PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – I: ZOOLOGY PAPER – I

TITLE OF THE PAPER: ANIMAL DIVERSITY OF INVERTEBRATES

Subject Code: 19-ZOO-101 **Credits: 04** **Teaching Hrs/Week:04**

SYLLABUS

UNIT – I

1.0 Brief History, Significance of Diversity Of Invertebrates.1.1 Phylum Protozoa:- General Characters and Outline Classification up to Classes with Examples; Type Study: Elphidium,1.3 Phylum Porifera:- General Characters and Outline Classification Up to Classes with Examples; Canal System in Sponges.

UNIT – II

2.0 Phylum Coelenterate: - General Characters and outline Classification upto Classes with Examples; Type Study: Aurelia,Polymorphism in Coelenterates: Corals and Coral Reef Formation. 2.1 Phylum Platyhelminthes:- General Characters and Outline Classification Upto Classes With Examples; Type Study: Fasciola hepatica. 2.2 Phylum Nemati helminthes:- General Characters and OutlineClassification upto Classes with Examples. *Epidemiological incidents in Chittoor District due to the effect of Nemati helminthes.

UNIT – III

3.0 Phylum Annelida: - General Characters and Outline Classification upto Classes with Examples; Metamerism in Annelida, ,* Regeneration in annelida 3.1 Vermiculture : Scope and details of earth worm species used in Vermiculture, Processing and Significance of Vermiculture, vermi compost, Economic Importance of Vermicompost

UNIT – IV

4.0 Phylum Arthropoda:- General Characters and Outline Classification Upto Classes with Examples; Onychophora:- Peripatus-Structure & Affinities, 4.1*Practices adopted in Sericulture industry at Chittoor district,.* Vector borne diseases - Use of Swacch Bharath programme in their prevention 4.2 Phylum Mollusca:- General Characters and Outline Classification Upto Classes With Examples Pearl Formation in Pelecypoda. Torsion in Gastropoda.

UNIT – V

5.0 Phylum Echinodermata: General Characters and Outline Classification upto Classes with Examples; Water Vascular System of Star Fish. *Autotomy and

regeneration in Echinodermata 5.1 Invertebrates Larval Forms: Amphiblastula, Ephyra,Trochophora, Nauplius, Zoea, Glochidium, Bipinnaria. 5.2 Hemichordata: General Characters and Outline Classification Upto Classes with Examples; Balanoglossus: Structure, Affinities & Tornaria Larvae

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER –I: ZOOLOGYPAPER – I

Subject Code: **19-ZOO-101**

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section-A (Short question)	10	5	50	5	5	25
2	Section-B (Short question)	10	10	100	5	10	50
Total Marks				**150**	**Total Marks**		**75**

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	30
UNIT - II	2	2	30
UNIT - III	2	2	30
UNIT - IV	2	2	30
UNIT - V	2	2	30
Total No. of Questions	**10**	**10**	**150**

PVKN Govt. College (A), Chittoor

I B.Sc., SEMESTER –I: ZOOLOGYPAPER –I

TITLE OF THE PAPER: ANIMAL DIVERSITY OF INVERTEBRATES

Subject Code: 19-ZOO-101 **Time: 3Hrs** **Max Marks: 75**

MODEL QUESTION PAPER

Answer any Five of the following Questions **5X5=25**

1. General characters of protozoa
2. Spicules
3. Coral reef formation
4. Flame cells
5. Leech
6. Vermi Compost
7. Appendages
8. Peripatus
9. Balanoglossus
10. Bipinnaria larva

Answer ALL of the following Questions **5X10=50**

11. Describe the life cycle of Elphidium

[OR]

12. Describe the Canal system in Sponge.
13. Explain about the polymorphism in coelenterates

[OR]

14. Describe the life history of Fasciola hepatica
15. Write an essay on reproductive system of leech

[OR]

16. Write an essay on vermiculture
17. Write an essay on respiratory system of prawn

[OR]

18. Describe the process of torsion in Gastropoda
19. Describe the process of water vascular system in star fish

[OR]

20. Give a detailed account on the affinities of Balonoglossus

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER –I: ZOOLOGY PAPER –I

TITLE OF THE PAPER: ANIMAL DIVERSITY OF INVERTEBRATES

Subject Code: 19-ZOO-101P **Credits :02** **Teaching Hrs/Week: 3Hrs**

PRACTICAL SYLLABUS

Animal Diversity of Invertebrates

Observation of the following slides/specimens/models

Protozoa: Elphidium, paramecium –Binary fission,Conjugation.
Porifera: Spongilla, Euspongia, Sycon, Sycon-L.S,T.S.
Coelenterata: Obelia colony,Medusa ,Physalia, Velella,Corallium, Gorgonia, Aurelia,Pennatula.
Platyhelminthes: Planaria, Fasciola hepatica larval stages of Meracidum,Redia,Cercaria ,Echinococcus granulosus.
Nematehelminthes: Ascaris Male&Female ,Ancylostoma duodenale.
Annelida: Neries,Heteroneries,Aphrodite,Hirudo,Trochophore larva.
Arthropoda: Nauplius,Mysis,Zoea Larvae,Anopheles,culex, mouth parts (Male&Female). house fly mouth parts.Scorpion, Crab,Prawn,scolopendra, Sacculina,Limulus,Paripatus.
Mollusca: Chiton,Murex,Sepia,Loligo,Octopus,Nautilus,Glochidium Larva.
Echinodermata: Ophiothrix, Echinus,Clypeaster,Cucumaria, AntedonAsterias, Bipinnaria larva.

Hemichordata : Balanoglossus,Tornaria larva.
Demonstration of dissection/dissected / Virtual Dissections: Leech / Prawn/Scorpion/Crab Digestive system, Prawn Appendages ,Prawn/Scorpion/Crab Nervous System , Pila/Unio Digestive System, Mounting of statocyst Mounting of Radula.

・Compulsory one species to be adopted for demonstration only by the faculty.

・Computer Aided Techniques as per U.G.C Guidelines.

