

**A.G & S.G.SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE**  
**VUYYURU-521165, KRISHNA Dt., A.P. (Autonomous)**

**Accredited by NAAC with "A" Grade**



**DEPARTMENT OF ZOOLOGY**  
**MINUTES OF BOARD OF STUDIES**  
**ODD SEMESTER**  
**01-11-2021**

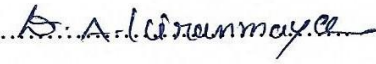
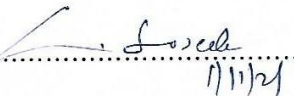
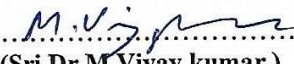


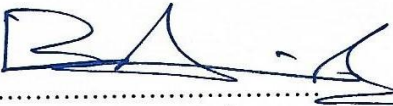
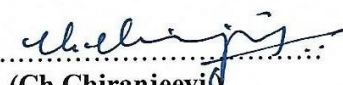


**Minutes of the meeting of Board of studies in Zoology for the Autonomous courses of AG & SG Siddhartha Degree College of Arts & Science, Vuyyuru, held at 2:30 pm on 01-11-2021 in the Department of Zoology.**

**Smt.D.A. Kiranmayee.** ...

Presiding

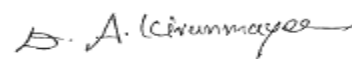
**Members Present:**

- 1)  Chair person Head, Department of Zoology,  
(Smt. D.A.Kiranmayee.) A.G&S.G.S Degree College of  
Vuyyuru-521165.
- 2)  University Nominee Bio Sciences & Bio technology  
(Smt. Dr.L.Suseela.) Krishna University  
Machilipatnam.
- 3)  Academic Council Head,Department of Zoology,  
(Sri Dr.M.Vijay kumar.) Nominee SRR & CVR Govt. Degree College,  
Vijayawada.
- 4)  Academic Council Head, Department of Zoology,  
(Sri Ch. Venkateswaralu.) Nomine P.B. Siddhartha College,  
Vijayawada.
- 5)  Member Lecturer in Zoology,  
(Smt. K. Padmaja.) A.G&S.G.S Degree College  
Vuyyuru-521165.
- 6)  Industrialist Asst. Project Manager,  
(B. Appala Naidu.) RGCA  
Manikonda.
- 7)  Student Represent P.hd –Research Scholar,  
(Ch.Chiranjeevi) Dept.of Botany & Microbiology,  
Acharya Nagarjuna University,  
Guntur.

## ZOOLOGY

### Agenda for B.O.S Meeting.

1. To recommend the syllabi (Theory & Practical), Model question paper for I Semester of I B.Sc (B.Z.C) for the academic year 2021 - 2022.
2. To recommend the syllabi (Theory & Practical), Model question paper for III Semester of II B.Sc (B.Z.C) for the academic year 2021 - 2022.
3. To recommend the syllabi (Theory & Practical), Model question paper for V Semester of III B.Sc (B.Z.C) for the academic year 2021 - 2022.
4. To recommend the Blue print for the semester end exam for I, III & V semester of I, II, III B.Sc (B.Z.C) for the academic year 2021 - 2022.
5. To introduce Life Skill Course Environmental Studies for I year students in this academic year 2021-22.
6. To introduce Skill Development Course Poultry Farming for III year students in this academic year 2021-22.
7. To recommend the teaching and evolution methods to be followed under Autonomous statues.
8. Any other matter.



Chairman

## **ZOOLOGY- RESOLUTIONS**

1. It is resolved to continue the changed syllabi (Theory & Practical), model question paper & guide lines to be followed by the question paper setters of Zoology of I semester of I B.Sc. (B.Z.C) under Choice Based Credit System (CBCS) approved by the Academic Council of 2021 – 2022.
2. It is resolved to implement **the new paper Cell Biology, Genetics, Molecular Biology & Organic Evolution** (Theory & Practical), to be followed under Choice Based Credit System (CBCS) in Zoology of III Semester of II B.Sc. (B.Z.C) approved by the Academic Council of 2021 – 2022.
3. It is resolved to implement the same syllabi & model papers under Choice Based Credit System (CBCS) Setters of Zoology of V semester of III B.Sc. (B.Z.C) approved by the Academic Council of 2021-2022.
4. It is resolved to Continue the same Blue prints of I, III, & V Semesters of B.Sc Zoology for the Academic year 2021-2022.
5. It is resolved to implement Life skill Course for I year students.
6. It is resolved to implement Skill Development Course for II year students.
7. It is resolved to continue the following teaching & evolution methods for the Academic year 2021-22.
8. Any other matter.

### **Teaching methods:**

Besides the conventional methods of teaching, we use modern technology i.e. Using of OHP and LCD projector to display on U boards etc; for better understanding of concepts.

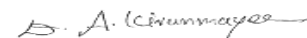
### **Evaluation of a student is done by the following procedure:**

#### **❖ Internal Assessment Examination:**

- ❖ Out of maximum 100 marks in each paper for II, III B.Sc, 30 marks shall be allocated for internal assessment.
- ❖ Out of these 30 marks, 20 marks are allocated for announced tests (i.e . IA-1& IA-2). Two announced tests will be conducted and average of these two tests shall be deemed as the marks obtained by the student, 5 marks are allocated on the basis of candidate's percentage of attendance and remaining 5 marks are allocated for the assignment for II, III B.SC.
- ❖ Out of maximum 100 marks in each paper for I B.Sc, 25 marks shall be allocated for internal assessment.
- ❖ Out of these 25 marks, 20 marks are allocated for announced tests (i.e . IA-1& IA-2). Two announced tests will be conducted and average of these two tests shall be deemed as the marks obtained by the student, 5marks allocated on the basis of candidate's percentage of attendance / assignment for I semester.
- ❖ There is no pass minimum for internal assessment for I, II, III B.Sc

#### **❖ Semester – End Examination:**

- ❖ The maximum mark for I (BZC) semester – End examination shall be 75 marks and duration of the examination shall be 3 hours.
- ❖ The maximum mark for II, III B.Sc semester- End examination shall be 70 marks and duration of the examination shall be 3 hours. Even though the candidate is absent for two IA exams / obtain zero marks the external marks are considered (if the candidate gets 40/70) and the result shall be declared as “PASS”
- ❖ Semester – End examination shall be conducted in theory papers at the end of every semester, while in practical papers, these examinations are conducted at the end of I, III, & V semester for I, II & III B.Sc.
- ❖ Discussed and recommended for organizing Seminars, Guest lectures, Work – Shops to upgrade the Knowledge of students, for the approval of the Academic Council.



