KSN GOVERNMENT DEGREE COLLEGE FOR WOMEN

(AUTONOMOUS)

ANANTHAPURAMU

(Affiliated to Sri Krishnadevaraya University, Ananthapuramu)

Reaccredited by NAAC at "A" Grade

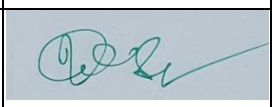
BOARD OF STUDIES IN ZOOLOGY

2023 – 2024

II SEMESTER

Consolidated Report of Board of Studies for the Academic Year 2022-2023

Board of studies meeting is convened on **10 October 2023** under the chairmanship of Dr. SRK. Neeraja to approve the syllabus crafted for the Undergraduate Course featuring **Zoology as a Major & Minor,** along with various multidisciplinary courses and **Pathway Courses** for **Semester I and II of the 2023-24 academic year**. The following individuals are listed as members.

S No	Name	Mail id & Mobile number	Signature
1	Dr. SRK. Neeraja Lecturer in Charge Department of Zoology KSN. Govt. Degree College for Women (A) Ananthapuramu.	BOS Chairman 9441664772 neerajaram09@gmail.com	
2	B. Jameela Beebi Lecturer in Zoology Govt. Degree College Guntakal.	University Nominee 9849704477 bjameela71@gmail.com	
3.	Dr. P. Ravisekhar Lecturer in Zoology Govt. College for Men (A) Kadapa.	Subject Expert 944168966 pesala1980@gmail.com	
4	Dr. R. Kamli Naik Lecturer in Zoology Govt. Degree College(M) Kurnool.	Subject Expert 9652208402 kamlinaikr@gmail.com	
5	Dr. G. Prasanthi Deputy Superintendent Super specialty Hospital Ananthapuramu.	Representative from Allied area drprashanthi@gmail.com	
8	M. Anusha Lecturer in Zoology	Faculty Member 8096140525 nithyaanu89@gmail.com	
6	Kum. D. Indraja	UG Alumni 7569752701 indraja@gamil.com	

Agenda of Board of Studies Meeting

1. Stakeholder Feedback on Syllabus:

Receive and review feedback from stakeholders regarding the proposed syllabus changes, considering input from students, faculty, and relevant departments.

2. Approval of Syllabus for UG I BSc Course with Zoology as Major & Minor

Deliberate on and grant approval for the updated syllabus designed for theUndergraduate Bachelor of Science Course with a major in Zoology.

3. Approval of College-Level Multidisciplinary Courses & Pathway courses for biology stream

Evaluate and endorse the list of multidisciplinary courses proposed at the college level, ensuring alignment with academic objectives and standards.

4. Approval of Question Paper Blueprint for Examinations:

Review and approve the question paper blueprint for mid-internal and end- semester examinations, ensuring balanced coverage of topics and appropriate difficulty levels.

5. Approval of Continuous Internal Evaluation and Assessment Pattern:

Discuss and grant approval for the continuous internal evaluation and assessmentpattern as per the Standard Operating Procedure issued by the CCE AP.

6. Approval of Even and Odd Semester Practical Examination Patterns:

Consider and approve the proposed patterns for practical examinations in both even and odd semesters, ensuring they adhere to the curriculum's practical learning objectives.

7. Approval of Panel of Examiners:

Evaluate and endorse the panel of examiners for various courses, considering their expertise and experience in the respective fields.

8. Approval of Panel of Question Paper Setters:

Review and grant approval for the panel of question paper setters, ensuring theypossess the necessary subject knowledge and understanding of examinationstandards.

9. Approval of Community Service Project Pattern:

Deliberate on and approve the proposed pattern for the Community Service Project, ensuring that it aligns with the institution's mission and provides valuable learning experiences.

10. Approval of Internship Evaluation Process:

Discuss and grant approval for the evaluation process of internships, ensuring that it effectively assesses student's practical skills and knowledge gained duringtheir internships.

11. Approval of Add-On Courses:

Consider and approve the proposed add-on courses, ensuring they complement the core curriculum and offer additional value to the students.

Course Frame work for I Semester is as follows

Languages	English/Telugu/Sanskrit/Hindi
Multi-Disciplinary Courses (Any One) Note: Students are not allowed to choose the courses already undergone at Intermediate level	Principles of Biological Sciences Principles of Chemical Sciences Principles of Physical Sciences Introduction to Social Work Principles of Psychology Indian History
Pathway Courses	Introduction to Classical Biology Introduction to Applied Biology

Zoology Major Proposed Titles

Proposed titles for Zoology Major & Minor for the semester II for the academicyear 2023-24 are

Semester	Major Course Title	Minor Course title
II	PAPER 3: ANIMAL DIVERSITY-I **BIOLOGY OF NON-CHORDATES** PAPER 4: **CELL AND MOLECULAR BIOLOGY**	PAPER 1. ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f: 2023-24

ZOOLOGY SYLLABUS–SEMESTER-II

PAPER – 3: ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES

HOURS: 45 Max.Marks:100

Learning objectives:

- To understand the taxonomic position of protozoa to helminthes.
- To understand the general characteristics of animals belonging to protozoa to hemichordata.
- To understand the structural organization of animals phylum from protozoa to hemichordata.
- To understand the origin and evolutionary relationship of different phylafrom protozoa to hemichordata.
- To understand the origin and evolutionary relationship of different phylumfrom annelids to hemichordates.

