SAURASHTRA UNIVERSITY

RAJKOT

Accrediated Grade 'A' by NAAC

(CGPA 3.05)

FACULTY OF SCIENCE

[Three Years (6 Semesters) Full Time Course]

ZOOLOGY SYLLABUS

WITH EXAMINATION CODING SYSTEM

16-03-04-01-01-01-00

16-03-04-01-01-02-00

2016 - 17

Saurashtra University
University Campus, Rajkot – 360 005.
Gujarat, India.

Website: www.saurashtrauniversity.edu

EXAMINATION CODING SYSTEM

Sr. No.	Name Of Programme	B.Sc. ZOOLOGY	
1	Title Of Paper	(In Sem -I) Non Chordates : Systematics, Forms & Functions, Cell biology & Histology, Ecology, Fisheries Biology& Wild life Biology	(In Sem -II) Chordate: Systematic, Forms & Functions, Genetics, Evolution, Physiology, Embryology, Applied Zoology, Reproductive Biology and Functional Anatomy of chordates
2	Theory Credit	4	4
3	Practical Credit	3	3
4	Total Credit	7	7
5	External Marks Of Theory	70	70
6	Internal Marks Of Theory	30	30
7	Total Marks Of Theory	100	100
8	External Marks Of Practical	35	35
9	Internal Marks Of Practical	15	15
10	Total Marks Of Practical	50	50
11	Grand Total	150	150
12	External Exam Time Duration	2½ Hours	2½ Hours

Course / Paper Code					
13	Year	1	6	1	6
14	Faculty	0	3	0	3
15	Subject	0	4	0	4
16	UG/PG	0	1	0	1
17	Semester	0	1	0	2
18	Paper	0	1	0	2
19	Core	0	0	0	0

SAURASHTRA UNIVERSITY

RAJKOT

ZOOLOGY

SYLLABUS

WITH EXAMINATION CODING SYSTEM

16-03-04-01-01-01-00

16-03-04-01-01-02-00

[SYLLABUS FOR THE CHOICE BASED CREDIT SYSTEM (CBCS)]

(F.Y. B.Sc.)

SEMESTER I – PAPER – Z-01

&

SEMESTER II – PAPER – Z-02

Revised Syllabus

INFORCE FROM JUNE – 2016

SAURASHTRA UNIVERSITY

RAJKOT

[SYLLABUS FOR CHOICE BASED CREDIT SYSTEM (CBCS)]

INFORCE FROM JUNE – 2016

SUBJECT: ZOOLOGY

WITH EXAMINATION CODING SYSTEM

16-03-04-01-01-01-00

16-03-04-01-01-02-00

SEMESTER – I

ZOOLOGY PAPER – Z – 01

Non Chordates: Systematics, Forms & Functions, Cell biology & Histology, Ecology, Fisheries Biology & Wild life Biology

SEMESTER – II

ZOOLOGY PAPER – Z – 02

Chordate: Systematic, Forms & Functions, Genetics, Evolution, Physiology, Embryology, Applied Zoology, Reproductive Biology and Functional Anatomy of chordates

FORWARD

Renewing and updating of the Curriculum is the prime important criteria in the University education system.

Syllabus provides an educational guide line and demarks the horizon of a subject. Syllabus of different Theory and Practical papers should have subjective harmony and gradual relationship within periphery of a subject.

Formulation of Curriculum for a particular subject requires the following criteria.

(A) Background of previous Curriculum.
(B) Relationship with other related subjects.
(C) Resources of Educational needs at regional level as well as national level.
(D) Financial and Statuary provisions of the State government.

All the above criteria are taken into consideration in formulation of this Curriculum.

This Curriculum is the result of prolonged discussions among the experienced teacher in this subject because after all, the college teachers are the real catalysts for implementation of this Syllabus.

The proposed Syllabus after required formalities will be implemented in the first year B.Sc.

Valuable guidelines and all facilities in this curriculum are provided by the authorities of the Saurashtra University, Rajkot.

DR. CHIRAG M. GOSAI
Chairman,
Board of Studies, Zoology,
Saurashtra University,
Rajkot – 360 005.