Chairman

**ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).**

**ALLOCATION OF CREDITS**

**For the Papers offered during I,III & V Semesters**

<i>Year</i>	<i>Semester</i>	<i>Title</i>	<i>Teaching hours</i>	<i>Internal marks</i>	<i>External marks</i>	<i>Credits</i>
I	I	Animal Diversity – I Biology of Non-Chordates	4	25	75	03
		Animal Diversity –Biology of Non-Chordates – Practical - I	2	10	40	01
II	III	Cell Biology, Genetics, Molecular biology & Evolution	4	30	70	03
		Practical Cell Biology, Genetics, Molecular biology & Evolution	2	25	25	01
III	V( 501)	Animal Bio technology	4	30	70	03
		Practical – 501p Animal Bio technology	2	25	25	01
	V(502)	Animal Husbandry	4	30	70	03
		Practical – 502p Animal Husbandry	2	25	25	01
		Total Credits				16

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OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).**

NACC reaccredited at 'A' level

Autonomous –ISO 9001-2015 Certified

Title of the Paper: **Animal Diversity Biology of Non – Chordates**

Semester: - I

Course Code	<b>ZOOT11A</b>	Course Delivery Method	Class Room/Blended Mode - Both
Credits	3	CIA Marks	25
No. of Lecture Hours/ Week	4	Semester End Exam Marks	75
Total Number of Lecture Hours	60	Total Marks	100
Year of Introduction : 2017-18	Year of Offering 2021-2022	Year of Revision – 2021-22	Percentage of Revision: 0%

**AIM**

- To know the biodiversity of invertebrates

**LEARNING OBJECTIVES**

- To understand the structural organization of animals from Protozoa to Hemichordate
- To understand the evolutionary relationship of different phyla from Protozoa to Hemichordate
- To understand the specific phenomena exhibited by different groups of invertebrates from Protozoa to Hemichordate
- To understand the taxonomic position and affinities of certain groups of invertebrates
- AsConnecting links
- To study the life cycles, and pathogenicity of certain

**PREREQUISITE**

- Knowledge of invertebrates acquired in Intermediate

**COURSE OUTCOMES**

By the end of the course students will be able to

CO 1 Gain knowledge in the fundamental concepts underlying the structural complexity in the organization of invertebrates.

CO 2 Understand biology and pathogenicity of parasites and their adaptations analyse remedial and preventive measures and promote the same in public domain.

CO 3 Appreciate and evaluate the economic, commercial, medicinal and culture importance of invertebrates and their larval stages in relation to phylogeny

CO 4 Describe the significance of connecting links in understanding the concept of evolution

CO 5 Explain the significance of specific phenomena in different group's of invertebrates in relation to their adaptability for survival

CO 6 Comprehend the systems biology of individual phyla with a specific type study and understand the origin and evolutionary relationship of different phyla and appreciate the uniqueness of individual phyla.

Syllabus  
Course Details

Unit	Learning Units	Lecture Hours
I	<b><i>PROTOZOA AND PORIFERA</i></b> Introduction to Non-chordates – Origin of metazoans Type study: <i>Polystomella</i> (structure and life cycle) Locomotion in protozoans Nutrition in protozoans Type study: <i>Sycon</i> (Structure, histology and skeleton) Canal system in sponges	13
II	<b><i>CNIDARIA AND CTENOPHORA</i></b> Type study: <i>Obelia</i> . (Structure – polyp and medusa and life cycle) Polymorphism in cnidarians. Corals and coral reefs Ctenophora (structure and affinities)	10
III	<b><i>HELMINTHES AND ANNELIDA</i></b> Type study: <i>Fasciola hepatica</i> (Structure, reproduction, life cycle and pathogenicity) Parasitic adaptations in helminthes Type study: <i>Ascaris lumbricoides</i> (Structure, reproduction, life cycle and pathogenicity) Type study: <i>Hirudinaria</i> (Structure, circulatory, excretory and reproductive systems) Coelom and coelomoducts in annelids	17
IV	<b><i>ARTHROPODA AND MOLLUSCA</i></b> Structural affinities of Onychophora Type study: <i>Macrobrachium rosenbergii</i> (Structure, appendages and Respiratory system) Economic importance of insects (Beneficial – Lac insect, honey bee, <i>Bombus morio</i> and Lady bird; Harmful – house fly, mosquito, locust and bedbug) Metamorphosis in insects Study of Pearl Oyster and Pearl Formation Torsion in gastropods	14
V	<b><i>ECHINODERMATA AND HEMICHORDATA</i></b> Water-vascular system Echinoderm larvae <i>Balanoglossus</i> - Structure and affinities	6

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### **TEXTBOOKS**

1. R.L. Kotpal, *Modern Text Book of Zoology - Invertebrates*.
2. P.S. Dhami and J.K. Dhami *Invertebrate Zoology*.

### **SUGGESTED READINGS**

1. L.H. Hyman, '*The Invertebrates*' Vol I, II and V. – M.C. Graw Hill Company Ltd.
2. Ruppert, Fox and Barnes, *Invertebrate Zoology - A Functional Evolutionary Approach* - Thomas Publishers. Indian Edition.
3. E.L. Jordan and P.S. Verma '*Invertebrate Zoology*' S. Chand and Company.
4. R.D. Barnes '*Invertebrate Zoology*' by: W.B. Saunders CO., 1986.
5. Barrington. E.J.W. '*Invertebrate Structure and Function*' by ELBS.
6. Sedgwick. A. '*A Student Text Book of Zoology*' Vol-I, II and III – Central Book Depot, Allahabad.

### **CO-CURRICULAR ACTIVITIES**

- Preparation of chart/model of *Elphidium* life cycle
- Visit to Zoology museum or Coral island as part of Zoological tour
- Charts on life cycle of *Obelia*, polymorphism, sponge spicules
- Clay models of canal system in sponges
- Preparation of charts on life cycles of *Fasciola* and *Ascaris*
- Visit to adopted village and conducting awareness campaign on diseases, to people as part of Social Responsibility.
- Plaster-of-Paris or Thermocol model of *Peripatus*
- Construction of a vermicompost in each college, manufacture of manure by students and donating to local farmers
- Models of compound eye, bee hive and termitarium (termitaria) by students
- Visit to apiculture centre and short-term training as part of apprenticeship programme of the govt. of Andhra Pradesh
- Chart on pearl forming layers using clay or Thermocol
- Visit to a pearl culture rearing industry/institute
- Live model of water vascular system
- Phylogeny chart on echinoderm larvae and their evolutionary significance
- Preparation of charts depicting the feeding mechanism, 3 coeloms, tornaria larva etc., of *Balanoglossus*

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***I SEMESTER END EXAMINATIONS***

**PAPER – I     MODEL PAPER** *Cours Code: ZOOT11A*

**Title of the paper: Animal Diversity Biology of Non – Chordates**

**Time: 3 Hours**

**Max. Marks: 75**

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**SECTION –A**

Draw neat labeled diagrams wherever necessary.

Answer and FIVE of the following

5x5=25 Marks

1. Describe the structure of *Polystomella* CO 1, L1
2. List out/state the different types of cells in sponges CO1, L1
3. Describe *Obelia* medusa CO1, L1
4. Describe Flame cells in *Fasciola hepatica* CO1, L1
5. Explain the significance of coelom in annelids CO2, L2
6. Explain bipinnaria larva in relation to phylogeny CO3, L2
7. Explain the process of pearl formation and its significance CO5, L2
8. *Peripatus* is a connecting link. Analyze. CO4, L4

**SECTION – B**

Answer the following questions.

