X5=15

5. Answer any THREE of the following
 - a) Frequency distribution.
 - b) Chisquare test.
 - c) MS word.
 - d) Power point.
 - e) Genomics.
 - f) Phylogenetic analysis.

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Model Question Paper: Paper - II

19ZOOT22 Animal Physiology

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) Write briefly molecular structure and properties of muscle, Add note on sliding filament theory.
(OR)
b) Write about haemopoiesis, Haemoglobin, and haemostasis. Add note on factors affecting blood coagulation.
2. a) Write about osmoregulation in aquatic Environments.
(OR)
b) Write about response to biotic and abiotic factors.
3. a) Write about the comparative physiology of excretion, Urine formation, Urine concentration, and waste elimination.
(OR)
b) Write about comparative anatomy of heart structure, myogenic heart. Add a note on blood pressure.
4. a) Write about photoreceptors, Auditory, Mechanoreceptors.
(OR)
b) Explain fresh water and terrestrial environment.

Section-B

3X5=15

5. Answer any THREE of the following:
 - a) Synaptic transmission & Neurotransmitters.
 - b) Neural control of muscle tone and posture.
 - c) Chemoreceptor.
 - d) Acclimatization.
 - e) BMR.
 - f) ECG.

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Model Question Paper: Paper - III

19ZOOT23 Immunology

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) What is innate immunity? Describe various innate immune mechanisms.
(OR)
b) Describe the structure and functions of various types of immunoglobulins.
2. a) Write an essay on antigen-antibody interactions.
(OR)
b) What are the cells involved in immune response? Describe their role.
3. a) Elucidate the mechanisms of antibody response to antigens.
(OR)
b) Write about Classical and alternative activation of complement.
4. a) What is immune tolerance? Elucidate the mechanisms of tolerance in T and B cells.
(OR)
b) Write an essay on immunological tests used in molecular and diagnostic laboratories.

Section-B

3X5=15

5. Answer any FIVE of the following:

- a) Acquired immunity.
- b) Haptens.
- c) Antigen presenting cells.
- d) Cytotoxic T-cells.
- e) Antigen receptors.
- f) ELISA.

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Model Question Paper: Paper - IV

19ZOOT24 Molecular Biology

Time: 3hours

Max. Marks: 75

Answer ALL questions. All questions carry equal marks

Section-A

4X15=60

1. a) Explain the prokaryotic and eukaryotic DNA replication.
(OR)
b) Explain the mechanics of DNA replication.
2. a) Explain the post transcription in prokaryote and eukaryotic transcription.
(OR)
b) Explain the post transcriptional modifications in RNA.
3. a) Explain the mechanisms of prokaryotic and eukaryotic translation.
(OR)
b) Explain the molecular mechanism of the antisense molecules and add a note on inhibition of splicing.
4. a) Write about gene targeting and DNA repair.
(OR)
b) Explain the types of mapping and molecular mapping of genome.

Section-B

3X5=15

5. Answer any FIVE of the following:
 - a) Enzymes involved in DNA replication.
 - b) RNA polymerases.
 - c) FISH.
 - d) Necessary proteins involved in DNA replication.
 - e) Genetic map.
 - f) Cap formation in post-translational modifications.