Dr. B. B. RADADIYA
Other than Chairman,
Board of Studies, Zoology,
Saurashtra University,
Rajkot – 360 005

SAURASHTRA UNIVERSITY

RAJKOT

(CBCS Syllabus)

SEMESTER – I

ZOOLOGY

16-03-04-01-01-01-00

PAPER – Z-01

Non Chordates: Systematics, Forms & Functions, Cell biology & Histology, Ecology, Fisheries Biology& Wild life Biology

UNIT – 1: SYSTEMATICS

Salient feature & classification up to classes in Non-chordates, structural organization in different phylum of Non-chordates with examples.
Kingdom- Protista, Phylum-Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, Hemichordata.

UNIT – 2: FORMS AND FUNCTIONS IN ANIMALS

General structures and morphology with functional anatomy of following type Animals.

2.1 PLATYHELMINTHES – Type study: Taenia solium.
2.2 ANNELIDA – Type Study: Earth worm.
2.3 ARTHROPODA – Type Study: Mosquito.

(i) Life cycle of Culex & Anopheles Mosquito.
(ii) Mouth parts of Culex & Anopheles mosquito.

UNIT – 3: CELL BIOLOGY AND HISTOLOGY

3.1 CELL BIOLOGY: Only Structure and Function of following organelles.

(i) Mitochondria
(ii) Nucleus
(iii) Endoplasmic Reticuium
(iv) Plasma membrane

3.2 HISTOLOGY: Histological structure and function of following organs of Mammals.

(i) Stomach
(ii) Intestine
(iii) Liver
(iv) Pancreas

UNIT – 4: ECOLOGY & FISHERIES BIOLOGY

4.1 Introduction of Ecology
4.2 Marine Ecosystem.
4.3 Fresh water – Pond Ecosystem.
4.4 Ecological Adaptations:
- (i) Fossorial Adaptation
- (ii) Aquatic Adaptation
- (iii) Arborial Adaptation
- (iv) Volant Adaptation
- (v) Desert Adaptation

4.5 Introduction of fish morphology
4.6 Difference between Chondrichthyes and Osteichthyes
4.7 Scales in fishes
4.8 Types of fishing Boats & Nets

UNIT – 5: WILDLIFE BIOLOGY

5.1 Introduction & Importance of Wildlife.
5.2 Difference between National Parks & Sanctuaries
5.3 Wildlife in Gujarat:

(I) NATIONAL PARKS: (i) Gir National Park.
(ii) Marine National Park in Gulf of Kutch.

(II): SANCTUARIES: (i) Kutch desert wildlife sanctuary.
(ii) Barda wildlife sanctuary.
(iii) Nalsarovar bird sanctuary.
(iv) Khijadia bird sanctuary.

PRACTICALS RELATED TO PAPER – Z-01

Practical: 1 : Identification and classification of Invertebrate animals

(i) Phylum: Protozoa : - Arcella, Ceratium, Vorticella, Plasmodium
(ii) Phylum: Porifera : - Leucosolenia, Euplectella, Euspongia
(iii) Phylum: Coelenterata : - Hydra, Rhizoastoma, Metridium

Practical: 2 : Identification and Classification of Invertebrate animals.

(i) Phylum: Platyhelminthes : - Planaria, Liverfluke, Tape worm
(ii) Phylum; Aschelminthes : - Ascaris, Hookworm
(iii) Phylum: Annelida : - Aphrodite, Earthworm, Leech

Practical: 3 : Identification and Classification of Invertebrate animals

(i) Phylum : Arthropoda :- Peripetus, Lobester, Millipede, Dragon fly, Scorpion
(ii) Phylum: Mollusca : - Chiton, Pila, Unio, Octopus, Dentalium

Practical: 4 : Identification and Classification of Invertebrate animals

(i) Phylum: Echinodermata: - Star fish, Brittle Star, Sea Urchin, Sea-Cucumber, Feather Star
(ii) Phylum : Hemichordata : - Balanoglossus

Practical: 5 : Systems of Earth worm:

(i) External Characters.
(ii) Digestive System.
(iii) Nervous System.
(iv) Reproductive System
- Through chart or Multimedia

Practical: 6 : Mounting of Earth worm:

(i) Septal Nephridia
(ii) Body Setae
(iii) Blood Gland
(iv) Ovary
- Through chart or Multimedia or Slide

Practical: 7 : Study of permanent slides (Taenia solium):

(i) Scolex
(ii) Mature segment
(iii) Gravid segment
(iv) Bladder worm

Practical: 8 : Study of permanent slides (Earth worm):

(i) T.S. Through Pharynx

(ii) T.S. Through Gizzard

(iii) T.S. Through Typhlosole

Practical: 9 : Study of permanent slides (Mosquito):

(i) Life cycle of Culex Mosquito.
(ii) Life cycle of Anopheles mosquito.
(iii) Mouth Parts of Culex and Anopheles Mosquito.