Laboratory record work shall be submitted at the time of Practical Examination, each practical batch should not have more than 20 students.

@@@@@

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER –I: ZOOLOGY PAPER –I

TITLE OF THE PAPER: ANIMAL DIVERSITY OF INVERTEBRATES

Subject Code: 19-ZOO-101P **Credits: 02** **Teaching Hrs/Week: 03**

PRACTICAL MODEL PAPER

I. Draw a Labeled diagram of virtual dissection/dissected animalsof 1X10 = 10M

II. Identification of six spotters/models/photographs, draw a labeled neatdiagram with salient features. 6 x 5 = 30 M

*One from Protozoa or Porifera, one from Cnidaria, or Helminthes, two from Annelida or Arthropoda two from Mollusca, or Echinodermata, or Hemichordate.

III) Certified Record 10 M

Without Practical record –Student is not admitted for University exam Spotters

Scheme of evaluation

Identification & Classification	1 M
Labeled Diagram	2 M
Comments	

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – I: ZOOLOGY PAPER – I

TITLE OF THE PAPER: ANIMAL DIVERSITY OF INVERTEBRATES

Subject Code: 19-ZOO-101 **Credits: 03** **Teaching Hrs/Week: 04**

QUESTION BANK

UNIT- 1 **10 MARKS**

1. Describe the general characters and outline classification up to classes of protozoa with examples
2. Describe the structure and life history of Elphidium
3. Describe the canal system in sponges

5MARKS

4. Sycon
5. Spicules in sponges
6. Types of cells in sponges

UNIT- II **10 MARKS**

1. Describe the structure and life cycle of Aurelia
2. Write about the polymorphism in coelenterates
3. Describe the life history of Fasciola hepatica
4. Describe the reproductive system in Fasciola
5. Describe the general characters and outline classification up toclasses of Nemati helminthes

5 MARKS

6. Corals
7. Coral reefs
8. Flame cells
9. Sporocyst

UNIT – III **10 MARKS**

1. Write an essay on reproductive system of leech
2. Give a detailed account on metamerism in Annelida
3. Write an essay on vermiculture
4. Write an essay on Haemocoelomic system of leech

5 MARKS

5. Hirudinaria
6. Vermicompost

UNIT – 1V **10 MARKS**

1. Write an essay on respiratory system of prawn
2. Discuss the general characters and affinities of peripatus
3. Write about the pearl formation in pelecypoda
4. Describe the process of torsion in gastropoda

5 MARKS

5. Appendages
6. Peripatus

UNIT – V **10 MARKS**

1. Describe the process of Water vascular system in star fish
2. Describe the general characters and outline classification upto classes of phylum Hemichordatawith examples

3. Give a detailed account on the affinities of Balanoglossus
4. Write the essay on regeneration in Echinodermata

5 MARKS

5. Bipinnaria Larva
6. Nauplius
7. Ephyra larva
8. Trochophore larva
9. Tornaria larva
10. Amphiblastula larva

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – II: ZOOLOGY PAPER – II

TITLE OF THE PAPER: ANIMAL DIVERSITY OF CHORDATES

Subject Code: 19-Zoo-202 **Credits: 04** **Teaching Hrs/Week: 4**

SYLLABUS

UNIT – I: PROTO CHORDATA

1.1 General Characters of Chordates and its origin. 1.2 Protochordata: Sailent Features 1.2.1 Structure and life history of Herdmania 1.2.3 Significance of Retrogressive metamorphosis 1.2.4 *Structure and affinities of Amphioxus.

UNIT – II: CYCLOSTOMATA AND FISHES

2.1.1 General characters of Cyclostomes 2.1.2 Difference between Petromyzon and myxine 2.2 Fishes 2.2.1 General Characters of Fishes 2.2.2 Classification of fishes up to sub-class level with examples 2.2.3 Scoliodon-External features, Digestive system, Respiratory system, Heart, aortic arches, Brain.2.2.4 Migration in fishes 2.2.5 Types of scales 2.2.6 *General account of dipnoi

UNIT – III: AMPHIBIA & REPTILIA

3.1 Amphibia 3.1.1 General characters of Amphibia3.1.2 Classification of Amphibia upto orders with suitable examples 3.1.3* Parental care in Amphibia 3.2 Reptelia 3.2.1 General Characters of Reptelia 3.2.2 Clasification of Reptelia upto orders with examples 3.2.3 * Skull in Reptiles.

UNIT – IV: AVES

4.1 Aves 4.1.1 General Characters of Aves 4.1.2 Classification of Aves upto sub-classes with examples 4.1.3 Columba livia-External features, Digestive System, Resipratory systems, 4.1.4 Migration of Birds 4.1.5 Flight adaptations in Birds.4.1.6 Evolutionary significance of Archaeopteryx.

UNIT – V: MAMMALIA AND ZOOGEOGRAPHY

5.1.1 General Characters of mammalia 5.1.2 Classification of Mammalia up to sub classes with examples 5.1.3 Dentition in Mammals 5.2. Zoogeography 5.2.1 Characteristics and fauna of Oriental region, Australian Region, Ethiopian Region.

Note: * marked are added topics to previous existing syllabus

Additional Inputs

1. Evolutionary significance and development of Chordates
2. Instinctive behaviour of petromyzon
3. Structure of vertebral column
4. Milk generation in Pigeon Crop
5. Hotspots in Oriental region

Suggested readings:

1. **E.L.jordan and P.S Verma** ' Chordate Zoology'-S .Chand Publications
2. **Mohan P Arora 'Chordata** –I,Himalaya Publishing House Pvt.ltd.
3. **Marshal, Parker and Haswell** 'Text book of vertebrates.' ELBS and Mc Millan , England .
4. **Alfred Sherwood Romer**. Thomas S Pearson' The Vertebrates body, Sixth edition, CBS college publishing Saunders College Publishing.
5. **George C**.Kent,Robert K Carr. Comparative Anatomy of the Vertebrates,9th ed. Mc Graw Hill.
6. **Kenneth Kardong Veretbrates** : Comparative Anantomy Function and Evolution,4th ed, 'McGraw Hill.
7. **J**.W.Young The life of Vertebrates , 3rd ed, Oxford University Press.
8. **Harvey Pough F, Christine M Janis, B Heiser,** Vertebrate Life, Pearson 6th ed, pearson Education Inc. 2002.
9. **R.L Kotpal,** Modern text book of Zoology, Rastagi Publications**.**
10. **Pandey & Sukla** Fish and fishers 2nd Ed. Rastagi Publications.