5X10=50 Marks

9. Explain the different types of nutrition in protozoans. CO5, L2  
OR  
Explain the different types of canal system in sponges. CO5, L2
10. Evaluate the process of metagenesis in the life cycle of *Obelia*. CO1, L5  
OR  
Evaluate how ctenophores differ structurally from cnidarians. CO1, L5
11. Describe the life cycle of *Ascaris lumbricoides*. CO2, L2  
OR  
Describe the reproductive system of *Hirudinaria*. CO2, L2
12. Enumerate the economic importance of insects CO3, L1  
OR  
Describe torsion in gastropods as significant in larval development CO3, L1
13. Analyze the functional suitability of water vascular system in echinoderms CO5, L4  
OR  
Examine the structural affinities of *Balanoglossus*. CO4, L4

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**PRACTICAL- I (At the end of I Semester)**

**Title of the paper: Animal Diversity Biology of Non – Chordates**

**No of Hours: 30**

**Credits: 01**

**WEF: 2021-2022 Course Code: ZOO P11A**

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**LEARNING OUTCOMES:**

By the end of the course students will be able to

1. Understand the general characters and classification from Protozoa to Hemichordata
2. Understand the importance of preservation of museum specimens
3. Identify animals based on special identifying characters
4. Understand different organ systems through demo or virtual dissections
5. Maintain a neat, labeled record of identified museum specimens
6. Exhibit the hidden creative talent

**COURSE OUTCOMES**

**CO1** To identify the characteristics and systematic position of protozoans and poriferans PO1, PO2, PO5, PO6, PO7, PSO1

**CO2** To identify the characteristics and systematic position of Cnidarians and Helmenthes. PO1, PO2, PO5, PO6, PO7, PSO1

**CO3** To identify the characteristics and systematic position of Annelids, Arthropodans and Molluscans. PO1, PO2, PO5, PO6, PO7, PSO1

**CO4** To identify the characteristics and systematic position of Echinoderms and hemichordates. PO1, PO2, PO5, PO6, PO7, PSO1

**CO5** To understand the various systems of Prawn by Dissecting and Mounting its appendages. PO1, PO2, PO5, PO6, PO7, PSO1

Syllabus  
Course Details

Unit	Learning Units
Syllabus	General characters and classification of the following phyla and sub-phyla up to classes with suitable examples: Protozoa, Porifera, Cnidaria, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata.
I	<b>SPOTTERS</b> Porifera: <i>Euspongia</i> , <i>Spongilla</i> , <i>Sycon</i> . Cnidaria: <i>Physalia</i> , <i>Velella</i> , <i>Aurelia</i> , <i>Gorgonia</i> , <i>Pennatula</i> . Annelida: <i>Nereis</i> , <i>Heteronereis</i> , <i>Aphrodite</i> , <i>Hirudineria</i> . Arthropoda: <i>Scylla</i> , <i>Macrobrachium</i> , <i>Scolopendra</i> , <i>Sacculina</i> , <i>Limulus</i> , <i>Scorpion</i> , <i>Peripatus</i> . Mollusca: <i>Chiton</i> , <i>Murex</i> , <i>Unio</i> , <i>Sepia</i> , <i>Loligo</i> , <i>Octopus</i> , <i>Nautilus</i> . Echinodermata: <i>Asterias</i> , <i>Ophiothrix</i> , <i>Echinus</i> , <i>Clypeaster</i> , <i>Cucumaria</i> , <i>Antedon</i> . Hemichordata: <i>Balanoglossus</i>
II	<b><u>SLIDES</u></b> Protozoa: <i>Elphidium</i> , <i>Paramoecium</i> , <i>Paramoecium</i> - Binary fission and conjugation, <i>Vorticella</i> , <i>Entamoebahistolytica</i> , <i>Plasmodium vivax</i> Porifera: T.S and L.S. of <i>Sycon</i> , spicules, gemmule Cnidaria: <i>Obeliacolony</i> and medusa, Platyhelminthes: <i>Planaria</i> , <i>Fasciola hepatica</i> , <i>Fasciolalarval</i> forms (Miracidium, Redia, Cercaria) <i>Echinococcusgranulosus</i> , <i>Taeniasolium</i> Nematoda: <i>Ascarislumbricoides</i> (male and female), <i>Ancylostomaduodenale</i> (male and female), <i>Dracunculus</i> , <i>Wuchereria</i> Annelida: Trochophore larva Arthropoda: Mouthparts of housefly, butter fly, male and female <i>Anopheles</i> and <i>Culex</i> , Crustacean larvae (nauplius, mysis, zoea) Mollusca: Glochidium larva Echinodermata: Bipinnarialarva Hemichordata: Tornaria larva
III	<b><u>DEMONSTRATION OF DISSECTIONS</u></b> 1. Prawn: Nervous system Mounting of statocyst Mounting of appendages 2. Mounting of Insect mouth parts <ul style="list-style-type: none"> <li>• Animal Album to be submitted at the time of practical examination</li> <li>• Laboratory Record Book to be submitted at the time of practical examination</li> </ul>

**Suggested Manuals**

1. Practical Zoology- Invertebrates S.S.Lal
2. Practical Zoology - Invertebrates P.S.Verma
3. Practical Zoology K.P.Kurl

**I B.Sc. ZOOLOGY PRACTICAL EXAMINATION**

**Practical - I**

**Course Code: ZOO P11A**

**Title of the paper: Animal Diversity Biology of Non – Chordates**

**Time: 3hrs.**

**Max. Marks 40M**

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1. List out the general characters of Phylum ----- . CO1 L1 3 M
  2. Identify and draw a neat labeled diagram of nervous system/appendages of prawn. 7 M  
CO 4 L3 Identification: 1 M  
Diagram: 4 M  
Labeling: 2 M
  2. Prepare a neat mount of statocyst/ mouth parts of cockroach. 5 M  
CO4 L3 Mounting: 2 M  
Diagram: 1 M  
Labeling: 2 M
  3. Identify, draw a labeled diagram, classify and write notes on A, B, C, D and E  
CO3 L2 5 X 3 = 15 M  
A. Protozoa & Porifera  
B. Cnidaria & Platyhelminthes  
C. Nematoda & Annelida  
D. Arthropoda  
E. Mollusca, Echinodermata & Hemichordata  
  
Identification: 1 M  
Diagram: ½ M  
Classification: ½ M  
Comments: 1 M
  4. Practical Record Book CO5 L3 5 M
  5. VIVA CO6 L5 5M

**Total Marks :- 40M**

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NACC recredited at 'A' level  
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Title of the Paper: **Cell Biology, Genetics, Molecular Biology & Evolution**

**Semester: - III**

Course Code	<b>ZOO-301</b>	Course Delivery Method	Class Room/Blended Mode - Both
Credits	3	CIA Marks	30
No. of Lecture Hours/ Week	4	Semester End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Year of Introduction : 2017-18	Year of Offering 2021-2022	Year of Revision – 2021-22	Percentage of Revision: 0%

**Course Outcomes:**

The overall course outcome is that the student shall develop deeper understanding of what life is and how it functions at cellular level. This course will provide students with a deep knowledge in Cell Biology, Animal Biotechnology and Evolution and by the completion of the course the graduate shall be able to –