Practical: 10 : Study of following cell organelles.

(i) Mitochondria
(ii) Nucleus
(iii) Endoplasmic Reticulum
(iv) Cell Membrane

- By photograph, Chart, Model, or multimedia.

Practical: 11 : Study of Histological structures of following Mammalian Organs.

(i) Stomach
(ii) Intestine
(iii) Liver
(iv) Pancreas

Practical: 12 : Study of different animals for Ecological Adaptation.

(i) Fossorial : Earthworm, Gryllotalpa, Snake, Rat.
(ii) Aquatic : Labeo, Crocodile, Turtle, Loligo.
(iii) Arboreal : Wall lizard, Chamelion, Squirrel, Monkey.
(iv) Volant : Exocoetus, Draco, Flying frog.

(v) Desert : Uromastix, Phrynosoma.

Practical: 13 : Fisheries Biology:

(i) Difference between Chondrichthyes and Osteichthyes
(ii) Scales in fishes
(iii) Types of fishing Boats & Nets

Practical: 14 : Study of Wild animals.

(i) Study of National parks and Sanctuaries of Gujarat state.
(ii) Study of following wild animals on the basis of zoo-geographical region as per theory
   (a). Asiatic Lion
   (b). Leopard
   (c). Corals
   (d). Jelly fish
   (e). Chinkara
   (f). Spotted deer
   (g). Greater flamingo
   (h). Painted stork
   - by photograph, Chart, stuffed animals or multimedia.

Practical: 15 : Instrumental Biology

Principle, structure & function of following instruments.
(i) Light microscope
(ii) Thermometer
(iii) pH Meter
(iv) Centrifuge

Practical: 16 : Visit to any one National Park or Sanctuary OR Fish processing plant OR Fishing area OR Reserve forest area.

DISTRIBUTION OF UNITS

16-03-04-01-01-01-00

SEMESTER – I

PAPER – Z-01			
Unit No.	**Unit Title**	**Theory Period**	**Marks.**
Unit : 1	Systematic	10	14
Unit : 2	Forms and Functions	18	14
Unit : 3	Cell Biology and Histology	14	14
Unit : 4	Ecology & Fisheries Biology	13	14
Unit : 5	Wildlife Biology	10	14
	TOTAL :	**65**	**70**

- Above statement concerned to only Theory portion of the paper.
- Above mentioned third column 'Theory Period' indicates total number of theory lectures per unit.
- Total syllabus should be completed within 65 theory lectures.
- Each and every unit carries equal 14 marks.
- Total marks for theory examination are 70 marks.
- **PAPER SETTER MUST FOLLOW THE UNIT WISE MARK SETUP.**

SAURASHTRA UNIVERSITY - RAJKOT
THEORY EXAMINATION

SEMESTER – I

ZOOLOGY

16-03-04-01-01-01-00

(Based on Paper – Z-01)

Time: **2½** Hours Total Marks: **70**

Instructions:

1. Illustrate your answer with neat and labeled diagrams.
2. Figure to the right side indicates full marks of questions.

QUESTION-1 (THIS QUESTION IS TAKEN FROM UNIT-1)

QUESTION-2 (THIS QUESTION IS TAKEN FROM UNIT-2)

QUESTION-3 (THIS QUESTION IS TAKEN FROM UNIT-3)

QUESTION-4 (THIS QUESTION IS TAKEN FROM UNIT-4)

QUESTION-5 (THIS QUESTION IS TAKEN FROM UNIT-5)

- ANY TYPE OF MCQ IS NOT INCLUDED IN THIS PAPER STYLE.

- EACH QUESTION CARRIES EQUAL MARKS – 14.

- THERE ARE 5 QUESTIONS CONTAINING SUBQUESTIONS (A), (B), (C), (D).