@@@@@

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER –II: **ZOOLOGY PAPER – II**

Subject Code: **19-Zoo-202**

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section-A (Short Question)	10	5	50	5	5	25
2	Section-B (Essay Question)	10	10	100	5	10	50
Total Marks				**150**	**Total Marks**		**75**

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	30
UNIT - II	2	2	30
UNIT - III	2	2	30
UNIT - IV	2	2	30
UNIT - V	2	2	30
Total No. of Questions	**10**	**10**	**150**

PVKN Govt. College (A), Chittoor

I B.Sc., SEMESTER – II: ZOOLOGY PAPER – II

TITLE OF THE PAPER: ANIMAL DIVERSITY OF CHORDATES

Subject Code: 19-ZOO-102 **Time: 3Hrs** **Max Marks: 75**

MODEL QUESTION PAPER

SECTION – A

Answer any Five of the following Questions **5X5 =25 Marks**

1. General characters of Protochordata
2. Write about the Affinities of Amphioxus
3. Write Difference between Petromyzon and myxine
4. Write about the General Characters of Fishes
5. Write about the General Characters of Reptelia
6. Skull in Reptiles
7. Give an account of Migration of Birds
8. Evolutionary significance of Archaeopteryx
9. Write about General Characters of mammalia
10. Give an account on Comparison of Prototherians, Metatherians and Eutherians

SECTION – B

Answer ALL the following Questions **10X5 =50 Marks**

Unit –I

11. Write about general Characters of Chordates and its origin

OR

12. Write about the structure and life history of Herdmania

Unit- II

13. Write about the classification of fishes up to sub class level with examples

OR

14. Explain the digestive system of Scoliodon

Unit –III

15. Describe the Digestive system in Rana hexadactyla

OR

16. Describe the Respiratory system in Rana hexadactyla

UNIT-IV

17. Describe the Digestive System of Columba livia

OR

18. Describe the Respiratory System of Columba livia

UNIT- V

19. Give an account on Characteristics and fauna of Oriental region

OR

20. Give an account on Characteristics and fauna of Australian Region

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – II: ZOOLOGY PAPER – II

TITLE OF THE PAPER: ANIMAL DIVERSITY OF CHORDATES

Subject Code: 19-ZOO-201P **Credits : 02** **Teaching Hrs/Week : 03**

PRACTICAL SYLLABUS

Observation of the following Slides/Spotters/Models.

Protochordata : Herdmania , Amphioxus, Amphioxus T.S Through Pharynx

Cyclostomes : Petromyzon, Myxine

Pisces : Labeo rohita, Catla, Channa, Clarius, Hippo Campus, Exocoetus, Echeneis, Anguilla, Pristis, Tarpedo, Protapterous (Dipnoi fish)

Fish Scales- Placoid, Cycloid, Ctenoid Scales

Amphibla : Hyla , Rachophorus, Icthyophis, siren, Amblystoma, Axolotal Larva.

Reptelia : Chamaeleon, Uromastix, Draco, Trionix, Naja, Bungarus, Enhydrina, Russels viper , Crocadilus.

Aves : Passer, Psittacula , Bubo, Allcedo,Columba, Carvas, Pavo cristatus, Collection and study of different feathersquill, contour, Filopluma , down .

Mammalia : Ornithorhyncus, Tachyglossus, hedgehog, Loris, Manis.

Osteology : Appendicular Skelton of Pigeon, rabbit-Skull, Forelimbs, Hind Limbs , Pectoral and pelvic girdles.

Demonstration of dissection/ Dissected/ Virtual dissection.

1. Cranial Nerves : V,VII,IX,X cranial nerves of shark or locally available fish
2. Arterial system of Shark/Calotes/Fowl/Rat
3. Digestive System of Fish

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – II: ZOOLOGY PAPER – II

TITLE OF THE PAPER: ANIMAL DIVERSITY OF CHORDATES

Subject Code: 19-ZOO-201P **Credits : 02** **Teaching Hrs/Week : 03**

PRACTICAL MODEL PAPER

MAX. MARKS -50

1. Identify the given dissection and Draw a labeled diagram 10M
2. Identify and comment on the following spotters and draw Labeled drawing A, B, C, D, E, F, G (One each from Prochordates, Fishes, Amphibia, Reptiles, Aves, and Osteology) 6 X5 = 30 M
3. Certified Practical record 10 M

Without Practical record –Student is not admitted for exam

1. Spotters Identification 1 M
2. Classification Labeled Diagram -2 M
3. Comments -2 M

@@@@@

PVKN Govt. College(A), Chittoor

I B.Sc., SEMESTER – II: ZOOLOGY PAPER – II

TITLE OF THE PAPER: ANIMAL DIVERSITY OF CHORDATES

Subject Code: 19-Zoo-202 **Credits: 03** **Teaching Hrs/Week: 4**

QUESTION BANK

UNIT – I (Proto Chordata)

Essay type questions

1. Write about general Characters of Chordates and its origin
2. Write about the structure and life history of Herdmania
3. Explain the Retrogressive metamorphosis in Herdmania

Short answer type questions

1. General characters of Protochordata
2. Write about the Affinities of Amphioxus
3. Urochordata

UNIT – II (Cyclostomata and Fishes)

Essay type questions

1. Write about the classification of fishes up to sub class level with examples
2. Explain the digestive system of Scoliodon
3. Explain the Respiratory system of Scoliodon
4. Give an account of Migration in Fishes
5. Describe the excretory system in scoliodon
6. Give the general account of dipnoi