- CO1 To understand the basic unit of the living organisms and to differentiate the organisms by their cell structure.
- CO2 Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell.
- CO3 To understand the history of origin of branch of genetics, gain knowledge on heredity, interaction of genes, various types of inheritance patterns existing in animals
- CO4 Acquiring in-depth knowledge on various aspects of genetics involved in sex determination, human karyotyping and mutations of chromosomes resulting in various disorders
- CO5 Understand the central dogma of molecular biology and flow of genetic information from DNA to proteins.
- CO6 Understand the principles and forces of evolution of life on earth, the process of evolution of new species and apply the same to develop new and advanced varieties of animals for the benefit of the society

**Learning Objectives**

- To understand the origin of cell and distinguish between prokaryotic and eukaryotic cell
- To understand the role of different cell organelles in maintenance of life activities
- To provide the history and basic concepts of heredity, variations and gene interaction
- To enable the students distinguish between polygenic, sex-linked, and multiple allelic modes of inheritance.
- To acquaint student with basic concepts of molecular biology as to how characters are expressed with coordinated functioning of replication, transcription and translation in all living beings
- To provide knowledge on origin of life, theories and forces of evolution
- To understand the role of variations and mutations in evolution of organisms

Syllabus  
Course Details

Unit	Learning Units	Lecture Hours
I	<b>Unit-I Cell Biology</b> Definition, history, prokaryotic and eukaryotic cells, virus, viroids, mycoplasma Electron microscopic structure of animal cell. Plasma membrane—Models and transport functions of plasma membrane. Structure and function of Golgi complex, Endoplasmic Reticulum and Lysosomes Structure and function of Ribosomes, Mitochondria, Nucleus, Chromosomes (Note: 1. General pattern of study of each cell organelle—Discovery, Occurrence, Number, Origin Structure and Functions with suitable diagrams) 2. Need not study cellular respiration under mitochondrial functions)	10
II	<b>Unit-II Genetics –I</b> Mendel's work on transmission of traits Gene Interaction—Incomplete Dominance, Codominance, Lethal Genes Polygenes (General Characteristics & examples); Multiple Alleles (General Characteristics and Blood group inheritance) Sex determination (Chromosomal, Genic Balance, Hormonal, Environmental and Haplo-diploidy types of sex determination) Sex linked inheritance (X-linked, Y-linked & XY-linked inheritance)	13
III	<b>Unit-III Genetics –II</b> Mutations & Mutagenesis Chromosomal Disorders (Autosomal and Allosomal) Human Genetics— Karyotyping, Pedigree Analysis (basics) Basics on Genomics and Proteomics	10
IV	<b>UNIT IV: Molecular Biology</b> Central Dogma of Molecular Biology Basic concepts of— a. DNA replication—Overview (Semi-conservative mechanism, Semi-discontinuous mode, Origin & Propagation of replication fork) b. Transcription in prokaryotes—Initiation, Elongation and Termination, Post-transcriptional modifications (basics) c. Translation— Initiation, Elongation and Termination Gene Expression in prokaryotes (Lac Operon); Gene Expression in eukaryotes	15
V	<b>Unit-V</b> Origin of life Theories of Evolution: Lamarckism, Darwinism, Germ Plasm Theory, Mutation Theory. Neo-Darwinism: Modern Synthetic Theory of Evolution, Hardy-Weinberg Equilibrium. Forces of Evolution: Isolating mechanisms, Genetic Drift, Natural Selection, and Speciation.	12

**A.G. &S.G.Siddhartha Degree College of Arts & Science, Vuyyuru – 521165, Krishna  
Dt. A.P. (Autonomous)**

**Semester III** *w.e.f. 2021-2022*

(Model question paper)

**Title of the paper:** Cell Biology, Genetics, Molecular Biology & Evolution

**Code – ZOO-301C**

**Time: 3hrs.**

**max.marks: 70**

**Section – A**

**4 x 5 = 20.**

Answer any **four** questions. Each question carries **five** marks. Draw neat labeled diagrams wherever necessary.

1. Golgicomplex
2. Nucleus,
3. LethalGenes
4. Sexdetermination
5. Mutations
6. Proteomics
7. Semi-conservativemechanism
8. Hardy-WeinbergEquilibrium

**Section – B 5 x 10 = 50.**

Answer any **five** questions. Each question carries **Ten** marks. Draw neat labeled diagrams wherever necessary.

9. Explain the Models and transport functions of Plasmamembrane?
10. Structure and functions of Mitochondria?
11. Explain about Sex linked inheritance?
12. Give an account of Chromosomal Disorders?
13. Explain about Translation?
14. Write an essay on Gene Expression in prokaryotes?
15. Explain about theory of Lamarckism & Darwinism?
16. Write an essay on Speciation?

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**A.G. & S.G.Siddhartha Degree College of Arts & Science, Vuyyuru – 521165,  
Krishna Dt. A.P. (Autonomous)**

**Semester -III**

**Guide**

**lines to the Paper Setter.**

**W.e.f. 2021-**

**2022 Title of the paper: Cell Biology, Genetics, Molecular Biology & Evolution**

**Code – ZOO-301C**

**Time: 3hrs.**

**Max. Marks: 70.**

1. Answer any **four** questions out of eight in Section – A. Each question carries five marks.  $4 \times 5 = 20M$ .

2. Answer any **five** questions out of eight in Section – B. Each question carries Ten marks.  $5 \times 10 = 50M$ .

	Section	UNIT-I	UNIT-II	UNIT-III	UNIT-IV	UNIT-V
<b>5 Marks Questions</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>
<b>10 Marks Questions</b>	<b>B</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>Weightage</b>		<b>30</b>	<b>25</b>	<b>20</b>	<b>25</b>	<b>25</b>

**Note:** 1. please provide the scheme of valuation for the paper.

2. Question paper should be in English medium.

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## REFERENCES:

1. Lodish, Berk, Zipursky, Matsudaria, Baltimore, Darnell 'Molecular Cell Biology' W.H. Freeman and company New York.
2. Cell Biology by De Robertis
3. Bruce Alberts, Molecular Biology of the Cell
4. Rastogi, Cytology
5. Varma & Aggarwal, Cell Biology
6. C.B. Pawar, Cell Biology
7. Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). Principles of Genetics. VIII Edition. Wiley India.
8. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.
9. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition. Benjamin Cummings.
10. Russell, P. J. (2009). Genetics- A Molecular Approach. III Edition. Benjamin Cummings.
11. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. Introduction to Genetic Analysis. IX Edition. W. H. Freeman and Co.
12. Ridley, M. (2004). Evolution. III Edition. Blackwell Publishing
13. Molecular Biology by Freifelder
14. Instant Notes in Molecular Biology by Bios scientific publishers and Viva Books Private Limited
15. Hall, B. K. and Hallgrimsson, B. (2008). Evolution. IV Edition. Jones and Bartlett Publishers
16. Campbell, N. A. and Reece J. B. (2011). Biology. IX Edition, Pearson, Benjamin, Cummings.
17. Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.
18. Minkoff, E. (1983). Evolutionary Biology. Addison-Wesley.
19. James D. Watson, Nancy H. Hopkins 'Molecular Biology of the Gene'
20. Jan M. Savage. Evolution, 2nd ed, Oxford and IBH Publishing Co., New Delhi.
21. Gupta P.K., 'Genetics'

PRACTICAL – III

Code: ZOO- 301P

w.e.f. 2021-2022

MAX.MARKS: 50.