QUESTION-1: (From UNIT-1) **[14]**

(A) Give the answer of following questions. **[04]**

Only short questions, Definitions and Fill in the blanks and NOT INCLUDED MCQs.

Each Question carries 1 Mark.

(1)

(2)

(3)

(4)

(B) Write any one out of Two. **[02]**

Each Question carries 2 Marks.

(1)

(2)

(C) Write any one out of Two. **[03]**

Each Question carries 3 Marks.

(1)

(2)

(D) Write any one out of Two. **[05]**

Each Question carries 5 Marks.

(1)

(2)

QUESTION-2: (As Above) (From UNIT-2) **[14]**

QUESTION-3: (As Above) (From UNIT-3) **[14]**

QUESTION-4: (As Above) (From UNIT-4) **[14]**

QUESTION-5: (As Above) (From UNIT-5) **[14]**

SAURASHTRA UNIVERSITY - RAJKOT
PRACTICAL EXAMINATION

SEMESTER – I

ZOOLOGY

16-03-04-01-01-01-00

(Based on Paper – Z-01)

Time: **3** Hours Total Marks: **35**

Que -1: Sketch and label _____ system of Earth worm. [06]

Que – 2: Sketch and label/Mountings of earth worm _____.

(Practical-6,7&8) [03]

Que – 3: Do as per instruction and show it to examiner [03]

(Practical – 13)

Que – 4: Do as per instruction and show it to examiner [03]

(Practical – 10)

Que – 5: Write as per instruction. [14]

(A) Identify and classify giving reasons. (Lower invertebrate)
(B) Identify and classify giving reasons. (Higher invertebrate)
(C) Identify and describe. (Practical- 9)
(D) Identify and describe. (Practical-11)
(E) Identify and describe (Practical-12)
(F) Identify and describe (Practical-14)
(G) Identify and describe (Practical-15)

Que. – 5: Report and Viva-voice. [03]

Que – 6: Certified Journal. [03]

SAURASHTRA UNIVERSITY – RAJKOT

List of Slides, Specimens, Charts, Models & Photographs

SEMESTER – I

ZOOLOGY

16-03-04-01-01-01-00

(Based on Paper – Z-01)

LIST OF SLIDES:

(1) All animals from Protozoa. [Practical-1, (i)]

(2) Mountings of Earthworms. [Practical-6]

(3) Permanent slides of Taenia solium. [Practical-7]

(4) Permanent slides of Earth worm. [Practical-8]

(5) Permanent slides of Mosquitoes. [Practical-9]

(6) Histological structure of Mammalian organs. [Practical-11]

(7) Scales in Fishes. [Practical-13, (ii)]

LIST OF SPECIMENS:

(1) All animal specimens from Phylum- Porifera to Phylum-Hemichordata. [Practical-1,(ii),(iii) to Practical-4]

(2) All animal specimens for Ecological Adaptations. [Practical-12]

(3) One animal of Chondrichthyes-Scoliodon & One specimen of Osteichthyes-Labeo/Catla/Pomfret. [Pratical-13, (i)]

LIST OF CHARTS/MODELS/PHOTOGRAPHS:

(1) National Parks & Sanctuaries of Gujarat State & Wild animals on the basis of Zoo-geographical region. [Practical-14,(i),(ii)]

LIST OF INSTRUMENTS:

(1) Light Microscope

(2) Thermometer

(3) pH Meter

(4) Centrifuse

REFERENCE BOOKS

16-03-04-01-01-01-00

SEMESTER – I

List of books For Unit-1 & 2

1 : Invertebrate Zoology…….E.L.Jordan & Dr.P.S.Verma

2 : Invertebrate Zoology……..…….P.S.Dhami &J.K.Dhami.

3 : A modern textbook of Zoology Invertebrate Zoology……..…..…….R.L.Kotpal.

4 : A textbook of Practical Zoology-Invertebrates…….S.S.Lal

5 : Kotpal Series – Platyhelminthus……..…….R.L.Kotpal

6 : Kotpal Series – Annelida……R.L.Kotpal

7 : Kotpal Series – Arthropoda…….R.L.Kotpal

8 : A Manual of Practical Zoology, Invertebrates……..P.S.Verma

List of books For Unit-3

9 : Cell Biology…….…….…….....Dr. Satyeshchandra Roy.

