SAURASHTRA UNIVERSITY

RAJKOT

[University emblem]

Accredited Grade ‘A’ by NAAC
(CGPA 3.05)

FACULTY OF SCIENCE

[Three Years (6 Semesters) Full Time Course]

ZOOLOGY SYLLABUS

WITH EXAMINATION CODING SYSTEM

17-03-04-01-03-03-00
17-03-04-01-04-04-00

2017 - 18

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

-Website: www.saurashtrauniversity.edu
# EXAMINATION CODING SYSTEM

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## Course / Paper Code

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SAURASHTRA UNIVERSITY
RAJKOT

ZOOLGY
SYLLABUS

WITH EXAMINATION CODING SYSTEM
17-03-04-01-03-03-00
17-03-04-01-04-04-00

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

(S.Y. B.Sc.)

SEMESTER III – PAPER – Z-03

&

SEMESTER IV – PAPER – Z-04

Revised Syllabus
INFORCE FORM JUNE – 2017
SUBJECT: ZOOLOGY

WITH EXAMINATION CODING SYSTEM

17-03-04-01-03-03-00
17-03-04-01-04-04-00

SEMESTER – III
ZOOGOLOGY PAPER – Z *– 03

SEMESTER – IV
ZOOGOLOGY PAPER – Z – 04
Chordate: Systematic, Forms & Functions, Embryology, Physiology & Reproductive Biology, Genetics & Inborn Errors of Metabolism, Evolution, Functional Anatomy of chordates & Fisheries Biology
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 second 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.
UNIT – 1: SYSTEMATIC

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

UNIT – 2: FORMS AND FUNCTIONS IN ANIMALS

2.1 PORIFERA:
(i) General account of Canal System in Sponge
(ii) Economic Importance of Sponge.

2.2 General structures and morphology with functional anatomy of following type
ANNELOIDA: Type Study: Leech

2.3 ARTHROPODA:
(i) Peripatus is as connecting link between Annelida & Arthropoda.
(ii) Different type of Mouth parts in Insects.
   1. Chewing & Bitting Type – Cockroach
   2. Chewing & Lapping Type – Honey Bee
3. Piercing & Sucking Type – Mosquito
4. Sponging Type – Housefly
5. Siphoning Type – Butterfly

UNIT – 3: CELL BIOLOGY AND HISTOLOGY

3.1 CELL BIOLOGY: Only Structure and Function of following organelles.
   (i) Golgi Complex
   (ii) Ribosome
   (iii) Lysosome
   (iv) Centrioles & Basal Bodies

3.2 HISTOLOGY: Histological structure and function of following organs of Mammals.
   (i) Pitutary
   (ii) Thyroid
   (iii) Adrenal
   (iv) Kidney

UNIT – 4: ANIMAL BEHAVIOUR & ECONOMIC ZOOLOGY

4.1 Social Behaviour:
   (i) Honey bee
   (ii) Termite

4.2 Courtship & Reproductive Behaviour:
   (i) Spider
   (ii) Scorpion
   (iii) Peacock

4.3 Parental Care Behaviour:
   (i) Arius
   (ii) Ichthyophis
   (ii) Alytes

4.4 Household Insects:
   (ii) Insect damaging Food Products: 1. Rice Weevil, 2. Wheat Weevil
   (iii) Insect damaging Household Goods: 1. Termite, 2. Silver Fish, 3. Cricket
   (iv) Insects damaging Storage grains: 1. Tribolium, 2. Pulse bettle

4.5 Insect Pest Management:
(i) Cultural Control
(ii) Biological Control
(iii) Chemical Control

UNIT – 5: WILD LIFE BIOLOGY, ECOLOGY & INSTRUMENTAL BIOLOGY

5.1 Wildlife in India & its Conservation

5.2 Reasons for depletion OF Wild-life

5.3 Wild-life in Gujarat:
(I) NATIONAL PARKS:  (i) Vansda National Park
                        (ii) Velavadar National Park
(II) SANCTUARIES:  (i) Ratanmahal Sloth bear Sanctuary
                    (ii) Shoolpaneshwar Wild life Sanctuary