Short answer type questions

1. Give an account of general characters of Cyclostomes
2. Write Difference between Petromyzon and myxine
3. Write about the General Characters of Fishes
4. Types of scales
5. Give the general account of dipnoi

UNIT – III (Amphibia & Reptilia)

Essay type questions

1. Give the classification of Amphibia up to orders with suitable examples
2. Parental care in Amphibia
3. Describe the Digestive system in Rana hexadactyla
4. Describe the Respiratory system in Rana hexadactyla
5. Write about the classification of Reptelia
6. Skull in Reptiles

7. Give an account of Identification of poisonous snakes and non-poisonous snakes.

Short answer type questions

1. Give the General characters Amphibia
2. Write about the General Characters of Reptelia
3. Skull in Reptiles
4. Apoda
5. Rhyncocephalia
6. Crocodelia

UNIT – IV (Aves)

Essay type questions

1. Write about the Classification of Aves upto sub-classes with examples
2. Describe the Digestive System of Columba livia
3. Describe the Respiratory System of Columba livia
4. Write about of Flight adaptations in Birds

Short answer type questions

1. Give the General Characters of Aves
2. Give an account of Migration of Birds
3. Evolutionary significance of Archaeopteryx
4. Ratitae
5. Write about of importance of pectin and functions in the eye of pigeon
6. Types of feathers in birds.
7. Evolutionary significance of Archaeopteryx

UNIT – V (Mammalia and Zoogeography)

Essay type questions

1. Write about Classification of Mammalia up to sub classes with examples
2. Write an essay on Dentition in Mammals
3. Give an account on Characteristics and fauna of Oriental region
4. Give an account on Characteristics and fauna of Australian Region

Short answer type questions

1. Write about General Characters of mammalia
2. Give an account on Comparison of Prototherians, Metatherians and Eutherians
3. Give an account on Characteristics and fauna of Ethiopian Region

$$$$

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER –III: ZOOLOGY (Subject) PAPER – III

Title of the Paper: CYTOLOGY, GENETICS AND EVOLUTION

Subject Code: 19-ZOO-201 **Credits: 04** **Teaching Hrs/Week: 04**

SYLLABUS

Unit – I: Cytology

1.1 Definition, history, prokaryotic and eukaryotic cells, virus, viroids, mycoplasma.1.2 Electron microscopic structure of eukaryotic cell.1.3 Plasma membrane – Different models of plasma membrane stressed fluid mosaic model. Functions of plasma membrane in orientation of exo cytosis, Endo cytosis, Phagocytosis, Pino cytosis, Active and Passive transport.

Unit – II: Cell Organelles

2.1 Structure and functions of Endoplasmic Reticulum. 2.2 Structure and functions of Golgi apparatus.2.3 Structure and functions of Lysosomes.2.4 Structure and functions of Ribosomes.2.5 Structure and functions of Mitochondria.2.6 Nucleus.2.7. Chromatin - Structure and significance, Chromosomes - Structure, types, functions.

Unit – III: Genetics -1

3.1.1 Principles of inheritance in brief.3.1.2 Incomplete dominance and codominance. 3.1.3 Lethal alleles, Epistasis, Pleiotropy, Multiple Alleles (ABO Blood grouping).

Unit – IV: Genetics - II

4.1.1 Sex determination – chromosomal mechanisms – XX – XO , XX – XY, ZZ – ZW type , Genic balance theory of Bridges, Dosage compensation in man. 4.1.2 Sex linked inheritance – Eye color in Drosophila, Hemophilia and Color. Blindness in man. 4.1.3 Extra chromosomal inheritance. 4.1.4 Human karyotyping.

Unit – V: Evolution

5.1.1 Origin of life – Biogenesis, Abiogenesis, Cosmozoic theory, Urey and Millers experiment. 5.1.2 Lamarckism, Darwinism, Neo – Darwinism, Hardy-Weinberg Equilibrium.5.1.3 Variations, isolating mechanisms, natural selection. 5.1.4 Types of natural selection (directional, stabilizing, disruptive). 5.1.5 *Evolution of man through ages*. 5.1.6 Speciation (Allopatric and Sympatric). 5.1.7 Macro evolutionary principles (Example: Darwin's finches)

@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER – III: ZOOLOGY (Subject) PAPER – III

Subject Code: 19-ZOO-201

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Short answers	10	5	50	5	5	25
2	Essay questions	10	10	60	5	10	50

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	30
UNIT - II	2	2	30
UNIT - III	2	2	30
UNIT - IV	2	2	30
UNIT - V	2	2	30
Total No. of Questions	**10**	**10**	**150**

PVKN Govt. College (A), Chittoor

II B.Sc., SEMESTER – III: ZOOLOGY (Subject) PAPER – III

Title of the Paper: CYTOLOGY, GENETICS AND EVOLUTION

Subject Code: 18-ZOO-201 **Time : 3Hrs** **Max Marks : 75**

MODEL QUESTION PAPER

SECTION – A

Answer any Five of the following Questions **5X5 =25 Marks**

1. Virus
2. Lysosomes
3. Multiple alleles
4. Human Karyotype
5. Lamarckism
6. Urey and Millers experiment
7. Chromatin
8. XX – XO
9. Incomplete dominance
10. *Phago cytosis*

SECTION – B

Answer all the following Questions **5X10 =50 Marks**

Unit –I

11. Comparison between Prokaryotic and Eukaryotic cell

OR

12. Structure of Plasma membrane and its functions

Unit- II

13. Write an essay on endoplasmic reticulum

OR

14. Chromosome structure and function

Unit –III

15. Write a brief note on Epistasis

OR

16. Write a brief note on Principles of inheritance

Unit- IV

17. Write an essay on Sex determination

OR

18. Write an essay on Sex linked inheritance in drosophila

Unit –V

19. Write an essay on Hardy-Weinberg Equilibrium and its significance?

OR

20. Write an essay on Allopatric and sympatric speciation

@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER – III: ZOOLOGY (Subject) PAPER – III