(2hrs/week)

**Cell Biology, Genetics, Molecular Biology & Evolution  
PRACTICAL SYLLABUS**

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 disorders
- To apply the basic concept of inheritance for applied research
- To get familiar with phylogeny and geological history of origin & evolution of animals

Syllabus

Course Details

Unit	Learning Units
I	I. Cell Biology 1. Preparation of temporary slides of Mitotic divisions with onion root tips 2. Observation of various stages of Mitosis and Meiosis with prepared slides 3. Mounting of salivary gland chromosomes of <i>Chironomus</i>
II	II. Genetics 1. Study of Mendelian inheritance using suitable examples and problems 2. Problems on blood group inheritance and sex linked inheritance 3. Study of human karyotypes (Down's syndrome, Edwards syndrome, Patau syndrome, Turner's syndrome and Klinefelter syndrome)
III	III. Evolution 1. Study of fossil evidences 2. Study of homology and analogy from suitable specimens and pictures 3. Phylogeny of horse with pictures 4. Study of Genetic Drift by using examples of Darwin's finches (pictures) 5. Visit to Natural History Museum and submission of report

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**PAPER – III**

**(Cell Biology, Genetics, Molecular Biology & Evolution)**

w.e.f.2021-22.

*Model Question paper (External)*Max.Marks: 25 M.

Paper Code: ZOO-301P

**I. Cell Biology**

1. Identify, draw neat labeled diagram & notes of the following stages. 2x2 ½= 5M.  
A & B

**II. Genetics**

- 1.Genetics Problem. 5M.  
2. Identify the following Chromosomes & Comment. 2x2 ½= 5M.  
A & B

**III. Evolution**

1. Identify the given pictures and write the Comment. 2x2 ½= 5M  
A & B  
2. Identify the given pictures and Comment. 2x2 ½= 5M  
A & B

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**A. G.& S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU-521165  
ZOOLOGY PRACTICAL -III**

**(INTERNAL)**

**w.e.f. 2021-2022.**

**(2hrs/week).**

**Cell Biology, Genetics, Molecular Biology & Evolution**

Code: ZOO-301P.

Max.marks:25M.

Time: 3hrs.

1. Attendance ----- 5M.  
2. Record ----- 10M.  
3. Field trip & Field note book -----10M.

Total ----- 25M.

**A. G & S. G. S. DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU 521165, KRISHNA Dt., A.P.**  
**(AUTONOMOUS)**  
**PAPER – III**

**Guide lines for the practical Examiner**

W.e.f.2021-2022

Class: II B.Z.C

Paper Title: **(Cell Biology, Genetics, Molecular Biology & Evolution)**

Paper Code: ZOO-301P

Max.Marks: 25 M.

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**I.Cytology**

1. Slide A from Mitosis & Slide B Meiosis.  $2 \times 2 \frac{1}{2} = 5M.$   
( $\frac{1}{2}$  mark for identification, 1 mark for labeled diagram & 1 mark for comments)

**II.Genetics**

2. Checker board  $2M.$   
Explanation  $3M.$
3. Identify & Comment on A& B (From Chromosomes).  $2 \times 2 \frac{1}{2} = 5M$   
A-Identification – 1 M, Comment –  $1 \frac{1}{2} M$   
B-Identification – 1 M, Comment –  $1 \frac{1}{2} M$

**III.Evolution**

4. Identify & Comment on A& B(A- fossil evidence, B – Homology & Analogy)  $2 \times 2 \frac{1}{2} = 5M$   
A-Identification – 1 M, Comment –  $1 \frac{1}{2} M$   
B-Identification – 1 M, Comment –  $1 \frac{1}{2} M$
5. Identify & Comment on A& B (A- Phylogeny of Horse, B – Darwin's Finches)  $2 \times 2 \frac{1}{2} = 5M$   
A-Identification – 1 M, Comment –  $1 \frac{1}{2} M$   
B-Identification – 1 M, Comment –  $1 \frac{1}{2} M$

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OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).**

NACC reaccredited at 'A' level  
Autonomous –ISO 9001-2015 Certified

Title of the Paper: Animal Biotechnology

**Semester: - V**

Course Code	<b>ZOO-501</b>	Course Delivery Method	Class Room/Blended Mode - Both
Credits	3	CIA Marks	30
No. of Lecture Hours/ Week	4	Semester End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Year of Introduction : 2017-18	Year of Offering 2021-2022	Year of Revision – 2021-22	Percentage of Revision: 0%

Objective of the course: To educate students on various biotechnological techniques involve in animal biotechnology, gene manipulations, their role in production of medicines and transgenic animals.

Course outcomes:

CO1 Students are made to become aware of the use of technology that is involved in cloning.

CO2 Improved quality of species with gene manipulations

CO3 Recent development in biotechnology that helps for better environment and  
Production of various monoclonal antibodies and vaccines.

CO4 Formation of different species - transgenic animals

CO5 Resistant variety and better yield

Learning Objectives

- To understand the natural function of Restriction enzymes and explained how they are used in r-DNA technology.
- To understand the features & Types of cloning vectors.
- Purposes and applications of r-DNA techniques.
- To understand uses of DNA probes.  
To understand gene transfer technologies for animals and animal cell lines.
- Explain how the creation of sticky ends by restriction enzymes in use full in producing a r-DNA technologies.
- To understand the process of nucleic acid hybridization .

Syllabus  
Course Details

Unit	Learning Units	Lecture Hours
I	<b>Unit 1: Tools of Recombinant DNA technology - Enzymes and Vectors</b> Restriction modification systems : Types I, II and III- Nomenclature, Applications of Type II restriction enzymes in genetic engineering ,DNA polymerases, transferase, kinases and phosphatases,and DNA ligases Cloning Vectors: : Properties of Cloning Vectors Plasmid vectors:pBR and pUC 18, Bacteriophage and, Cosmids.Artificial Chromosome Vectors: BACs, YACs	15
II	<b>Unit 2: Techniques of Recombinant DNA technology</b> Cloning: Procedure of gene cloning, Use of linkers and adaptors. Microinjection, electroporation, biolistic method (gene gun). PCR:- Basics of PCR, Principle and Procedure of PCR. DNA Sequencing: Sanger's method of DNA sequencing- traditional and automated sequencing. Southern, Northern and Western blotting. DNA finger printing,	15
III	<b>UNIT 3 Animal Cell Technology</b> Cell culture media: Natural and Synthetic, Types Cell cultures-: primary culture, secondary culture. Continuous cell lines , Established Cell lines (common examples such as MRC, HeLa,CHO, BHK, ) Cryopreservation of cultures, Hybridoma Technology:- Cell fusion, Production of Monoclonal antibodies (mAb), Applications of mAb Stem cells: Types of stem cells- Embryonic and Adult Stem Cells, Diabetes and Parkinson's diseases.	10
IV	<b>Unit 4: Reproductive Technologies &amp; Transgenic Animals</b> Manipulation of reproduction in animals, Artificial Insemination, <i>In vitro</i> fertilization. Super ovulation, Embryo transfer, Embryo cloning. Transgenic Animals- Production of Transgenic Animals- sheep, fish.	10
V	<b>Unit 5: Applied Biotechnology</b> Industry: Fermentation- Different types of Fermentation. Submerged & Solid state, batch, Fed batch & Continuous (Short notes only) Downstream processing - Filtration, centrifugation, chromatography, spray drying , Fisheries: Polyploidy in fishes.	10