Learning Outcomes

By the completion of the course the graduate should be able to

- Describe concept of animal kingdom classification and general characters ofProtozoa
- Classify Porifera and Coelenterata with taxonomic keys
- Classify Phylum Platy&Nemathelminthes using examples, parasitic adaptation
- Describe Phylum Annelida & Arthropoda using examples and economic importance of vermicomposting & economic importance of insects.
- Describe Mollusca, Echinodermata &Hemichordata with suitable examples inrelation to the phylogeny

UNIT-I

Protozoa General Characters and classification up to classes with suitableexamples
Protozoa Locomotion & nutrition
Protozoa reproduction
Economic importance of Protozoa

Activity: Assignment /Seminar on the above

Evaluation: Marks to be awarded for written and oral presentations

UNIT–II

Porifera General characters and classification up to classes with suitableexamples
Canal system in sponges
Coelenterata General characters and classification up to classes withsuitable examples
Polymorphism in coelenterates & Corals and coral reefs
Impact of water pollution on coral formation

Activity:
Assignment /Seminar /Quiz/Project on the above
Evaluation: Evaluation of Written part + Evaluation of oral Presentation, Assessment of students in Quiz participation and Ranking- Evaluation of ProjectReport and oral presentation

UNIT– III

Platyhelminthes General characters and classification up to classes withsuitable examples
Parasitic Adaptations in helminthes
Nemathelminthes General characters and classification up to classes withsuitable examples
Lifecycle and pathogenicity of Ascaris lumbricoides
Brief report on Helminths and Human diseases

Activity:
Assignment /Seminar /Quiz/Project/Peer teaching on the above
Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluationof the above activity

UNIT– IV

Annelida General characters and classification up to classes with suitableexamples.

Vermiculture - Scope, significance, earthworm species, processing,

Vermicompost, Economic importance of vermicompost

Arthropoda General characters and classification up to classes with suitableexamples

Peripatus-Structure and affinities

Metamorphosis in Insects.

Activity:
Assignment /Seminar /Quiz/Project/Peer teaching on the above
Evaluation:
Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity.

UNIT– V

Mollusca General characters and classification up to classes with suitableexamples
Pearl formation in Pelecypoda
Echinodermata General characters and classification up to classes withsuitable examples- Water vascular system in starfish
Hemichordata General characters and classification up to classes withsuitable examples Balanoglossus-Structure and affinities
Autotomy and regeneration in Echinoderms.

Activity: Assignment /Seminar /Quiz/Project/Peer teaching on the above
Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluationof the above activity

Co-curricular activities (suggested)

- Preparation of chart/model of phylogenic tree of life and 5-kingdom classification
- Visit to Zoology Museum or Coral Island as part of Zoological tour
- Charts on polymorphism
- Clay models of canal system in sponges
- Plaster-of-Paris model of Peripatus
- Construction of a vermicompost in each college, manufacture of manureby students and donating to local farmers
- Charton pearl forming layers using clay
- Visit to a pearl culture rearing industry /institute
- Live model of water vascular system
- Observation of Balanoglossus for its tubicolous habit

Reference books:

- L.H.Hyman The Invertebrates Vol I, II and V.–McGraw-Hill Company Ltd.
- Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
- E.L.Jordan and P.S.Verma„ Invertebrate Zoology S.Chand and Company.
- R.D.Barnes„ Invertebrate Zoology'by:W.B.SaundersCO.,1986.
- Barrington.E.J.W.,„Invertebrate structure and Function by ELBS
- P.S.Dhami and J.K. Dhami. Invertebrate Zoology. S.Chand and Co. NewDelhi.
- Parker,T.J.and Haswell„ Atext book of Zoology by W.A.MacMillan Co.London.
- Barnes,R.D.(1982).Invertebrate Zoology, V Edition

PAPER-3: ANIMALDIVERSITY-BIOLOGY OF NON-CHORDATES

PRACTICAL SYLLABUS

Periods:30 **Max.Marks:50**

Learning Objectives:

To understand the importance of preservation of museum specimensTo

identify animals based on special identifying characters

To understand different organ systems through demo or virtual dissectionsTo maintain

a neat, labelled record of identified museum specimens

Study of museum slides/specimens/ models (Classification of animals up toorders)