5.4 Threatened Wild animals of India:
(i) Mammals: Slender Loris, Black Nilgiri Langur, Cheetah, Asiatic Lion, Tiger, Snow leopard
(ii) Birds: Pink Headed Duck, Himalayan Golden Eagle, Peacock, Great Indian Bustard, Greater Flamingo, Vulture

5.5 Ecology:
(i) Energy Flow in Eco-system
(ii) Ecological pyramids

5.6 Instrumental Biology:
(i) Phase Contrast Microscope
(ii) Haemoglobino Meter
(iii) Sphygmomanometer
Practical: 1: Identification and classification of Invertebrate animals
(i) Phylum: Protozoa: Noctiluca, Amoeba, Plasmodium, Opelina, Paramecium
(ii) Phylum: Porifera: Grantia, Hyalonema, Chalina

Practical: 2: Identification and Classification of Invertebrate animals.
(i) Phylum: Coelenterata: Obelia, Aurelia, Gorgonia
(ii) Phylum: Platyhelminthes: Bipalium, Schistosoma, Moniezia Expansa
(iii) Phylum: Aschelminthes: Enterobius vermicularis, Filarial worm, Guinea worm

Practical: 3: Identification and Classification of Invertebrate animals
(i) Phylum: Annelida: Nereis, Lumbricus, Pontobdella,
(ii) Phylum: Arthropoda: Peripatus, Prawn, Centipede, Grasshopper, Spider, Limulus

Practical: 4: Identification and Classification of Invertebrate animals
(i) Phylum: Mollusca: Chaetoderma, Mytilus, Aplysia, Dentelium, Loligo
(ii) Phylum: Echinodermata: Anthena (Star fish), Ophiocoma (Brittle Star), Echinocardium (Heart urchin), Holothuria (Sea Cucumber), Antedon (Feather Star)
(iii) Phylum: Hemichordata: Saccoglossus, Rhabdopleura

Practical: 5: To Study Systems of Leech:
(i) External Characters
(ii) Digestive System
(iii) Nervous System
(iv) Reproductive System
   - By chart or Multimedia

Practical: 6: To Study Mounting of Leech:
(i) Jaws
(ii) Salivary Gland
(iii) Nephridia
(iv) Ovary
   - By chart or Multimedia or Slide

Practical: 7: To Study Mouthparts of Insects:
(i) Chewing & Bitting Type – Cockroach
(ii) Chewing & Lapping Type – Honey Bee  
(iii) Piercing & Sucking Type – Mosquito  
(iv) Sponging Type – Housefly  
(v) Siphoning Type – Butterfly

**Practical: 8 :** To Study Cell Organelles:  
(i) Golgi Complex  
(ii) Ribosome  
(iii) Lysosme  
(iv) Centrioles & Basal Bodies

**Practical: 9 :** To Study Histological Structure of Mammalian Organs:  
(i) Pitutary  
(ii) Thyroid  
(iii) Adrenal  
(iv) Kidney

**Practical: 10 :** To Study Animal Behaviours:  
1. Social Behaviour:  
(i) Honey bee  
(ii) Termite  
2. Courtship & Reproductive Behaviour:  
(i) Spider  
(ii) Scorpion  
(iii) Peacock  
3. Parental Care Behaviour:  
(i) Arius  
(ii) Ichthyophis  
(ii) Alytes

**Practical: 11 :** To Study Household Insect:  
(ii) Insect damaging Food Products: 1. Rice Weevil, 2. Wheat Weevil  
(iii) Insect damaging Household Goods: 1. Termite, 2. Silver Fish, 3. Cricket  
(iv) Insects damaging Storage grains: 1. Tribolium, 2. Pulse bettle  

**Practical: 12 :** To Study apparatus for collecting and killing method:  
(i) Insect Net  
(ii) Aspirator  
(iii) Killing Jar
**Practical: 13:** To Study National Parks and Sanctuaries of India:
(i) Vansda National Park
(ii) Velavadar National Park
(iii) Ratanmahal Sloth bear Sanctuary
(iv) Shoolpaneshwar Wild life Sanctuary

**Practical: 14:** To Study Threatened Wild animals of India:
(i) Mammals: Slender Loris, Black Nilgiri Langur, Cheetah, Asiatic Lion, Tiger, Snow leopard
(ii) Birds: Pink Headed Duck, Himalayan Golden Eagle, Peacock, Great Indian Bustard, Greater Flamingo, Vulture
- by photograph, Chart, stuffed animals or multimedia.