Title of the Paper: CYTOLOGY, GENETICS AND EVOLUTION

Subject Code: 19-ZOO-201 P **Credits: 02** **Teaching Hrs/Week: 03**

PRACTICAL SYLLABUS

Observation of the following slides/specimens/models

I. Cytology

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 *Chiranomous*

II. Genetics

1. Study of Mendelian inheritance using suitable examples
2. Study of linkage recombination, gene mapping using the data
3. Study of human karyotypes

III. Evolution

1. Study of fossil evidences
2. Study of homology and analogy from suitable specimens and picture
3) Evolution of man through ages with pictures (Added because it is important for competition exams).
4. Darwin's finches (pictures)
5. Visit to natural history museum and submission of report

@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER – III: ZOOLOGY (Subject) PAPER – III

Title of the Paper: CYTOLOGY, GENETICS AND EVOLUTION

Subject Code: 19-ZOO-201 P **Credits: 02** **Teaching Hrs/Week: 03**

PRACTICAL MODEL PAPER

1. Squash preparation of onion root tip for mitotic chromosomes 10M

OR

Mounting of salivary glands of chromosomes of Chironomus larva

2. Identify and comment on the following spotters 5 x 6 = 30M

1. Mitosis stage – I
2. Meiosis stage – I
3. Human karyotype
4. Homo rhodesiense
5. Hardy Weinberg law

2. Certified record 10M

Spotters-

Identification – I Mark

Diagram - 2 Marks

Comments – 2 Marks

Certified practical record is compulsory. Student is not admitted to practicals with put record book.

@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER – III: ZOOLOGY (Subject) PAPER – III

Title of the Paper: CYTOLOGY, GENETICS AND EVOLUTION

Subject Code: 19-ZOO-201 **Credits: 03** **Teaching Hrs/Week: 03**

QUESTION BANK

UNIT – I (Cytology)

Essay type questions

Q1. Give detailed account on Electron microscopic structure of Eukaryotic cell
Q2. Describe the Plasma membrane structure
Q3. Write about the functions of Plasma membrane

Short answer type questions

Q1. Differences between prokaryotic cell and Eukaryotic cell
Q2. Mycoplasma
Q3. Corona virus
Q4. Viroid's

UNIT – II (CELL ORGANELLS)

Essay type questions

Q1.Describe the structure and functions of Robisome
Q2. Kreb's cycle
Q3. Give the detailed account on structure and types of Chromosomes

Short answer type questions

Q1. Give the Structure and functions of Endoplasmic reticulum
Q2. Give the Structure and functions of Golgi apparatus
Q3. Give the Structure and functions of Lysosomes

UNIT – III (GENETICS-I)

Essay type questions

Q1. Give detailed account on Epistasis
Q2. Describe the multiple alleles

Short answer type questions

Q1. Mendilian principles
Q2. Co-dominance
Q3. In complete dominance

Q4. Lethal allels
Q5. Pleotrophism

UNIT – IV (GENETICS-II)

Essay type questions

Q1. Describe the Chromosomal method of Sex determination
Q2. Discuss the sex linked inheritance with any three examples
Q3. Write about the Sex determination in Drosophila

Short answer type questions

Q1. Barr body
Q2. Human karyotyping
Q3. Hemophilia
Q4. Color blindness

UNIT – V(EVOLUTION)

Essay type questions

Q1. Give detailed account on Isolation
Q2. Speciation
Q3. Describe the Urey and Miller's experiment in the origin of life
Q4. Neo-darwinism

Short answer type questions

Q1. Lamarkism
Q2. Darwinism
Q3. Natural selection
Q4. Cosmozoic theory of origin of life

$$$$

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER –IV: ZOOLOGY (Subject) PAPER – IV

Title of the Paper:(EMBRYOLOGY, PHYSIOLOGY, ECOLOGY&ANIMAL BEHAVIOUR)

Subject Code: 19-ZOO-401 **Credits: 04** **Teaching Hrs/Week: 04**

SYLLABUS

Unit – I: Developmental Biology and Embryology

1.1.1 Gametogenesis (Spermatogenesis and Oogenesis).1.1.2 Fertilization.1.1.3. Types of eggs 1.1.4 Types of cleavages.1.2 Formation and functions of Foetal membrane in chick embryo.1.3. Development, types and functions of Placenta in mammals.

Unit – II: Physiology - I

2.1.1 Elementary study of process of digestion.2.1.2 Absorption of digested food2.1.3 Respiration - Pulmonary ventilation, transport of oxygen and carbondioxide2.1.4 Circulation - Structure and functioning of heart, Cardiac cycle.2.1.5 Excretion – Structure of nephron, urine formation, counter current mechanism

Unit – III: Physiology – II

3.1.1 Nerve impulse transmission - Resting membrane potential, origin andpropagation of action potentials along myelinated and non-myelinated nervefibers3.1.2Muscle contraction –Ultra structure of muscle fiber,Slidingfilament theory of muscle contraction. 3.1.3 Endocrine glands - Structure, secretions and the functions (of hormones)of pituitary, thyroid, parathyroid, adrenal glands, pancreas and gonads(Testis & Ovaries).

Unit – IV:Ecology – I

4.1.1 Meaning and scope of Ecology 4.1.2 Pond Ecosystem– Biotic and Abiotic factors - Temperature, light, water,food chain & Energy flow. 4.1.3 Bio geo - Chemical cycles - Nitrogen, carbon and phosphorus. 4.1.4 Animal Habitat & ecological niche and Ecological succession.4.1.4 Components of Ecosystem (Example:lake), 4.1.5 Community interactions - Mutualism, Commensalism, Parasitism, Competition, Predation.