Protozoa : Amoeba, Paramoecium, Paramoecium Binary fission and Conjugation,

Vorticella, Entamoeba histolytica, Plasmodium vivax

Porifera : Sycon, Spongilla, Euspongia, Sycon- T.S & L.S, Spicules, Gemmule

Coelenterata: Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula

Platyhelminthes: Planaria, Fasciola hepatica, Fasciola larval forms – Miracidium,Redia, Cercaria, Echinococcus granulosus, Taenia solium, Schistosoma haematobium

Nemathelminths: Ascaris (Male & Female), Drancunculus, Ancylostoma, Wuchereria

Annelida: Nereis, Aphrodite, Chaetopteurs, Hirudinaria, Trochophore larva

Arthropoda: Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus,

Larvae - Nauplius, Mysis, Zoea, Mouth parts of male &female Anopheles andCulex, Mouthparts of Housefly and Butterfly.

Mollusca: Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus,

Glochidiumlarva

Echinodermata: Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, AntedonDissections:

Computer-aided techniques should be adopted or show virtual dissections
Dissection of edible

(Prawn/Pila) invertebrate as per UGC guidelines

An “Animal album” containing photographs, cut outs, with appropriate write up

about the above mentioned taxa. Different taxa/topics may be given to different sets of students for this purpose

RFERENCE WEB LINKS:

https://virtualmicroscopy.peabody.yale.edu/

https://tnhm.in/category/assorted-gallery-for-vertebrates-and-invetebrates/invertebrates/

http://www.nhc.ed.ac.uk/index.php?page=24.25.312

https://biologyjunction.com/invertebrate-notes/

https://lanwebs.lander.edu/faculty/rsfox/invertebrates/

http://www.zoologyresources.com/uploadfiles/books/dc64b77d8769325515d17 c945e461b45.pdf

ZOOLOGY-SEMESTER-II

PAPER–4: CELL AND MOLECULAR BIOLOGY
THEORY SYLLABUS

UNIT–I: Cell Biology-I

Definition, history, prokaryotic and eukaryotic cells, virus, viroids,mycoplasma.
Electron microscopic structure of animal cell.
Plasma membrane–Models and Fluid mosaic model
Transport functions of plasma membrane-Active – passive- facilitated.
Foldscope and its utility in the biological world.

Activity:
Model preparation of cell/Assignment /Students Seminar /Quiz/Project/Peer teaching on the above

Evaluation:
Instructor supposed to prepare a detailed Rubrics for the evaluation of the above activity

UNIT–II: Cell Biology-II

Structure and functions of Golgi complex & Endoplasmic Reticulum

Structure and functions of Lysosomes & Ribosomes

Structure and functions of Mitochondria & Centriole

Structure and functions of Nucleus & Chromosomes

Role of cell organelles in aging.

Activity:
Model preparation of cell organelles/Assignment /Students Seminar/Quiz/Project/Peer teaching on the above.

Evaluation:
Instructor supposed to prepare a detailed Rubrics for the evaluation of theabove activity

UNIT–III: Cell Biology-III

Cell Division- mitosis, meiosis

Cell cycle – stages- check points- regulation

Abnormal cell growth- cancer- apoptosis

Bio energetics- Glycolysis-Krebs cycle-ETS

Synthetic Biology Approaches in Controlling Cell Division.

Activity:
Model preparation cell division /Assignment /Students Seminar /Quiz/Project/Peer teaching/Report writing after watching any video on theabove
Evaluation:
Instructor supposed to prepare a detailed Rubrics for the evaluation of theabove activity

UNIT IV: Molecular Biology-I

Central Dogma of Molecular Biology
Basic concepts of-DNA replication–Overview(Semi-conservative mechanism,Semi-discontinuous mode, Origin & Propagation of replication fork)
Transcription in prokaryotes–Initiation, Elongation and Termination, Post-transcriptional modifications (basics)
Translation– Initiation, Elongation and Termination
Basic concept of cell-Free Synthetic Biology

Activity:
Model preparation of DNA/Assignment /Students Seminar /Quiz/Project/Peer teaching/Report writing after watching any video on the above
Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluationof the above activity

UNIT V: Molecular Biology-II

Gene Expression in prokaryotes (Lac Operon); Gene Expression in eukaryotes
Biomolecules- Carbohydrates (Glucose- structure-properties- biologicalimportance only)
Biomolecules- Protein (Amino acid- structure- properties- biologicalimportance only)
Biomolecules- Lipids (Fatty acid- structure - properties- biologicalimportance only)
Chaperones and Protein Folding Assistants.

Activity:
Assignment /Students Seminar /Quiz/Project/Peer teaching/Report writingafter watching any video on the above
Evaluation:
Instructor supposed to prepare a detailed Rubrics for the evaluation of theabove activity.