**Practical: 15:** To Study Principle, Structure & Function of Following Instruments:
(i) Phase Contrast Microscope
(ii) Haemoglobinometer
(iii) Sphygmomanometer

**Practical: 16:** Visit to any one National Park or Sanctuary OR Reserve forest area.
## DISTRIBUTION OF UNITS

**17-03-04-01-03-03-00**

**SEMESTER – III**

### PAPER – Z-03

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<td>Cell Biology and Histology</td>
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<td>Animal behaviour &amp; Economic Zoology</td>
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<td>Wild life Biology, Ecology &amp; Instrumental Biology</td>
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- 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 units are 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 – III
ZOOLOGY
17-03-04-01-03-03-00
(Based on Paper – Z-03)

Time: 2½ Hours Total Marks: 70

Instructions:

1. Illustrate your answer with neat and labeled diagram.
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 MCQs 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 Marks.

(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 – III
ZOOLOGY
17-03-04-01-03-03-00
(Based on Paper – Z-03)

Time: 3 Hours Total Marks: 35

Que -1: Sketch and label ____________ system of Leech. [06]
Que – 2: Sketch and label /Mountings of Leech__________.
       (Practical-6) [03]
Que – 3: Do as per instruction and show it to examiner
       (Practical – 8) [03]
Que – 4: Do as per instruction and show it to examiner
       (Practical – 15) [03]
Que – 5: Write as per instruction. [14]
       (A) Identify and classify giving reasons.
           (Lower invertebrate, Practical- 1&2)
       (B) Identify and classify giving reasons.
           (Higher invertebrate, Practical – 3&4)
       (C) Identify and describe. (Practical- 7)
       (D) Identify and describe. (Practical-9)
       (E) Identify and describe (Practical-10)
       (F) Identify and describe (Practical-11/12)
       (G) Identify and describe (Practical-13/14)

Que. – 5: Report and Viva-voice. [03]
Que – 6: Certified Journal. [03]
SAURASHTRA UNIVERSITY – RAJKOT

List of Slides, Specimens, Charts, Models & Photographs

SEMESTER – III

ZOOCOLOGY

17-03-04-01-03-03-00

(Based on Paper – Z-03)

LIST OF SLIDES:

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

(2) Obelia, Schistosoma, Enterobius vermicularis, Filaria worm [Practical-2, (i), (ii), (iii)]

(3) Mountings of Leech [Practical-6]

(4) Mouth Parts of Insects. [Practical-7]

(5) Histological Structure of mammalian organs. [Practical-9]

(6) Termite [Practical-10, (i)]

(7) Tse-Tse Fly, Mosquito, Rice Weevil, Wheat Weevil, Tribolium, Pulse bettle, Rice bug [Practical-11, (i), (ii), (iv), (v)]

LIST OF SPECIMENS:

(1) All animal specimens from Phylum- Porifera to Phylum-Hemichordata. [Practical-1 to Practical-4, except Practical-1, (i) & Obelia, Schistosoma, Enterobius vermicularis, Filaria worm ]

(2)Animal Behaviour & Household Insects [Practical-10 & 11 except Termite, Tse-Tse Fly, Mosquito, Rice Weevil, Wheat Weevil Tribolium, Pulse bettle Rice bug]

LIST OF CHARTS/MODELS/PHOTOGRAPHS:

(1) Systems of Leech. [Practical-5]

(2) Cell Organelles. [Practical-8]

(3) Apparatus for collecting and killing method [Practical-12]
(4) National Parks & Sanctuaries of Gujarat State & Threatened Mammals and Birds. [Practical-13 & 14]