Unit - V: Animal Behaviour

5.1. Animal Behaviour: Definition & Types 5.2. Innate Behaviour: Taxes & Reflexes –Brief outline of Communication in Animals (Added because of important topic for higher studies). 5.3. Learned Behaviour: Associate Learning (E.g.Classical Conditioning & Instrumental Learning). 5.4 Learning & Memory. 5.5 Biological Clocks & Circadian Rhythms

@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER – IV: ZOOLOGY (Subject) PAPER – IV

Subject Code: 19-ZOO-401

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section-A (Short Question)	10	5	50	5	5	25
2	Section-B (Essay Question)	10	10	100	5	10	50
Total Marks				**150**	**Total Marks**		**75**

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT – I	02	02	30
UNIT – II	02	02	30
UNIT – III	02	02	30
UNIT – IV	02	02	30
UNIT – V	02	02	30
Total No. of Questions	**10**	**10**	**150**

@@@@@

PVKN Govt. College (A), Chittoor

II B.Sc., SEMESTER –IV: ZOOLOGY (Subject) PAPER –IV

Title of the Paper:(EMBRYOLOGY, PHYSIOLOGY, ECOLOGY&ANIMAL BEHAVIOUR)

Subject Code:19-ZOO-401 **Time: 3Hrs** **Max Marks :75M**

MODEL QUESTION PAPER

SECTION – A

Answer any Five of the following Questions **5X5 =25 Marks**

1. Foetal membranes in chicks
2. Fertilization
3. Structure of Nephron
4. Synaptic transmission
5. Structure of Skeletal Muscle
6. Ecological niche
7. Commensalism
8. Reflexes
9. Taxes
10. Parathyroid

SECTION – B

Answer ALL the following Questions **5X10 =50 Marks**

Unit –I

11. Describe Gametogenesis

OR

12. Write about types and functions of Placenta in mammals

Unit- II

13. Describe the carbohydrates and protein digestion

OR

14. Describe the structure of human heart

Unit –III

15. Describe sliding filament theory

OR

16. Explain pituitary secretions and its functions

Unit- IV

17. Define biogeochemical cycles explain nitrogen cycle

OR

18. Write about mutualism, competition and predation

Unit –V

19. What is associated learning explain it with reference to two examples you have studied

OR

20. Define Animal Behaviour explain different type of behaviour.

@@@@@@

PVKN Govt. College(A), Chittoor

II B.Sc., SEMESTER –IV: ZOOLOGY (Subject) PAPER –IV

Title of the Paper:(EMBRYOLOGY, PHYSIOLOGY, ECOLOGY&ANIMAL BEHAVIOUR)

Subject Code: 19-ZOO-401 **Credits: 02** **Teaching Hrs/Week: 04**

QUESTION BANK

Unit - I
Developmental Biology and Embryology
Essay type questions

Q1. Describe the process of Spermatogenesis
Q2. Describe the process of Oogenesis
Q3. Write about various Types of cleavages.
Q4. Write an Essay on Placenta in mammals.

Short answer type questions

Q1. Give an account on Fertilization.
Q2.Write about various Types of eggs.

Unit - II
Physiology – I
Essay type questions

Q1. Write about the detailed account on process of Digestion of Proteins and Carbohydrates.
Q2. Give an account of transportation of Respiratory gases
Q3. Describe the structure of the Human Heart with the help of labelled diagram
Q4. Write notes on the working of the Heart of Man
Q5. Describe Arrhythmia
Q6. Describe the structure of Nephron
Q7. Explain the physiology of Urine formation

Short answer type questions

Q1. Explain the Mechanism of Absorption of digested food.
Q2. Write about Gastro Intestinal hormones.
Q3. Write about Respiratory pigments
Q4. Discuss briefly about Open and closed circulation
Q5. Describe Cardiac cycle
Q6.Describe the structure of Nephron

Unit - III
Physiology – II
Essay type questions

Q1. Explain the transmission of nerve impulse through a nerve fibre with the help of suitable diagrams
Q2. Explain the mechanism of muscle contraction
Q3. Write about the hormones of Pituitary gland

Short answer type questions

Q1. Give an account of synaptic transmission
Q2. Write about any three neurotransmitters
Q3. Write about the structure of Muscle
Q4. Cori cycle
Q5. Adrenal gland

Unit – IV
Ecology
Essay type questions

Q1. Temperature as on Ecological factor – Discuss it
Q2. Write about the Energy flow in an ecosystem
Q3. Write about Biogeochemical cycles
Q4. Give detailed account on Ecological succession

Short answer type questions

Q1. Write about the various food chains
Q2. Ecological Niche
Q3. Parasitism
Q4. Commensalism
Q5. Phosphorus cycle

Unit - V
Animal Behaviour
Essay type questions

Q1. Write about the taxes and reflexes
Q2. Classical conditioning and instrumental learning
Q3. Biological clocks

Short answer type questions

Q1. Memory
Q2. Circadian rhythms

δδδδδ

P.V.K.N. Govt. College(A), Chittoor

III B.Sc., SEMESTER –V: Zoology PAPER – 5
ANIMAL BIOTECHNOLOGY

Subject Code: 21-ZOO-501 Credits : 03 Teaching Hrs/Week : 4

Periods:60Max. Marks:100

Unit 1: Tools of Recombinant DNA technology - Enzymes and Vectors

Restriction modification systems: Types I, II and III. Mode of action, nomenclature, applications of Type II restriction enzymes in genetic engineering

DNA modifying enzymes and their applications: DNA polymerases, kinases and phosphatases, DNA ligases and Reverse transciptaseCloning Vectors: Plasmid vectors:pBR and pUC series, Bacteriophage lambda and M13 based vectors, Cosmids, BACs, YACs,

Unit 2 Techniques of Recombinant DNA technology

Cloning: Use of linkers and adaptors

Gene delivery: Microinjection, electroporation, biolistic method (gene gun), liposome and viralmediated delivery

PCR: Basics of PCR. &*Its applications*, Basics of RT-PCR&its applications

DNA Sequencing: Sanger's method of DNA sequencing

Hybridization techniques: Southern, Northern and Western blotting,

Genomic and cDNA libraries: Preparation and uses

Recombinant insulin &human growth hormone

Gene therapy

UNIT 3 Animal Cell Technology

Cell culture media: Natural and Synthetic

Cell cultures: Primary culture, secondary culture, continuous cell lines; Protocols for Primary Cell Culture; Established Cell lines (common examples such as MRC, HeLa, CHO, BHK, Vero); Organ culture; Cryopreservation of cultures.