Co-curricular activities (Suggested)

- Model of animal cell
- Working model of mitochondria to encourage creativity among students
- Photo album of scientists of cell biology
- Charts on plasma membrane models/cell organelles
- Charts on central dogma/lac operon/genetic code
- Model of semi-conservative model of DNA replication
- Power point presentation of any of the above topics by students

REFERENCES:

- Lodish, Berk, Zipursky,Matsudaria, Baltimore, Darnell, MolecularCellBiology"W.H.F reeman and company New York.
- Cell Biology by DeRobertis
- Bruce Alberts, Molecular Biology of the Cell
- Rastogi, Cytology
- Varma & Aggarwal, Cell Biology
- C.B.Pawar, Cell Biology
- Molecular Biology by Freifielder
- Instant Notes in Molecular Biology by Bios scientific publishers and VivaBooks Private Limited
- James D.Watson, Nancy H.Hopkins„ Molecular Biology of the Gene"

AP STATE COUNCIL OF HIGHER EDUCATION w.e.f.2023-24
ZOOLOGY-SEMESTER-II

PAPER–4: CELL AND MOLECULAR BIOLOGY

PRACTICAL SYLLABUS

Periods:30 Max.Marks:50

Learning Objectives:

Acquainting and skill enhancement in the usage of laboratory microscope Hands-on experience of different phases of cell division by experimentation

Develop skills on human karyotyping and identification of chromosomal disordersTo apply the basic concept of inheritance or applied research

To get familiar with phylogeny and geological history of origin & evolution of animals

Cell and molecular Biology

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis with prepared slides
3. Observation of various stages of Meiosis with prepared slides
4. Mounting of salivary gland chromosomes of Chironomus
5. Test for carbohydrate in given biological sample (Benedict's test)
6. Test for Protein in given biological sample (Nitric acid test -white ring)
7. Test for lipid in the given biological sample (Saponification test)

RFERENCE WEB LINKS:

https://cbi-au.vlabs.ac.in/

https://www.youtube.com/watch?v=xhnUZAyNdQk

https://www.youtube.com/watch?v=l8LXQg5_VL0

https://www.labster.com/simulations

https://www.sciencecourseware.org/BiologyLabsOnline/protected/TranslationLa b/index.php

https://virtual-labs.github.io/exp-analysis-of-carbohydrates-au/procedure.html

https://www.labxchange.org/library/items/lb:LabXchange:f10fd7ad:lx_simulati on:

http://www.zoologyresources.com/uploadfiles/books/dc64b77d8769325515d17 c945e461b45.pdf

ZOOLOGY MAJOR AND MINOR

Suggestions made by the subject Experts of Board of Studies

Topics deleted

S No	Unit	Name of the topic deleted
1	1	Whittaker five kingdom classification

Newly Added Topics to the Syllabus in Paper III

S No	Unit	Name of the topic
1	1.5	Economic importance of Protozoa
2	2.5	Impact of water pollution on coral formation
3	3.5	Brief report on Helminths and Human diseases
4	4.5	Metamorphosis in Insects
5	5.5	Autotomy and Regeneration in Echinoderms

Newly Added Topics to the Syllabus in Paper IV

S No	Unit	Name of the topic
1	1.5	Foldscope and its utility in the biological world
2	2.5	Role of cell organelles in aging
3	3.5	Synthetic Biology Approaches in Controlling Cell Division
4	4.5	Basic concept of cell-Free Synthetic Biology
5	5.5	Chaperones and Protein Folding Assistants

Zoology as Minor

S No	Semester	Course	Title of the course	No. of hours /week	No. of credits
1	II	BSc Zoology as Minor	Animal Diversity-I Biology of Non Chordates – Theory	3	3
			Animal Diversity-I Biology of Non Chordates – Practical	2	1

SEMESTER-II

COURSE 1: ANIMAL DIVERSITY- I. BIOLOGY OF NON-CHORDATES

Theory

Credits: 3 3hrs/week

LEARNING OBJECTIVES:

- To understand the taxonomic position of protozoa to helminthes.
- To understand the general characteristics of animals belonging to protozoa to hemichordata.
- To understand the structural organization of animals phylum from protozoa tohemi Chordata.
- To understand the origin and evolutionary relationship of different phyla fromprotozoa to hemichordata.
- To understand the origin and evolutionary relationship of different phylum fromannelids to hemichordates.

LEARNING OUTCOMES:

By the completion of the course the graduate should able to –

- Describe concept of animal kingdom classification and general characters ofProtozoa
- Classify Porifera and Coelenterata with taxonomic keys
- Classify Phylum Platy & Nemathelminthes using examples, parasitic adaptation
- Describe Phylum Annelida & Arthropoda using examples and economic importanceof vermicomposting & economic importance of insects.
- Describe Mollusca, Echinodermata & Hemichordata with suitable examples inrelation to the phylogeny.

UNIT-I

Protozoa General Characters and classification up to classes with suitableexamples

Protozoa Locomotion & nutrition

Protozoa reproduction.