SEMESTER-V (Model Question paper)

w.e.f.- 2021-2022. *Paper*

*Title:Animal Biotechnology.*

*Paper Code: ZOO 501C*

*Time: 3 hrs.*

Max.Marks:70

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**Part – A**

Answer **any FOUR** questions out of eight in Part - A. Each question carries five marks. **4 X 5 = 20**

**Part – B**

- 1.Ligases
- 2.YAC
- 3.Southern Blotting
- 4.DNA Fingerprinting
- 5.Applications of mAb
- 6.Polyploidy in fishes
- 7.Invivo fertilization
- 8.Chromatography

**Part – B**

Answer **any FIVE** questions out of eight in Part - B .Each question carries Ten marks. **5 X 10 = 50**

9. Write an essay on cloning vectors.
10. Explain the role of Type II Restriction enzymes in genetic engineering.
11. Define gene cloning .Describe the procedure of gene cloning in detail.
12. What is PCR. Briefly describe various steps of PCR.
13. Define Stem Cell Technology ? Briefly describe about it.
14. Write in detail about the transgenic animals.
15. Write an essay on different types of fermentation.
16. Briefly describe the technology of super ovulation and Embryo transfer in cattle's and discuss their applications and limitations.

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**SEMESTER-V****Time: 3 hrs****Max.Marks:70****Guide lines to the paper setter****Paper Title: Animal Biotechnology****Paper Code: ZOO -501C**

*Note:*1. Answer **any FOUR** questions out of eight in Part-A . Each question carries five marks.  $4 \times 5 = 20M$ .

2. Answer any **FIVE** questions out of eight in Part-B . Each question carries 10 marks.  $5 \times 10 = 50M$ .

	<b>PART</b>	<b>Unit – I</b>	<b>Unit – II</b>	<b>Unit – III</b>	<b>Unit – IV</b>	<b>Unit – V</b>
<b>5 Marks Questions</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>10 Marks Questions</b>	<b>B</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>
<b>Weightage</b>		<b>30</b>	<b>30</b>	<b>15</b>	<b>25</b>	<b>20</b>

- Note:**
1. please provide the scheme of valuation for the paper.
  2. Question paper should be both in English and Telugu media.

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**Reference Books:-**

1. Brown TA. (2010). Gene Cloning and DNA Analysis. 6th edition. Blackwell Publishing , Oxford,U.K
2. Clark DP and Pazdernik NJ. (2009). Biotechnology: Applying the Genetic Revolution. Elsevier Academic Press, USA
3. Primrose SB and Twyman RM. (2006). Principles of Gene Manipulation and Genomics, 7th edition. Blackwell Publishing, Oxford, U.K.

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A. G & S. G. S. DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU 521165, KRISHNA Dt., A.P.  
(AUTONOMOUS)

ZOOLOGY PRACTICAL SYLLABUS

PAPER - V

Periods: 30 Code: ZOO-501P

Credits :2 Paper Title : Animal Biotechnology

Max.Marks:50

Unit	Learning Units
SYLLABUS	1. Genomic DNA isolation from <i>E. coli</i> .
	2. Plasmid DNA isolation (pUC 18/19) from <i>E. coli</i>
	3. Study the following techniques through photographs. a. Southern blotting. b. Western blotting. c. DNA sequencing (Sanger's method) d. DNA finger printing
	4.. PCR (demonstration) on site or of site demonstration
	5. Project report on animal cell culture

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*Practical - V*                      *w.e.f. 2021- 22*  
*(Animal Biotechnology)*                      *Max. Marks: 25*  
*Model Question Paper (External)*                      *Paper Code: ZOO-501P*

1. Identify the following Genomic DNA isolation from *E. coli*. 5m
2. Identify the following Plasmid DNA isolation (pUC 18/19) from *E. coli*. 5m
3. Study the following techniques given on photographs & Write notes on A & B 2x5=10
4. PCR (demonstration) on site or of site demonstration. 5m
- .
- Total: 25m

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Guide lines for the Practical Examiners.

Class: III B.Z.C

Paper Title: Animal Biotechnology.

Max.Marks: 25 M.

W.e.f.2021-22.

Paper Code: ZOO-501C

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1. Identify the following Genomic DNA isolation from *E. coli*.  
( 5 marks for Procedure)
  2. Identify the following Plasmid DNA isolation (pUC 18/19) from *E. coli* .  
( 5 marks for Procedure)
  3. Study the following techniques given on photographs & Write notes on A & B.  
(1 mark for identification & 4 marks for diagram and notes, for each photographs)
  4. PCR (demonstration) on site or of site demonstration.  
( 5 marks for PCR demonstration)

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*Practical – V*  
*(Animal Biotechnology)*  
*Model Question Paper (Internal)*

*w.e.f. 2021-22*  
*Max. Marks: 25*  
*Paper Code: ZOO-501P*

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1. Attendance	--	5 M
2. Record	--	10M
3. Field trip & Field note book	--	10M
Total		-- 25M

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NACC recredited at 'A' level  
Autonomous –ISO 9001-2015 Certified

Title of the Paper: Animal Husbandry

**Semester: - V**

Course Code	<b>ZOO-502</b>	Course Delivery Method	Class Room/Blended Mode - Both
Credits	3	CIA Marks	30
No. of Lecture Hours/ Week	4	Semester End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Year of Introduction : 2017-18	Year of Offering 2021-2022	Year of Revision – 2021-22	Percentage of Revision: 0%

**Objective of the course:** To help students to stand on their own legs, acquire skills in poultry and Dairy farms and to set up their own firms.

**Course outcomes:**

CO1; Students are given awareness about different varieties of chicks.

CO2: Students are familiarized with recent technologies those are applied to produce different species with variations which are more beneficial and income fetching.

CO3: Students with the help of self help schemes, can set up their own firms, and provide

CO4: Employability to others and to tap the resources of Government and Non governmental sectors.

CO5: They are given managerial and marketing skills as well.

**Learning Objectives**

- To understand production of milk, meat, egg and other animal bi – products.
- To understand delivery of necessary livestock health care through timely immunization against total diseases, proper diagnosis and rational treatment for optimization of livestock production.
- To understand fulfil the objective of protein enriched quality food requirement of the growing population of the country and prevent malnutrition in one the highest malnourished children population in the world.
- To understand principles of feeding and nutrient requirements for different stages of layers and broilers.
- To make available quality concentrated animals feed to the cattle, buffalo, sheep and poultry to provide balanced ration at affordable prices.