Hybridoma Technology: Cell fusion, Production of Monoclonal antibodies (mAb), Applications of mAb

Stem cells: Types of stem cells, applications ,Stem cell therapy

Unit 4 Reproductive Technologies & TransgenicAnimals

Manipulation of reproduction in animals: Artificial Insemination, In vitro fertilization , super ovulation, Embryo transfer, Embryo cloning

Transgenic Animals: Strategies of Gene transfer; Transgenic - sheep, - fish; applications ,Ethical concerns regarding Transgenesis

Unit 5 Applied Biotechnology Industry: Fermentation: Different types of Fermentation: Short notes on - Submerged & Solid state; batch, Fed batch & Continuous; Stirred tank, Air Lift, Fixed Bed and Fluidized; Downstream processing - Filtration, centrifugation, extraction, chromatography, spray drying and lyophilization

Agriculture: fisheries –*Genetically modified fishes*, monoculture in fishes, polyploidy in fishes; DNA fingerprinting

SUGGESTED READING

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.

4. Sambrook J and Russell D. (2001). Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press

5. Wiley JM, Sherwood LM and Woolverton CJ. (2008). Prescott, Harley and Klein's Microbiology. McGraw Hill Higher Education

6. Brown TA. (2007). Genomes-3. Garland Science Publishers

7. Primrose SB and Twyman RM. (2008). Genomics: Applications in human biology. Blackwell Publishing, Oxford, U.K.

8. Animal Cells Culture and Media, D.C. Darling and S.J. Morgan, 1994.BIOS Scientific Publishers Limited.

9. Methods in Cell Biology, Volume 57, Jennie P. Mathur and David Barnes, 1998. Animal Cell Culture Methods Academic Press.

10. P.K. Gupta: Biotechnology and Genomics, Rastogi publishers (2003).

11. B.D. Singh: Biotechnology, Kalyani publishers, 1998 (Reprint 2001)

PVKN Govt. College(A), Chittoor

III B.Sc., SEMESTER –V: Zoology PAPER – V

(**ANIMAL BIOTECHNOLOGY**)

Subject Code: 21-Zoo-501 Credits : 03 Teaching Hrs/Week : 4

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Short Answers	10	5	50	5	5	25
2	Essays	10	10	100	5	10	50
							75

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	15
UNIT - II	2	2	15
UNIT - III	2	2	15
UNIT - IV	2	2	15
UNIT - V	2	2	15
Total No. of Questions	**10**	**10**	**75**

NEW

PVKN Govt. College(A), Chittoor

III B.Sc., SEMESTER –V: ZOOLOGY PAPER – V

(ANIMAL BIOTECHNOLOGY)

Subject Code: 21-ZOO-501 Time : 3hrs Max Marks : 75

MODEL QUESTION PAPER

SECTION – A

Answer any FIVE of the following 5×5=25M

Draw labelled diagrams wherever necessary

1.DNA polymerase

2.Cosmid

3.Linkers

4.Gene therapy

5.Natural cell culture media

6.Cryopreservation

7.cell fusion

8.Artificial insemination

9.Chromatography

10.DNA finger printing

SECTION -B

Answer any FIVE of the following 5×10=50M

Draw labelled diagrams wherever necessary

11.a)Give an account on Restriction Endonuclease enzymes and its applications

OR

b) Describe DNA modifying enzymes and their applications

12.a)Write methods of Gene delivery process.

OR

b)Write about basics of PCR and its applications

13.a)Explain about established or continuous cell lines with suitable examples.

OR

b)Write about stem cells and its applications.

14.a)Explain Embryo Transfer and Embryo cloning.

OR

b)Write about transgenic animals and its applications.

15.a)What is Fermentation Technology and write types of Fermentation

OR

b)Explain in detail about Down stream processing

PVKNGovt.College(A),Chittoor

NEW

III B.Sc., SEMESTER –V: ZOOLOGY PAPER – VI
(ANIMAL HUSBANDRY)

Subject Code: 21-ZOO-502 Credits : 03 Teaching Hrs/Week : 3

SYLLABUS

UNIT – I : 10 Hours

General introduction to poultry farming. - Central Pollution control board regulations on Poultry- Principles of poultry housing. Poultry houses. Systems of poultry farming. Management of chicks, growers and layers. Management of Broilers.

UNIT – II: 10 Hours

Poultry feed management – Principles of feeding. Nutrient requirements for different stages of layers and broilers. Methods of feeding. Poultry diseases – viral, bacterial, fungal and parasitic (two each); symptoms, control and management. General hygiene prevention & control measures of infectious diseases of poultry, External parasites prevention methods

UNIT – III: 10 Hours

Selection, care and handling of hatching eggs. Quality in fresh – Laid eggs. Methods of hatching. Brooding and rearing. Sexing of chicks.

UNIT- IV: 20 Hours

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. Cleaning and sanitation of dairy farm. Weaning of calf. Castration and dehorning. Deworming and Vaccination programme. Records to be maintained in a dairy farm.

UNIT - V: 10 Hours

Care and management of dairy animals - Care and management of calf, heifer, milk animal, dry and pregnant animal, bulls and bullocks. Government sponsored programmes, General hygiene prevention & control measures of infectious diseases of livestock & poultry, Classification of common livestock feeds.