Economic importance of Protozoa

Activity:

Assignment /Seminar on the above

Evaluation:

Marks to be awarded for written and oral presentations

UNIT –II

Porifera General characters and classification up to classes with suitableexamples

Canal system in sponges

Coelenterata General characters and classification up to classes with suitableexamples

Polymorphism in coelenterates & Corals and coral reefs.

Impact of Water pollution coral formation.

Activity:

Assignment /Seminar /Quiz/Project on the above

Evaluation:

Evaluation of Written part + Evaluation of oral Presentation, Assessment of students in Quiz participation and Ranking - Evaluation of Project Report and oralpresentation

UNIT – III

Platyhelminthes General characters and classification up to classes withsuitable examples

Parasitic Adaptations in helminthes

Nemathelminthes General characters and classification up to classes withsuitable examples.

Life cycle and pathogenicity of Ascaris lumbricoides.

Brief report on Helminths and Human diseases.

Activity:Assignment /Seminar /Quiz/Project/Peer teaching on the aboveEvaluation:

Instructor supposed to prepare a detailed Rubrics for the evaluationof the above activity.

UNIT – IV

Annelida General characters and classification up to classes with suitableexamples

Vermiculture - Scope, significance, earthworm species, processing,Vermicompost, economic importance of vermicompost

Arthropoda General characters and classification up to classes with suitableexamples

Peripatus - Structure and affinities.

Metamorphosis in Insects.

Activity: Assignment /Seminar /Quiz/Project/Peer teaching on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluation of theabove activity

UNIT – V

Mollusca General characters and classification up to classes with suitableexamples

Pearl formation in Pelecypoda.

Echinodermata General characters and classification up to classes with suitable examples.

Water vascular system in star fish.

Hemichordata General Characters and classification up to classes withsuitable examples.

Balanoglossus - Structure and affinities.

Autotomy and Regeneration in Echinoderms.

Activity: Assignment /Seminar /Quiz/Project/Peer teaching on the above

Evaluation: Instructor supposed to prepare a detailed Rubrics for the evaluationof the above activity

Co-curricular activities (suggested)

- Preparation of chart/model of phylogenic tree of life, 5-kingdom classification
- Visit to Zoology Museum or Coral Island as part of Zoological tour
- Charts on polymorphism
- Clay models of canal system in sponges
- Plaster-of-Paris model of Peripatus

- Construction of a vermicompost in each college, manufacture of manure bystudents and donating to local farmers
- Chart on pearl forming layers using clay
- Visit to a pearl culture rearing industry/institute
- Live model of water vascular system
- Observation of Balanoglossus for its tubicolous habit.

REFERENCE BOOKS:

- L.H. Hyman „The Invertebrates' Vol I, II and V. – M.C. Graw Hill Company Ltd.
- Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
- E.L. Jordan and P.S. Verma „Invertebrate Zoology' S. Chand and Company.
- R.D. Barnes „Invertebrate Zoology' by: W.B. Saunders CO., 1986.
- Barrington. E.J.W., „Invertebrate structure and Function' by ELBS.
- P.S. Dhami and J.K. Dhami. Invertebrate Zoology. S. Chand and Co. New Delhi.
- Parker, T.J. and Haswell„A text book of Zoology' by, W.A., Mac MillanCo. London.
- Barnes, R.D. (1982). Invertebrate Zoology, V Edition"

SEMESTER-II

COURSE 1: ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES

Practical

Credits: 1 **2 hrs/week**

LEARNING OBJECTIVES

- To understand the importance of preservation of museum specimens
- To identify animals based on special identifying characters
- To understand different organ systems through demo or virtual dissections
- To maintain a neat, labelled record of identified museum specimens

SYLLABUS

Study of museum slides / specimens / models (Classification of animals up toorders)

- Protozoa: Amoeba, Paramoecium, Paramoecium Binary fission and Conjugation, Vorticella, Entamoeba histolytica, Plasmodium vivax
- Porifera: Sycon, Spongilla, Euspongia, Sycon- T.S & L.S, Spicules, Gemmule
- Coelenterata: Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula
- Platyhelminthes: Planaria, Fasciola hepatica, Fasciola larval forms – Miracidium,Redia, Cercaria, Echinococcus granulosus, Taenia solium, Schistosoma haematobium
- Nemathelminths: Ascaris (Male & Female), Drancunculus, Ancylostoma, Wuchereria
- Annelida: Nereis, Aphrodite, Chaetopteurs, Hirudinaria, Trochophore larva
- Arthropoda: Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus, Larvae – Nauplius, Mysis, Zoea, Mouth parts of male &female Anopheles and Culex, Mouthparts of Housefly and Butterfly.
- Mollusca: Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus, Glochidium larva
- Echinodermata: Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria,Antedon, Bipinnaria larva
- Hemichordata: Balanoglossus, Tornaria larva Dissections: Computer - aided techniques should be adopted or show virtual dissections Dissection of edible(Prawn/Pila) invertebrate as per UGC guidelines An “Animal album” containingphotographs, cut outs,

with appropriate write up about the abovementioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