10 : Cell Biology……..…C.B.Power

11 : Cytology & Genetics…….……P.K.Gupta

12 : Cell & Molecular Biology……..……..……..De Robertis.

13 : Biotechnological Cell Biology..……..……..…V.B.Rastogi.

14 : Molecular Biology……V.B.Rastogi

15 : Histology……..……Atlas.

16 : Cell Biology, Genetics, Molecular Biology, Evolution and Ecology…….…P.S.Varma & V.K.Agrawal.

17 : Cytology……...……..P.S.Verma & V.K.Aggarwal

18 : Cytology, Genetics & Evolution……..…P.K.Gupta

List of books for Unit-4

19 : Ecology & Environmental biology…….…….P.D.Sharma.

20 : Cell Biology, Genetics, Molecular Biology, Evolution and Ecology…….…P.S.Varma & V.K.Agrawal.

21 : Fundamentals of Ecology……..…..Odum E.P. & Barrett G.W.

22 : Basic Concepts of Ecology…….……A. Arumugam

23 : Elements of Ecology……....Robert & Thomas.

24 : Environmental Biology……...P.S.Verma & V.K.Aggrwal

25 : Fish and Fisheries of India……...……V.B.Jhingran.

List of books for Unit-5

26 : Wild Life of Gujarat…….……H.S.Singh.

27 : Indian National Parks and Sanctuaries……..…Khati &Annand S.

28 : Modern textbook of Zoology Vertebrates…….R.L.Kotpal

29 : Vertebrate Zoology…….….E.L.Jordan & Dr.P.S.Verma

30 : Practical Zoology Vertebrate…….S.S.Lal

List of Books for Viva-Voices

31 : Practical Zoology Invertebrate……..S.S.Lal

32 : Practical Zoology Vertebrate…….S.S.Lal

SAURASHTRA UNIVERSITY
RAJKOT
(CBCS Syllabus)
SEMESTER - II
ZOOLOGY
16-03-04-01-01-02-00

PAPER – Z-02

Chordate: Systematic, Forms & Functions, Genetics, Evolution, Physiology, Embryology, Applied Zoology, Reproductive Biology and Functional Anatomy of chordates

UNIT- 1: SYSTEMATIC, FORMS AND FUNCTIONS IN ANIMALS:

1.1 Salient features and classification up to class in Chordates with examples.

1.2 General structure and morphology with functional anatomy of following type.

(I) PROTOCHORDATA: Type study: Amphioxus
(i) External Features
(ii) Digestive system
(iii) Endostyle
(iv) T.S. through Pharynx region
(II) Embryonic development of Amphioxus:
(i) Sperm
(ii) Ovum
(iii) Fertilization
(iv) Blastulation
(v) Gastrulation

UNIT- 2: GENETICS & EVOLUTION:

2.1 MULTIPLE ALLELES:
(i) Characters of multiple alleles.
(ii) The 'C' gene in Rabbit (Coat colour).
(iii) A, B, AB and O blood groups in Humans.
(iv) 'Rh' factor and Erythroblastosis foetalis.

2.2 EVOLUTION:
(i) Introduction to Evolutionary Theories: Lamarckism, Darwinism, Neo-darwinism
(ii) Direct Evidences of Evolution: Types of fossils, Incompleteness of fossil record, Phylogeny of Horse.

UNIT- 3: PHYSIOLOGY & EMBRYOLOGY:

3.1 DIGESTION:
(i) Physiology of digestion in the alimentary Canal.
(ii) Absorption of carbohydrates, proteins, lipids.

3.2 BLOOD:
(i) composition of blood.
(ii) physiology of coagulation of blood

3.3 SPERMATOGENESIS
3.4 OOGENESIS

UNIT- 4: APPLIED ZOOLOGY:

4.1 A study of general structure and characters of following pathogenic animals:
(i) Entamoeba.
(ii) Trypanosoma.
(iii) Filarial worm.
(iv) Guinea worm.
(v) Round worm.
(vi) Pin worm.

4.2 A study of general characters and structure of following harmful parasitic Insects of mankind:
(i) Human louse.
(ii) Bed bug.
(iii) Flea.