## Syllabus

## Course details

Unit	Learning Units	Lecture Hours
I	<b>UNIT – I:</b> General introduction to poultry farming, Principles of poultry housing. Poultryhouses. Systems of poultry farming. Management of chicks, growers, layers, and Broilers.	10
II	<b>UNIT – II:</b> Poultry feed management – Principles of feeding. Nutrient requirements for different stages of layers and broilers. Methods of feeding- Whole grain feeding system, Grain and mash method, All mash method, Pellet feeding. Poultry diseases – viral, bacterial, fungal and parasitic (two each); symptoms, control and management.	10
III	<b>UNIT – III:</b> Selection, care and handling of hatching eggs, Egg testing. Methods of hatching. Brooding and rearing, Sexing of chicks.	10
IV	<b>UNIT- IV:</b> Breeds of Dairy Cattle and Buffaloes – Definition of breed; Classification of Indian Cattle breeds, exotic breeds and Indian buffalo breeds. Systems of inbreeding and crossbreeding. Housing of dairy animals – Selection of site for dairy farm; systems of housing – loose, housing system. Conventional dairy barn.	20
V	<b>UNIT - V:</b> Care and management of dairy animals - Care and management of calf, heifer, milk animal, dry and pregnant animal, bulls and bullocks. Cleaning and sanitation of programme. Records to be maintained in a dairy farm.	10

SEMESTER-V (Model Question paper)

Time: 3 hrs Paper Code: Zoo-502C

Paper Title: Animal Husbandry Max.Marks:70

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**Part – A**

Answer **any FOUR** questions out of eight in Part - A . Each question carries five marks. **4 X 5 = 20**

1. Principles of poultry farming.
2. Chick management.
3. Poultry feed management.
4. Marek's disease.
5. Egg testing (Candle test)
6. Cleaning and sanitation of Dairy farm.
7. Milk record register
8. Loose housing system

**Part – B**

Answer **any five** questions out of eight in Part - B .Each question carries Ten marks. **5 X 10 = 50**

9. Write an essay on systems of poultry farming
10. Write an essay on management of Broilers
11. Write an essay on symptoms control and management of two viral and bacterial diseases.
12. Write an essay on methods of feeding in Poultry
13. Write an essay on different methods of hatching eggs
14. Give an account of breeds of Indian Cows
15. Explain the vaccination programme in Cattle
16. Write an essay on care and management of Calf, heifer and milk animals

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SEMESTER-V

Time: 3 hrs

Max.Marks:70

Guide lines to the paper setter

Paper Title: Animal Husbandry.

Paper Code: 502C

Note: 1. Answer **any FOUR** questions out of eight in Part-A . Each question carries five marks. 4 X 5 = 20M.

2. Answer any **five** questions out of eight in Part-B . Each question carries 10 marks. 5 X 10 = 50M.

	PART	Unit – I	Unit – II	Unit – III	Unit – IV	Unit – V
<b>5 Marks Questions</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>
<b>10 Marks Questions</b>	<b>B</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>
<b>Weightage</b>		<b>30</b>	<b>30</b>	<b>15</b>	<b>30</b>	<b>15</b>

**Note:** 1. please provide the scheme of valuation for the paper.

2. Question paper should be both in English and Telugu media.

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**Text Books:-**

1. Animal Husbandry: ---- Technical Test paper.
2. Poultry- Technical Revised Common Core.
3. Animal Husbandry --- Dr.K.Kondaiah, A.V.N.Gupta.

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ZOOLOGY PRACTICAL SYLLABUS

Period: 30

PAPER – VI

Credits:2

Paper Code: Zoo-502P

Paper Title: Animal Husbandry

Max.Marks:50

Unit	Learning Units
SYLLABUS	1. Study of various breeds of layers and broilers (photographs)
	2. Identification of disease causing organisms in poultry birds (as per theory)
	3. Study of the anatomy of a poultry bird by way of dissecting a bird. (Demonstration)
	4. Study of various activities in a poultry farm (layers and broilers) and submission of a report.
	5. Study of various breeds of cattle (photographs/microfilms)
	6. Study of various activities carried out in a dairy farm and submission of a report.

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**Practical - VI**

**(Animal Husbandry)**

**Max. Marks: 50**

*Model Question Paper (External)*

*Paper Code: ZOO-502P*

1. Study of various breeds of layers and broilers (photographs) A & B	2X2 <sup>1</sup> / <sub>2</sub> =5M
2. Identification of disease causing organisms in poultry birds (as per theory) A & B	2X2 <sup>1</sup> / <sub>2</sub> =5M
3. Study of the anatomy of a poultry bird by way of dissecting a bird. (Demonstration)	5M
4. Study of various breeds of cattle (photographs/microfilms) A & B	2X5=10M
.	Total -- 25M

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**Guide lines for the Practical Examiners.**

Class: III B.Z.C

Paper Title: (Animal Husbandry)

*Max.Marks: 25m*  
Paper Code: ZOO-502C

1. Identify and comment on A & B (Charts / Photographs).  
(Identification -  $\frac{1}{2}$  mark & Comments -2m)
2. Identify and comment on A & B (Charts / Photographs)  
(Identification -  $\frac{1}{2}$  mark & Comments -2m)
3. Demonstration: (4 marks for diagram & 1 mark for labeling)
4. Identify and comment on A & B (Photographs/ microfilms).  
(Identification -1 mark & Comments -4m)

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**Animal Husbandry**

**Practical - V I**  
**Max. Marks: 50**

**Model Question Paper (Internal)    Paper Code: ZOO-502P**

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1. Attendance	--	5 M
2. Record	--	10M
3. Field trip & Field note book (Any one)	--	10M

Total -- 25M

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OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).**

NACC recredited at 'A' level  
Autonomous –ISO 9001-2015 Certified

Title of the Paper: **Environmental Studies.**

**Semester: - I**

Course Code		Course Delivery Method	Class Room/Blended Mode - Both
Credits	2	CIA Marks	10
No. of Lecture Hours/ Week	10	Semester End Exam Marks	40
Total Number of Lecture Hours	30	Total Marks	50
Year of Introduction : 2021	Year of Offering 2020-2021	Year of Revision – 2021-22	Percentage of Revision: 0%

<b>LIFE SKIL COURSE</b>	<b>CLAC001</b>	<b>2021-2022</b>	<b>B.A., B.Com., A.B.C.,&amp;B.Sc</b>
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**CO1:** Realize the importance of environment, the goods and services of a healthy biodiversity, dependence of humans on environment.

**CO2:** Evaluate the ways and ill effects of destruction of environment, population explosion on ecosystems and global problems consequent to anthropogenic activities.

**CO3:** Discuss the laws/ acts made by government for environmental conservation and acquaint with international agreements and national movements and realize citizen's role in protecting environment and nature.