RFERENCE WEB LINKS:

- https://virtualmicroscopy.peabody.yale.edu/
- https://tnhm.in/category/assorted-gallery-for-vertebrates-and-invetebrates/invertebrates/
- http://www.nhc.ed.ac.uk/index.php?page=24.25.312
- https://biologyjunction.com/invertebrate-notes/
- https://lanwebs.lander.edu/faculty/rsfox/invertebrates/
- http://www.zoologyresources.com/uploadfiles/books/dc64b77d8769325515d17c945e461b45.pdf

BLUE PRINT FOR MODEL QUESTION PAPER

W.e.f: 2023-2024

SEMESTER END EXAMINATION-I

Time : 2½ hr **Max. Marks: 60**

Section-A

Answer any FIVE out of the following 5 x 4M = 20 Marks

S No	Unit wise weightage
1	Short Answer Question from Unit-I
2	Short answer question from Unit - II
3	Short Answer Question from Unit-III
4	Short Answer Question from Unit-IV
5	Short Answer Question from Unit- V
6	Short Answer Question from Unit- I or II
7	Short Answer Question from Unit- III or IV
8	Short Answer Question from Unit- V

Section-B

Answer any FIVE out of the following 5 x 8M = 40 Marks

S.NO	Unit wise internal choice weightage
9a	Essay Question from Unit-I (or)
9b	Essay Question from Unit-I
10a	Essay Question from Unit-II (or)
10b	Essay Question from Unit-II
11a	Essay Question from Unit-III (or)
11b	Essay Question from Unit- III
12a	Essay Question from Unit- IV (or)
12b	Essay Question from Unit- IV
13a	Essay Question from Unit-V (or)
13b	Essay question from Unit- V

Recommended Format for Question Paper

Single Major Zoology For both paper III & IV

Time: 3 Hours *[Max. Marks :60]*

Section-A

Answer any FIVE of the following questions. [5X4=20]

1 Contents of Unit-I

2 Contents of Unit-II

3 Contents of Unit-III

4 Contents of Unit-IV

5 Contents of Unit-V

6 Contents of Unit-I to Unit II

7 Contents of Unit-III to Unit IV

8 Contents of Unit-IV to Unit V

Section-B [5X8=40]

Answer FIVE questions

9 a Contents of Unit-I

(OR)

9b Contents of Unit-I

10 a	Contents of Unit-II	
	(OR)	
10 b	Contents of Unit-II	
11 a	Contents of Unit-III	
	(OR)	
11 b	Contents of Unit-III	
12 a	Contents of Unit-IV	
	(OR)	
12 b	Contents of Unit-IV	
13 a	Contents of Unit-V	
	(OR)	
13 b	Contents of Unit-V	

KSN Govt. Degree College for Women (A) Ananthapuramu

B Sc Zoology II Semester Examination

Paper III: ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES

Time: 2 1/2Hours *[Max. Marks :60]*

Section-A

Answer any FIVE of the following questions. [5X4=20]

1 Add a short note on binary fission

2 Describe the impact of water pollution on coral formation

3 List out the parasitic adaptations of helminthes

4 Write briefly about the affinities of Peripatus

5 Describe Hirudinea

6 Write a short note on Cephalopoda

7 Describe the pathogenicity of Ascaris

8 Describe holozoic nutrition

Section-B [5X8=40]

Answer FIVE questions

9 a Write an essay on the economic importance of Protozoa

(OR)

9 b Describe about reproduction in protozoa

10 a Write an essay on canal system of sponges

(OR)

10 b Describe polymorphism in coelenterates

11 a List out the general characters of Platyhelminthes

(OR)

11 b Write an essay on the classification of Nemathelminthes

12 a Write an essay on metamorphosis in insects

(OR)

12 b Describe vermiculture process

13 a Write an essay on pearl formation

(OR)

13 b Describe the general characters of Echinodermata

KSN Govt. Degree College for Women (A) Ananthapuramu

B Sc Zoology II Semester Examination

Paper IV : CELL AND MOLECULAR BIOLOGY

Time: 2 1/2 Hours *[Max. Marks :60]*

Section-A

Answer any FIVE of the following questions. [5X4=20]

1 Describe animal cell

2 Write a short note on functions of Golgi complex

3 Add a note on apoptosis

4 Add a note on central dogma of molecular biology

5 Describe the structure of fatty acids

6 Add a note on significance of replication fork

7 Describe glycolysis

8 Draw a labelled diagram of mitochondria

Section-B [5X8=40]

Answer FIVE questions

9 a Write an essay on foldscope and its utility in biological world

(OR)

9 b Describe the transport functions Plasma membrane

10 a Describe different types of chromosomes

(OR)

10 b Describe the structure and functions of lysosome

11 a List out the differences between mitosis and meiosis

(OR)