4.3 Poultry science:
(i) A general account of poultry science.
(ii) A type of poultry house.
(iii) Different apparatus used in poultry house.
(iv) A visit of poultry farm.
4.4 A study of fresh water aquarium.

UNIT-5: REPRODUCTIVE BIOLOGY & FUNCTIONAL ANATOMY OF CHORDATES

5.1 Menstrual cycle
5.2 Estrus cycle
5.3 Integumentary System: Derivatives of integument: Glands and digital tips, Nails, Claws, Horns, Hoofs
5.4 Circulatory system: Origin & Evolution of heart.

PRACTICAL RELATED ON PAPER – Z-02

Practical: 1 : Identification and classification of Chordate animals.

(i) Sub-Phylum : Urochordata : Herdmania
(ii) Sub-Phylum: Cephelochordata : Amphioxus.
(iii) Class: Cyclostomata : Petromyzon.
(iv) Super Class: Pisces : Shark, Electric Ray, Eel, Sea-horse.

Practical: 2 : Identification and classification of Chordate animals.

(i) Class: Amphibia : Ichthyophis, Bufo, Salamander.
(ii) Class : Reptiles : Turtle, Draco, Chamaeleon, Mabuia (Skink), Varanus, Snake, Crocodile.
(iii) Class: Aves : Weaver Bird, Parrot, Owl, Wood pecker.
(iv) Class : Mammal : Duck-bill, Kangaroo, Hedge hog, Bat, Dolphin

Practical: 3 : Forms and Function in Animals :

(i) Amphioxus: External characters
(ii) Amphioxus: Lateral view with digestive system
(iii) Amphioxus: Food & feeding mechanism with endostyle
(iv) T.S. of pharynx in Amphioxus.

-By slides or charts or Multimedia.

Practical: 4 : Embryology of Amphioxus :

(i) Sperm
(ii) Ova
(iii) Fertilization
(iv) Cleavage
(v) Blastulation
(vi) Gastrulastion

-By slides or charts or Multimedia.

Practical: 5 : Examples of Genetics.

Examples should be taken from theory portion of Multiple Alleles only.

Practical: 6 : To determine own blood group & Rh factor.

Practical: 7 : To study of following Evolutionary charts / models/ pictures:

(i) Study of fossil evidence from plaster cast models and pictures
(ii) Study of homology and analogy from suitable specimens/ pictures
(iii) Phylogeny of horse with diagrams/ cut outs of limbs and teeth of horse ancestors
(iv) Darwin's finches with diagrams/ cut outs of beaks of different species.

Practical: 8 : Test of salivary Amylase for digestion of Starch.

Practical: 9 : General Emryology:
Study of oogenesis and spermatogenesis by chart or model.

Practical: 10 : Study of following pathogenic animals.

(i) Entamoeba

(ii) Trypanosoma

(iii) Filaria worm

(iv) Guinea worm

(v) Ascaris lumbricoides (Round worm)

(vi) Enterobius vermicularis (Pin-worm)

Practical: 11 : Study of following harmful parasitic insects.

(i) Human louse.

(ii) Bed bug.

(iii) Flea.

Practical: 12 : Study of following poultry apparatus.

(i) Types of poultry farms
(ii) Apparatus used in poultry farm: Feeder, Brooder, Waterer.
-By photographs, charts or by Multi-media.

Practical: 13 : To study of Integumentary derivatives: Glands, Claws, Hoofs, Nails, Horns.

Practical: 14 : Origin & Evolution of heart and comparative account of it.

Practical: 15 : Visit to poultry farm/ Pathology Laboratory/ Natural History Museum And Submission Of Report.