**LIST OF INSTRUMENTS:**

[Practical-15]
(i) Phase Contrast Microscope
(ii) Haemoglobin Meter
(iii) Sphygmomanometer
REFERENCE BOOKS

17-03-04-01-03-03-00

SEMESTER – III

List of books For Unit-1 & 2

1: Invertebrate Zoology............................................................E.L. Jordan & Dr. P.S. Verma
4: A textbook of Practical Zoology-Invertebrates..............................S.S. Lal
5: Kotpal Series – Porifera..................................................................R.L. Kotpal
6: Kotpal Series – Annelida...............................................................R.L. Kotpal
7: Kotpal Series – Arthropoda............................................................R.L. Kotpal

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.
17: Cytology..................................................................................P.S. Verma & V.K. Aggarwal
18: Cytology, Genetics & Evolution...............................................P.K. Gupta

List of books for Unit- 4 & 5

20: Applied Zoology.....................................................................N Arumugam
21: Applied Zoology.....................................................................Nagendra S Pawar
22: Applied Entomology.................................................................P G Fenemore
23: Indian National Parks and Sanctuaries.................................Khati & Annand S.
24: Modern textbook of Zoology Vertebrates.................................R.L. Kotpal
25 : Vertebrate Zoology.................................................................E.L.Jordan & Dr.P.S.Verma
26 : Practical Zoology Vertebrate.....................................................S.S.Lal
27 : Ecology & Environmental biology...........................................P.D.Sharma.
30 : Basic Concepts of Ecology.....................................................A. Arumugam
31 : Elements of Ecology.............................................................Robert & Thomas.
32 : Environmental Biology..........................................................P.S.Verma & V.K.Aggrwal

List of Books for Viva-Voices

33 : Practical Zoology Invertebrate..................................................S.S.Lal
34 : Practical Zoology Vertebrate.....................................................S.S.Lal
UNIT- 1: SYSTEMATIC:

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

1.2 Archaeopteryx as a connecting link between Reptiles and Aves.

1.3 General account of Ratitae

1.4 Platypus as connecting link between Aves & Mammals.

UNIT- 2: FORMS AND FUNCTIONS IN ANIMALS::

2.1 PISCES: General account of Migration in Fishes:
   (i) Anadromous Type
   (ii) Catadromous Type

2.2 General structure and morphology with functional anatomy of following type.
   REPTILE: Type Study – Calotes

2.3 Difference between Poisonous & Non-Poisonous snakes.

2.4 To Study Following Poisonous & Non-Poisonous Snakes:

2.5 Snake bite, Anti-Venom, Preventive measures and First aid Treatment.

UNIT- 3: EMBRYOLOGY, PHYSIOLOGY & REPRODUCTIVE BIOLOGY:

3.1 EMBRYOLOGY:
(i) Types of Eggs according to yolk.
(ii) Types of Cleavage

3.2 EXCRECTION:
(i) Nitrogenous Waste
(ii) Structure of Nephrone
(iii) Formation of Urine
(iv) Control of Renal Function

3.3 REPRODUCTIVE BIOLOGY:
(i) Manopause
(ii) Hormones of Ovary & Testis

UNIT- 4: GENETICS & INBORN ERRORS OF METABOLISM:

4.1 GENETICS:
(i) Structure of Chromosome
(ii) Types of Chromosome according to Centromere
(iii) Human Chromosome and Karyotyping
(iv) Giant Chromosome:
1. Polytene Chromosome
2. Lambrush Chromosome
(v) DNA Finger printing
(vi) Sex Determination in Drosophila, Human being and Bonelia
(vii) Cytoplasmic Inheritance:
1. Kappa Particles in Paramecium
2. 4 O’ Clock Mirabilis Jalapa

4.2 INBORN ERRORS OF METABOLISM:
(i) Phenylketonuria (PKU)
(ii) Alkaptonuria
(iii) Albinism
(iv) Sickle-Cell anemia

UNIT-5: EVOLUTION, FUNCTIONAL ANATOMY OF CHORDATES & FISHERIES BIOLOGY

5.1 EVOLUTION:
(i) Origin and Evolution of Earth
(ii) Isolation
(iii) Speciation
(iv) Evolution of Man
(v) Morphological & Comparative anatomy of Homologous and Analogous Organs.
(vi) Vestigial Organs of Human