11 b Write an essay on cell cycle

12 a Describe the basic concept of cell-Free Synthetic Biology

(OR)

12 b Describe the transcription in prokaryotes

13 a Write an essay on Lac Operon concept

(OR)

13 b Write an essay Chaperones and Protein Folding Assistants

B.Sc Zoology

Zoology as Major

Mid I Question paper

The question paper consists of three sections. Total=20 Marks

Section-A

S.NO	Unit	Level in Blooms taxonomy	Sample Question
1	I	Understand	List out the general characters of Protozoa
2	II	Understand	Describe the canal system in sponges
3	III	Understand	Write a short note on parasitic adaptations

Answer any one of the following questions. 1x5=5

Section-B

Answer any five of the following questions. 5x2=10

S.NO	Unit	Level in Blooms taxonomy	Sample Question
1	I	Understand	Discuss the economic significance of Protozoans
2	I	Apply/ Analyse	Why marine protozoans lack contractile vacuole?
3	I or II	Understand	Why sedentary sponges have free swimming larval stages?
4	II	Apply/ Analyse	Why Sponges are considered as dead branch in phylogenetic tree ?
5	II	Apply/ Analyse	Why Cnidarians are called stinging animalcules?
6	III	Understand	List out the characters of Cestoda
7	III	Apply/ Analyse	Among the suckers and hooks in tape worm, which are the most effective organs of attachment? Why?

Section-C

Answer the following objective questions. 10x1/2=5. Answer here itself.

S.NO	Unit	Level in Blooms taxonomy	Sample Question
1	I	Understand	Malarial is caused by a. Plasmodium b. Entamoeba c. Euglena d. paramecium
2	I	Apply	Contractile vacuole is absent in a. fresh water protozoans b. marine water protozoans c. parasitic protozoans d. b & c
3	I	Analyse	Tetra nucleate cysts are the infective stages of a. Plasmodium b. Entamoeba c. Euglena d. paramecium
4	I	Analyse	Statement 1: Female Anopheles spreads malaria Statement 2: Male Anopheles feeds on plant juices a. Statement 1 correct b. Statement 2 is correct c. Statements 1 & 2 are correct d. both statements are wrong
5	II	Apply	Which of the following opening in sponges is called incurrent pore? a. ostia b. osculum c. mouth d. anus
6	II	Analyse/Evaluate	Water pollution is indicated by a. lichens b. birds c. corals d. fungi
7	III	Apply	Which of the following organ functions on vacuum principle? a. hooks b. suckers c. tentacles d. ostia

8	III	Apply/ Analyse	Why Ascaris is not digested by the gut enzymes of humans? a. due to the presence of cuticle b. due to the presence of tegument c. due to the presence of chitin d. due to the presence of amphids
9	III	Analyse/ Evaluate	Sexual dimorphism is seen in Ascaris. Elucidate
10	III	Analyse/ Evaluate	Only system that is highly developed in parasites is reproductive system. Explain the reason

KSN. Govt Degree College for Women(A) Ananthapuramu
B.Sc Zoology
Zoology as Major
Mid II Question paper

The question paper consists of two sections. Total=15 Marks

Section-A

Answer any one of the following questions. 1x5=5

S.NO	Unit	Level in Blooms taxonomy	Sample Question
1	III	Understand	Discuss the life history of Ascaris
2	IV	Understand	List out the general characters of Annelida
3	V	Understand	List out the affinities of Balanoglossus

Section-B

Answer any five of the following questions. 5x2=10

S.NO	Unit	Level in Blooms taxonomy	Sample Question
1	III	Understand	Add a note on Trematoda
2	III	Apply/ Analyse	Explain the impact of helminthes on public health profile
3	IV	Understand	Why the blood in case of Arthropods is called hemolymph?
4	IV	Apply/ Analyse	List out the most striking features of insects
5	IV	Apply/ Analyse	Peripatus is a connecting link between Annelida & Arthropoda. Elucidate
6	V	Understand	Discuss the pearl formation in Mollusca
7	V	Apply/ Analyse	Discuss the significance of torsion in Mollusca

Panel of Question Paper Setters for Zoology

S No	Name of the Question Paper Setter	Designation & Address
1	Dr.P. Ravisekhar	Lecturer in Zoology, Govt. College for Men (A) Kadapa 9441689606 pesala1980@gmail.com
2	Dr.Y. Savithri	Lecturer in Zoology, Govt. College for Men (A) Kadapa 8985513433 drysavithri@gmail.com
3.	Dr.P. Giridhar .	Lecturer in Zoology Govt. College (A) Ananthapuramu 9491361743 drpgiridhar@gmail.com
4.	GLN. Prasad	Lecturer in Charge Department of Zoology 9441450987 glnp.zoology@gmail.com
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8	Dr. R. Kamli Naik .	Lecturer in Zoology Govt. Degree College(M) Kurnool 9652208402 kamlinaikr@gmail.com
9	Smt. B. Prabhavathi .	Lecturer in Zoology SVGM Govt Degree College (A) Kalyandurg 9440746019 Prabhavathi.zoology@gmail.com
10	Dr.P. Sachi Devi,	Lecturer in Charge Department of Zoology SKR & SKR Govt. College for women (A), Kadapa 9703436861 sachidevipureti@gmail.com