DISTRIBUTION OF UNITS

16-03-04-01-01-02-00

SEMESTER – II

PAPER – Z-02			
Unit No.	**Unit Title**	**Theory Period**	**Marks.**
Unit : 1	Systematics, Forms and Functions	15	14
Unit : 2	Genetics & Evolution	14	14
Unit : 3	Physiology & Embryology	13	14
Unit : 4	Applied Zoology	09	14
Unit : 5	Reproductive Biology & Functional Anatomy of chordates	14	14
	TOTAL :	**65**	**70**

- Above statement concerned to only Theory portion of the paper.
- Above mentioned third column 'Theory Period' indicates total number of theory lectures per unit.
- Total syllabus should be completed within 65 theory lectures.
- Each and every unit carries equal 14 marks.
- Total marks for theory examination are 70 marks.
- **PAPER SETTER MUST FOLLOW THE UNIT WISE MARK SETUP.**

SAURASHTRA UNIVERSITY - RAJKOT
THEORY EXAMINATION

SEMESTER – II

ZOOLOGY

16-03-04-01-01-02-00

(Based on Paper – Z-02)

Time: **2½** Hours Total Marks: **70**

Instructions:

1. Illustrate your answer with neat and labeled diagrams.
2. Figure to the right side indicates full marks of questions.

QUESTION-1 (THIS QUESTION IS TAKEN FROM UNIT-1)

QUESTION-2 (THIS QUESTION IS TAKEN FROM UNIT-2)

QUESTION-3 (THIS QUESTION IS TAKEN FROM UNIT-3)

QUESTION-4 (THIS QUESTION IS TAKEN FROM UNIT-4)

QUESTION-5 (THIS QUESTION IS TAKEN FROM UNIT-5)

- ANY TYPE OF MCQ IS NOT INCLUDED IN THIS PAPER STYLE.

- EACH QUESTION CARRIES EQUAL MARKS – 14.

- THERE ARE 5 QUESTIONS CONTAINING SUBQUESTIONS (A), (B), (C), (D).

QUESTION-1: (From UNIT-1) **[14]**

(A) Give the answer of following questions. **[04]**

Only short questions, Definitions and Fill in the blanks and NOT INCLUDED MCQs.

Each Question carries 1 Mark.

(1)

(2)

(3)

(4)

(B) Write any one out of Two. **[02]**

Each Question carries 2 Marks.

(1)

(2)

(C) Write any one out of Two. **[03]**

Each Question carries 3 Marks.

(1)

(2)

(D) Write any one out of Two. **[05]**

Each Question carries 5 Marks.

(1)

(2)

QUESTION-2: (As Above) (From UNIT-2) **[14]**

QUESTION-3: (As Above) (From UNIT-3) **[14]**

QUESTION-4: (As Above) (From UNIT-4) **[14]**

QUESTION-5: (As Above) (From UNIT-5) **[14]**

SAURASHTRA UNIVERSITY - RAJKOT
PRACTICAL EXAMINATION

SEMESTER – II

ZOOLOGY

16-03-04-01-01-02-00

(Based on Paper – Z-02)

Time : **3** Hours Total Marks : 35

Que – 1 : Sketch and label _____ system of Amphioxus. [05]

(Practical-3)

Que – 2 : Sketch and label _____ (Practical-4 & 9) OR

Do as per instruction & show it to examiner.(Practical-6 & 8) [04]

Que – 3 : Solve the given example of Genetics. (Practical- 5)

Any two examples, Each from Coat colour of Rabbit & Blood Group. [04]

Que – 4 : Identify and Describe about comparative account of it. (Practical- 14) [04]

Que – 5 : Write as per instruction. [12]

(A) Identify and classify giving reasons.(Lower chordate)
(B) Identify and classify giving reasons. (Higher Chordate)
(C) Identify and describe. (Practical-8)
(D) Identify and describe. (Practical-10 or 11)
(E) Identify and describe. (Practical-12)
(F) Identify and describe. (Practical-13)

Que – 6 : Tour Report & Viva – voice. [03]

Que – 7 ; Certified Journal. [03]

SAURASHTRA UNIVERSITY – RAJKOT

List of Slides, Specimens, Charts, Models & Photographs

SEMESTER – II

ZOOLOGY

16-03-04-01-01-02-00

(Based on Paper – Z-02)

LIST OF SLIDES:

(1) T.S. of Pharynx in Amphioxus. [Practical-3,(IV)] , Also available in Chart.

(2) All slides of Embryology of Amphioxus. [Practical-4] , Also available in Chart.

(3) Slides of Pathogenic animals-Entamoeba, Trypanosoma, Pin-Worm. [Practical-10]

(4) Slides of harmful Parasitic Insects-Human louse, Bed-bug, Flea [Practical-11]

LIST OF SPECIMENS:

(1) All animal specimens from Sub-Phylum-Hemichordata to Class- Mammals. [Practical-1&2]

(2) Specimens of pathogenic animals- Filiaria-worm, Guinea-worm, Ascaris. [Practical-10]

(3) Integumentary Derivatives- Glands, Claws, Hoofs, Nails & Horns. [Practical-13], Also available in chart.