5.2 FUNCTIONAL ANATOMY OF CHORDATES:
(i) Circulatory System: Origin & Evolution of Aortic arch

5.3 FISHERIES BIOLOGY:
(i) Pomfret
(ii) Bombayduck
(iii) Prawn
(iv) Lobster
(v) Pearl Oyster
Practical: 1: Identification and classification of Chordate animals.
(i) Sub-Phylum: Urochordata: Ascidia, Doliolum, Oikopleura
(ii) Sub-Phylum: Cephelochordata: Amphioxus
(iii) Class: Cyclostomata: Myxine
(iv) Super Class: Pisces: Tiger-Shark, Pristis, Trygon, Acipensor, Labeo, Protoperus

Practical: 2: Identification and classification of Chordate animals.
(i) Class: Amphibia: Uraeotyphlus, Siren, Axolotal Larva, Rhacophorus, Hyla
(ii) Class: Reptiles: Testudo, Sphenodon, Phrynosoma, Cobra, Crocodylus(Mugggar), Gavialis(Ghariyal), Ophiosaurus

Practical: 3:
(i) Class: Aves: Pigeon, Flamingo, Duck, Crow, Ostrich
(ii) Class: Mammal: Spiny Anteater, Loris, Shrew, Rhesus Monkey

Practical: 4: To Study systems of Catoles:
(i) External Characters
(ii) Digestive System
(iii) Arterial System
(iv) Venous System
(v) Urinogenital System
(vi) Brain
- Through chart or Multimedia

Practical: 5: To Study Mountings of Calotes:
(i) Pecten
(ii) Blood
(iii) Striated Muscle

Practical: 6: To study Archaeopteryx as connecting link between Reptiles & Aves:
- By charts or Multimedia.

Practical: 7: To Study Migration in Fishes:
(i) Anadromous Type : Salmon  
(ii) Catadromous Type : Eel  

Practical: 8 : To Study difference between Poisonous & Non-Poisonous Snakes.  

Practical: 9 : To study types of eggs according to Yolk.  

Practical: 10 : To study types of Cleavage.  

Practical: 11 : To study types of Chromosomes according to Centromere.  

Practical: 12 : To study Giant Chromosome.  


Practical: 14 : To study Evolution of Man.  

Practical: 15 : To Study Haemologus & Analogus organs.  
(i) Talpa  
(ii) Flying Fox  
(iii) Rhesus Monkey  
(iv) Whale  
(v) Horse  
(vi) Ichthyophis  
(vii) Blind Snake  

Practical: 16 : To Study comparative account of aortic arches.  

Practical: 17 : To study of Important fisheries:  
(i) Pomfret  
(ii) Bombayduck  
(iii) Prawn  
(iv) Lobster  
(v) Pearl Oyster
DISTRIBUTION OF UNITS

17-03-04-01-04-04-00

SEMESTER – IV

PAPER – Z-04

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<td>Unit : 3</td>
<td>Embryology, Physiology &amp; Reproductive Biology</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Unit : 4</td>
<td>Genetics &amp; Inborn Errors of Metabolism</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Unit : 5</td>
<td>Evolution, Functional Anatomy of chordates &amp; Fisheries Biology</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>65</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

- 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 units are carries equal 14 marks.
- Total marks for theory examination are 70 marks.
- **PAPER SETTER MUST FOLLOW THE UNIT WISE MARK SETUPS.**
SAURASHTRA UNIVERSITY - RAJKOT
THEORY EXAMINATION
SEMESTER – IV
ZOOOLOGY
17-03-04-01-04-04-00
(Based on Paper – Z-04)

Time: 2½ Hours Total Marks: 70

Instructions:
1. Illustrate your answer with neat and labeled diagram.
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 MCQs 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 Marks.