Signatures

Panel list of Examiners for Practical's & Paper valuation, Internship Valuation

S.No	Name of the examiner	Designation & address
1	Smt B. Nagajyothirmai .	Lecturer in Zoology Govt. College (A) Ananthapuramu 9441034800 bnjyothirmai@gmail.com
2	Smt. B. Prabhavathi	Lecturer in Zoology SVGM Govt. Degree College Kalyandurg. 9440746019 Prabhavathi.zoology@gmail.com
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9	Smt. K. Ruhinaaz	Lecturer in Zoology Govt. College(A), Anantapuramu 8886974786 kruhinaz4@gmail.com
10	Dr. Krishna Naik	Lecturer in Zoology STSN Govt. Degree College(A), kadiri 8008132533 krishnanaiksku123@gmail.com

Signatures

Department of Zoology

Add on Course in First Aid

Credits : 2 Marks : 50

Course Objectives

Providing insights regarding the significance of first aid to the students, Imparting hands on experience on CPR

Enlightening the students regarding the first aid methods during golden period

Unit 1

Definition of First aid – Significance of first aid- Organizations involved inFirst Aid – Need of First Aid – First Aid kit – CPR, AED Skills

Unit 2

Types of injuries – Chest, abdominal & pelvic injuries – Head & Spinal injuries-fractures & types- Burn injuries – accidents – types of treatments- drugs andtypes

Unit 3

Blood groups – blood donation- blood loss- haemorrhages – Blood bank – blood bank management

Unit – 4

Poisoning – substance misuse – bites & stings – Cold and heat emergencies- rescuing and moving victims

Resource Persons :

Dr G. Hemalatha, MBBS DCH, Resident Medical Officer , Govt Hospital, Anantapur

Dr G P Sandhya Reddy MS Gynaecology

Dr G. Prasanthi, Superintendent, Super Specialty Hospital, Anantapur

Signatures

Model Question paper

KSN. Govt Degree College for Women (A), Ananthapuramu

Add on Course in First Aid

Time : 1 ½ Hours Marks : 50

Answer ALL Multiple Choice Questions.

Each question carries 2 marks (25X 2 = 50)

Signatures

Department of Zoology

Certificate Course in Vermiculture

Credits : 2 Marks : 50

Unit I:

Definition, history, and scope of Vermiculture, Types of Earthworm used in Vermiculture and Classification Epigeic, Endogeic, Diageic.

UNIT II:

Biology: Reproductive system-Male & Female, copulation, cocoon formation & fertilization, development of earth worm.

Unit III:

Establishment of Vermicomposting unit and Vermiwash unit.

Unit IV

Vermicompost - harvest and processing, Nutritional Composition of vermicompost and comparison with other fertilizers. Vermiwash collection, composition & use, Enemies of Earthworms.

Resource Persons:

1. Dr. P. Giridhar Lecturer in Zoology Govt. College(A), Anantapuramu

2. Sri GLN. Prasad Lecturer in Zoology Govt. College(A), Anantapuramu

3. Smt. B. Nagjyothirmai Lecturer in Zoology Govt. College(A), Anantapuramu

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Model Question paper

KSN. Govt Degree College for Women(A), Ananthapuramu

Certificate Course in Vermiculture

Time : 1 ½ Hours Marks : 50

Answer ALL Multiple Choice Questions.

Each question carries 2 marks (25X 2 = 50)

Signatures

S No	Resolution
1	1. Stakeholder Feedback on Syllabus: Collected in the specified format and analyzed
2	2. Approval of Syllabus for UG BSc Course with Zoology as Major: Syllabus is approved after brain storming sessions of Pre BoS and BoS meets.
3.	3. Approval of College-Level Multidisciplinary Courses & pathway courses for biology stream Course frame work for above said courses is approved in the BoS meet conducted by the specified boards
4	4. Approval of Question Paper Blueprint for Examinations Approved in the BoS meet
5	5. Approval of Continuous Internal Evaluation and Assessment Pattern The Continuous internal evaluation format designed by CCE is adhered to and the same is approved by BoS members
6	6. Approval of Practical Examination Patterns Practical examination pattern is approved
7	7. Approval of Panel of Examiners List is provided and the same is approved
8	8. Approval of Panel of Question Paper Setters List is provided and the same is approved
9	Add on / Certificate courses Certificate course on Environmental-friendly biotechnology is approved
10	Action plan Action plan for the current academic year is designed and the same is discussed
11	Results analysis Results analysis of previous year is discussed and the efforts to improve the same are also discussed

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