Syllabus  
Course Details

Unit	Learning Units	Lecture Hours
I	<b>Unit 1: Environment and Natural Resources</b> Multidisciplinary nature of environmental education. Scope and importance of environmental education. A brief account of forest, water and renewable energy resources. Biodiversity introduction, Levels of Biodiversity: genetic, species and ecosystem diversity. Concept, Structure and functions of an Ecosystem.	8
II	<b>Unit 2 : Environmental degradation and Impacts</b> Threats to Biodiversity: Natural calamities, habitat destruction and fragmentation, over exploitation, hunting and poaching, introduction of exotic species, pollution, predator and pest control. A brief account of causes and effects of Air, Water, Soil and Noise pollution. Non-renewable energy resources, their utilization and influences. Climate change, Global warming, Acid rains, Ozone depletion. Human population growth and its impacts on environment; land use change, land degradation, soil erosion and desertification.	12
III	<b>Unit 3: Conservation of Environment</b> Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Control measures for various types of pollution; use of renewable and alternate sources of energy. Solid waste management- Measures for safe urban and Industrial wastes disposal. Environment Laws: Environment Protection Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols. Environmental movements: Bishnois of Rajasthan, Chipko, Silent valley.	10

**Suggested activities to learner:**

1. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural site.
2. Visit to a local waste disposal/ land filling site

**Reference Books :**

1. Environmental Studies by Dr.M.Satyanarayana, Dr.M.V.R.K.Narasimhacharyulu, Dr.G. Rambabu and Dr.V.VivekaVardhani, Published by Telugu Academy, Hyderabad.
2. Environmental Studies by R.C.Sharma, Gurbir Sangha, published by Kalyani Publishers.
3. Environmental Studies by Purnima Smarath, published by Kalyani Publishers

**MODEL PAPER**  
**AEC002 /HRDMM/**

**Title of the paper: Environmental Studies.**

**No. of Pages:-1.**

**Max. Marks: 40M**

**Time: 2 Hrs**

**No. of Questions: 16 Pass min. 16M**

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**SECTION –A**

Answer any FOUR of the following:

4x7=28 M

1. Explain the scope and importance of environmental studies?  
.
2. Give an account of renewable energy resources?  
.
3. Define ecosystem. Explain the structural components of an ecosystem?  
.
4. Define biodiversity. Explain various strategies for its conservation?  
.
5. Explain the causes, effects and control measures of air pollution?  
.
6. Give an account on environmental acts?

**SECTION –B**

Answer any SIX of the following:

6x2=12 M

7. Deforestation.
8. Chipko movement
9. Food chain
10. Biodiversity Hotspots
11. Poaching
12. Floods
13. Earthquakes
14. Rainwater harvesting
15. Global warming
16. Population explosion

**ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS SIDDHARTHA DEGREE COLLEGE  
OF ARTS & SCIENCE, VUYYURU-521165, KRISHNA Dt., A.P. (AUTONOMOUS).**

NACC recredited at 'A' level  
Autonomous –ISO 9001-2015 Certified

Title of the Paper: **Poultry Farming**

**Semester: - III**

Course Code	<b>PF-301</b>	Course Delivery Method	Class Room/Blended Mode - Both
Credits	2	CIA Marks	00
No. of Lecture Hours/ Week	10	Semester End Exam Marks	50
Total Number of Lecture Hours	30	Total Marks	50
Year of Introduction :	Year of Offering 2020-2021	Year of Revision – 2021-22	Percentage of Revision: 0%

<b>SKILL DEVELOPMENT COURSE</b>	Course code: PF-301	<b>2021-2022</b>	<b>A.B.C.,&amp; B.Sc</b>
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**Learning Outcomes:**

By successful completion of the course, students will be able to;

1. Understand the field level structure and functioning of insurance sector and its role in protecting the risks
2. Comprehend pertaining skills and their application for promoting insurance coverage
3. Prepare better for the Insurance Agent examination conducted by IRDA
4. Plan 'promoting insurance coverage practice' as one of the career options.

Syllabus  
Course Details

Unit	Learning Units	Lecture Hours
I	<b>Section I (Introduction to Poultry Farming):</b> General introduction to poultry farming -Definition of Poultry; past and present scenario of poultry industry in India. Principles of poultry housing. Poultry houses. Systems of poultry farming. Management of chicks, growers and layers. Management of Broilers. Preparation of project report for banking and insurance	10
II	<b>Section II (Feed and Livestock Health Management):</b> Poultry feed management – Principles of feeding, Nutrient requirements for different stages of layers and broilers. Feed formulation and Methods of feeding. Poultry diseases – viral, bacterial, fungal and parasitic (two each); symptoms, control and management; Vaccination programme.	10
III	<b>Section III (Harvesting of Eggs and Sanitation):</b> Selection, care and handling of hatching eggs. Egg testing .Methods of hatching. Brooding and rearing. Sexing of chicks. Farm and Water Hygiene, Recycling of poultry waste.	10

**Co- Curricular Activities suggested:**

**(4 Hrs)**

1. Group discussion& SWOT analysis
2. Visit to a poultry farm
3. Invited Lectures by Concerned officers of government or private farms
4. Cheap and Healthy Feed preparation by students based on government standards
5. Market study and Survey (Monitoring of daily price hike in poultry market and analysis)
6. Online Swayam Moocs course on poultry farming (see reference 9 below)

**Reference books:**

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi"

**Semester –III**

*w.e.f. 2021-2022* **Time: 90 mins** (Model question paper)

**Title of the paper: Poultry Farming. Code – PF- 301(SDC)**

**max.marks: 50**

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**Section – A**

Answer any **four** questions. Each question carries **five** marks. **4 x 5 = 20.**

1. Poultry house
2. Broilers
3. Any two viral diseases of poultry
4. Any two bacterial diseases of poultry
5. Any two fungal diseases of poultry
6. Egg testing
7. Brooding
8. Sexing chicks

**Section – B**

Answer any **three** questions. Each question carries **Ten** marks. **3 x 10 = 30**

9. Discuss briefly the past, present and future scenario of poultry farming industry in India
10. Explain principles of poultry housing in detail, with examples.
11. Write an essay on viral diseases of poultry.
12. Give an account of fungal and bacterial diseases (any two each) of poultry
13. Write an essay on selection, handling and hatching of eggs.

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(AUTONOMOUS)

**SEMESTER-III  
SKILL DEVELOPMENT COURSE**

**Guide lines to the paper setter**

**Time: 1½ hrs**

**Max.Marks:50**

**Paper Title: - Poultry Farming.**

**Paper Code: PF-301 (SDC)**

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*Note:*1. Answer **any four** questions out of eight in Part-A. Each question carries five marks.4X 5 = 20M.

2. Answer any**three** questions out of five in Part-B. Each question carries 10 marks.3 X 10 = 30M.

	<b>PART</b>	<b>Unit –I</b>	<b>Unit – II</b>	<b>Unit-III</b>
<b>5 Marks Questions</b>	<b>A</b>	<b>2</b>	<b>3</b>	<b>3</b>
<b>10 Marks Questions</b>	<b>B</b>	<b>2</b>	<b>2</b>	<b>1</b>
<b>Weightage</b>		<b>30</b>	<b>35</b>	<b>25</b>

- Note:**
1. please provide the scheme of valuation for the paper.
  2. Question paper should be both in English and Telugu media.