(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 – IV
ZOOLOGY
17-03-04-01-04-04-00
(Based on Paper – Z-04)
Time : 3 Hours Total Marks : 35
Que – 1 : Sketch and label ____________ system of Calotes. [05]
(PRACTICAL-4)
Que – 2 : Sketch and label/Mounting of Calotes ________
(PRACTICAL-5) [03]
Que – 3 : Identify and Describe about comparative account of it.
(PRACTICAL- 16) [04]
Que – 4 : Do as per instruction and show it to examiner
(PRACTICAL – 11/12/13) [03]
Que – 4 : Write as per instruction. [14]
(A) Identify and classify giving reasons. (Lower chordate)
(B) Identify and classify giving reasons. (Higher Chordate)
(C) Identify and describe. (PRACTICAL-6/7)
(D) Identify and describe. (PRACTICAL- 8)
(E) Identify and describe. (PRACTICAL- 9/10)
(F) Identify and describe. (PRACTICAL-14/15)
(G) Identify and describe. (PRACTICAL- 17)
Que – 6 : Viva – voice. [03]
Que – 7 : Certified Journal. [03]
SAURASHTRA UNIVERSITY – RAJKOT

List of Slides, Specimens, Charts, Models & Photographs

SEMESTER – IV

ZOOLOGY

17-03-04-01-04-04-00

(Based on Paper – Z-04)

LIST OF SLIDES:

(1) Doliolum, Oikopleura [Practical-1,(i)]
(2) Mountings [Practical-5], Also available in Chart.
(3) Types of eggs according to Yolk [Practical – 9]
(4) Types of Cleavage. [Practical – 10]
(5) Giant Chromosome. [Practical – 12]

LIST OF SPECIMENS:

(1) All animal specimens from Sub-Phylum-Hemi Chordata to Class-Mammals. [Practical-1&2 except Doliolum & Oikopleura]
(2) Salmon & Eel [Practical-7]
(3) Snakes [Practical-8]
(4) Homologus & Analogus Organs[Practical-15]
(5) Fisheries [Practical-17]

LIST OF CHARTS/MODELS/PHOTOGRAPHS:

(1) Systems of Calotes [Practical-4]
(2) Archaeopteryx [Practical-6]
(3) Types of Chromosome according to centromere [Practical-11]
(4) Giant Chromosomes [Practical-12]
(5) Human Chromosomes & Its Karyotyping [Practical-13]
(6) Evolution of Man [Practical-14]

(7) Aortic arches: Origin, Evolution & Comparative account of it. [Practical-16]
REFERENCE BOOKS

17-03-04-01-04-04-00

SEMESTER – IV

List of Books for Unit - 1 & 2

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 - 3

7 : Animal Physiology…………………………………………………V.K.Agrawal.
8 : Animal Physiology…………………………………………………………M.P.Arora
9 : A textbook of Animal Physiology..............................................Tyagi Prasum
10 : Human Physiology, Vol- I & II.................................................Chatterjee C.C.
11 : A textbook of Animal Physiology..............................................A.K.Berry & K.Berry
12 : Animal Physiology & Bio-Chemistry........................................R.A.Aggrawal &
Anil k. Shrivastva & Kaushal Kumar
13 : Chordate Embryology………………………………………………P.S.Verma & V.K.Agraval

List of Books for Unit - 4

15 : Genetics………………………………………………………………..P.S.Varma & V.K.Agraval.
16 : Problems on Genetics, Molecular Genetics & Evolutionary Genetics….
……………………………………………………………………………….Dr. P.K.Banergee.
17 : Genetics & Biostatistics……………………………………………….Meyyan.
18 : Cell Biology, Genetics, Molecular Biology, Evolution & Ecology……..P.S.Verma &
V.K.Aggarval.
19 : Cytology, Genetics & Evolution……………………………………….P.K.Gupta

List of Books for Unit – 5

20 : Organic Evolution .................................................................Dr. N. Arumugam.
21: Evolution.................................................................Veerbala Rastogi.
22: Chordate Zoology...................................................E.L.Jordan & Dr.P.S.Verma
24: Fisheries Biology..................................................S S Khanna & H R Singh

List of Books for Viva-Voice

35: Practical Zoology Invertebrate..............................................S.S.Lal
36: Practical Zoology Vertebrate..............................................S.S.Lal