III B.Sc., SEMESTER – V: Zoology
Animal Husbandry

Subject Code: 21-ZOO-502
BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Short Answers	10	5	50	5	5	25
2	Essays	10	10	100	5	10	50
							75

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	15
UNIT - II	2	2	15
UNIT - III	2	2	15
UNIT - IV	2	2	15
UNIT - V	2	2	15
Total No. of Questions	10	10	75

PVKN Govt. College(A), Chittoor

III B.Sc., SEMESTER –V: ZOOLOGY PAPER – V
(ANIMAL HUSBANDRY)

Subject Code: 21-ZOO-502 Time : 3hrs Max Marks : 75

MODEL QUESTION PAPER

SECTION – A

Answer any Five of the following Questions **5X3 =15 Marks**

1
2
3
4
5
6
7
8
9
10

SECTION – B

Answer ALL the following Questions **5X3 =15 Marks**

Unit –I

11

Or

12

Unit- II

13

Or

14

Unit –III

15

Or

16

Unit- IV

17

Or

18

Unit –V

19

Or

20

PVKN Govt. College(A), Chittoor

III B.Sc., SEMESTER –V: Zoology PAPER – VI

(**ANIMAL Husbandry**)

Subject Code: 21-ZOO-502 **Credits : 3** **Teaching Hrs/Week : 3**

QUESTION BANK

UNIT – I (General introduction to poultry farming)

Essay type questions

Q1. Write about the principles of housing in a layout of poultry farm.
Q2. Give a detailed account of different types of poultry houses.
Q3. Describe the management of Broilers
Q4. Describe the management of Layers.
Q5 Describe the management of Brooders
Q6 Describe the management of Growers

Short answer type questions

Q1. Quarantine room
Q2. Light importance in layer birds
Q3. Temperature importance in Brooder birds
Q4. Layout importance in poultry farm
Q5. Spent out chickens and Loafers
Q6. Culling
Q7. Deep litter system

UNIT – II (Poultry feed management)

Essay type questions

Q1. Write about the nutrient requirements in Broilers.

Q2. Write about the nutrient requirements in Layers

Q3. Write about the different types of feeding mechanisms.
Q4. Write about the diseases any four diseases causative by virus, bacteria and Fungus

Short answer type questions

Q1. Pearson formula
Q2. Feeding restriction
Q3. Ranikhet
Q4. Pneumonia

UNIT – III

Essay type questions

Q1. Write about the Selection and care of eggs
Q2. Write about the egg testing mechanisms.

Q3. Explain about different types of hatching methods.
Q4. Write about the sexing in chick

Short answer type questions

Q1. candle test
Q2. Vent sexing
Q3. Natural brooding

UNIT – IV

Essay type questions

Q1. Explain about Indian milching cow breeds
Q2. Write about the different breeding methods
Q3. Write about the housing of dairy animals.

Short answer type questions

Q1. Murra
Q2. Weaning
Q3. Exotic cattle breeds
Q4. Conventional Barn

UNIT – V (Care and management of dairy animals**)**

Essay type questions

Q1. Write about the caring of Calf's.
Q2. Explain about the caring of Milching animals.
Q3 Explain about the caring of Pregnant animal

Short answer type questions

Q1. Heifer

Q2. Colostrum importance

Q3. Concentrate feed importance in cattle's
Q4. General hygiene practices in a dairy

PVKN Govt. College(A), Chittoor

III B.Sc., SEMESTER –VI: ZOOLOGY PAPER – 7
(IMMUNOLOGY)

Subject Code: 20-ZOO-601

Credits : 03

Unit - I

1.1 Overview of Immune system

1.1.1 Introduction to basic concepts in Immunology

1.1.2 Innate and adaptive immunity

1.2 Cells and organs of Immune system

1.2.1 Cells of immune system

1.2.2 Organs of immune system, Negative, Positive selection of T cells

Unit - II

2.1 Antigens

2.1.1 Basic properties of antigens

2.1.2 B and T cell epitopes, hapten and adjuvants

2.1.3 Factors influencing immunogenicity

Unit - III

3.1 Antibodies

3.1.1 Structure of antibody

3.1.2 Classes and functions of antibodies

3.1.3. Antibody diversity

3.1.3Monoclonal antibodies

Unit - IV

4.1 Working of Immune system

4.1.1 Structure and functions of major histocompatibility complexes

4.1.2 Exogenes and Endogenes pathways of antigen presentation and processing

Unit - V

5.1 Immune system in health and disease

5.1.1 Classification and brief description of various types of hyper sensitivities,

5.2 Vaccines

5.2.1 General introduction to vaccines

5.2.2 Types of vaccines

5.2.1 Different types of indigenous COVID vaccines

PVKN Govt. College(A), Chittoor
III B.Sc., SEMESTER – VI: ZOOLOGY PAPER – VII
TITLE OF THE PAPER: Immunology core
Subject Code: 20-ZOO-601 Credits: 03 Teaching Hrs/Week: 4

BLUE PRINT FOR THE MODEL PAPER

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Short Answers	10	5	50	5	5	25
2	Essays	10	10	100	5	10	50

BLUE PRINT FOR THE QUESTION PAPER SETTING

Chapter Name	Essay Question 10 Marks	Short Questions 5 Marks	Marks allotted to the Chapter
UNIT - I	2	2	15
UNIT - II	2	2	15
UNIT - III	2	2	15
UNIT - IV	2	2	15
UNIT - V	2	2	15
Total No. of Questions	**10**	**10**	**75**

PVKN GOVT COLLEGE (AUTONOMOUS)
ZOOLOGY MODEL PAPER FOR VI SEMESTER
ZOOLOGY - ELECTIVE PAPER – VII-(A)
IMMUNOLOGY

Time: 3 hrs **Max. Marks: 75**

I. Answer any FIVE of the following: **5x5=25**

Draw labeled diagrams wherever necessary

1. Innate immunity
2. Dendritic cells
3. Thymus gland
4. Hapten
5. Epitope
6. Ig- G
7. Monoclonal antibodies -uses
8. CD - 4
9. Recombinant vaccines
10. Erythroblastosis foetalis

II. Answer any FIVE of the following: **5x10=50**

Draw labelled diagrams wherever necessary

11. Write about the Adaptive immunity

OR

12. Write about the different organs is immune system

13. Write about the properties of antigens

OR

14. Write about the factors of the immunogenicity

15. Write about the model structure of immunoglobulin's and give details of different types of immunoglobulin's

OR

16. Write about the hybridoma technology and applications of Monoclonal antibodies

17) Write about the different types of Major histocompatibility and its structure with a labelled diagramsOr18) Write about the exogenous pathway

19) Write about the different types of Hypersensitivities

Or

20) Write about the different types of vaccines