LIST OF CHARTS/MODELS/PHOTOGRAPHS:

(1) Amphioxus: External characters, Lateral view with Digestive System, Food & Feeding Mechanism with Endostyle, T.S. of Pharynx [Practical-3].

(2) Evolutionary Study of Fossil evidence, Homology and Analogy, Phylogeny of Horse, Darwin's Finches. [Practical-7]

(3) Spermatogenesis & Oogenesis. [Practical-9]

(4) Types of Poultry Farms, Feeder, Brooder & Waterer as Poultry apparatus. [Practical-12], Also available in Instruments.

(5) Integumentary Derivatives- Glands, Claws, Hoofs, Nails & Horns. [Practical-13]

(6) Heart: Origin, Evolution & Comparative account of it. [Practical-14]

LIST OF INSTRUMENTS/CHEMICALS & MATERIALS:

(1) Light Microscope

(2) Dissection Box, Serum A, Serum B, Serum D, Spirit & Cotton. [Practical-6]

(3) Saliva, Iodine (I_2), Starch-Solution, Cavity plate, Dropper.[Practical-7]

(4) Types of Poultry Farms, Feeder, Brooder & Waterer as Poultry apparatus. [Practical-12]

REFERENCE BOOKS

16-03-04-01-01-02-00

SEMESTER – II

List of Books for Unit -1

1 : Chordate Zoology……...E.L.Jordan & Dr.P.S.Verma

2 : Modern textbook of Zoology Vertebrates ……..…….R.L.Kotpal.

3 : Chordate Embryology……P.S.Verma & V.K.Agraval

4 : A manual of practical Zoology, Vertebrates……..P.S.Verma

5 : Practical Zoology, Vertebrates……S.S.Lal

List of Books for Unit - 2

6 : Principal of Genetics……..……..…Gardner.

7 : Genetics…….....P.S.Varma &V.K.Agrawal.

8 : Problems on Genetics, Molecular Genetics & Evolutionary Genetics….
……..…….……..…..Dr. P.K.Banergee.

9 : Genetics & Biostatistics……..……..……..Meyyan.

10 : Cell Biology, Genetics, Molecular Biology, Evolution & Ecology……..P.S.Verma & V.K.Aggarval.

11 : Cytology, Genetics & Evolution……..…P.K.Gupta

12 : Organic Evolution ……..…..Dr. N. Arumugam.

13 : Evolution…….Veerbala Rastogi.

List of Books for Unit - 3

14 : Animal Physiology…….……P.K.Gupta.

15 : Animal Physiology……..V.K.Agrawal.

16 : Animal Physiology……..…M.P.Arora

17 : A textbook of Animal Physiology……..Tyagi Prasum

18 : Human Physiology, Vol- I & II……..…….Chatterjee C.C.

19 : A text book of Animal Physiology…….….A.K.Berry & K.Berry

20 : Animal Physiology & Bio-Chemistry……..R.A.Aggrawal & Anil k. Shrivastva & Kaushal Kumar

21 : Chordate Embryology……P.S.Verma & V.K.Agraval

List of Books for Unit – 4

22 : Applied Zoology……..….Arumugam, T. Murugan, Rajeshwar, Ram Prabhu.

23 : Economic Zoology…….……..…..Shukla &Upadhyay.

24 : Economic Zoology……..Venkitaraman.

List of Books for Unit – 5

25 : Reproductive Physiology…….……A.V.Nalbandow.

26 : Chordate Zoology……...E.L.Jordan & Dr.P.S.Verma

27 : Modern textbook of Zoology Vertebrates ……..…….R.L.Kotpal.

28 : Animal Physiology……..…M.P.Arora

29 : Animal Physiology & Bio-Chemistry……..R.A.Aggrawal & Anil k. Shrivastva & Kaushal Kumar

List of Books for Viva-Voice

33 : Practical Zoology Invertebrate……..S.S.Lal

34 : Practical Zoology Vertebrate…….S.S.Lal