

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED**

ZOOLOGY – CURRICULUM

June - 2013

**B.Sc. GENERAL
Semester Pattern
B.Sc. First Year
MCQ Pattern**

An Outline: B. Sc. I

Semester	Paper No. & Title	Period/ Practical	Marks		
			MCQ Exam	Internal Exam	Total
Semester-I	Theory Paper- I : Life and Diversity of Animals- I (Non-Chordata)	45	40	10	50
	Theory Paper- II : Cell Biology	45	40	10	50
Semester-II	Theory Paper- III : Life and Diversity of Animals- II (Chordata)	45	40	10	50
	Theory Paper- IV : Developmental Biology	45	40	10	50
Annual Pattern	Practical Paper- V : Practical Based on theory papers of Semester- I & II	24	-	-	100

Workload:

- 1. Theory :** Per paper per week three periods
- 2. Practical :** Per batch per week one practical (Three Periods)

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED VISHNUPURI, NANDED (M.S.)**

Board of Studies in Zoology

1. Dr. Mali Rajendra Prabhakar, Chairman

Yeshwant Mahavidyalaya, Nanded

2. Dr. Barde Ravi Dhondiraj

Shri Guru Buddhi Swami Mahavidyalaya, Purna, Dist. Parbhani

3. Dr. Shaikh Isakh Maheboob

D. S. M. Mahavidyalaya, Jintur Dist. Parbhani

4. Dr. Kolpuke Madhav Nivarti

Maharashtra Mahavidyalaya, Nilanga Dist. Latur

5. Dr. Gore Ghansham Dharbaji

Shri Sant Gadge Maharaj Mahavidyalaya, Loha Dist. Nanded

6. Dr. Bhalerao Sudam Sakharam

Bahirji Smarak Mahavidyalaya, Basmat Dist. Hingoli

7. Dr. G. Gyananath

Director, School of Life Science, S. R. T. M. University, Nanded

8. Dr. Mane Anil Mahadev

Arts, Commerce & Science College, Shankarnagar, Tq. Biloli, Dist. Nanded

9. Dr. Patil Meena Umakant

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

10. Dr. Mirza Mumtaz Baig

Govt. Vidharba Science Institute, Amravati

11. Dr. Dhonde Satish Gurunath

Cadila Healthcare Ltd. Moraiya, Tq. Sanad, Dist. Ahmedabad

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,

**NANDED
B.Sc. First Year**

Semester I

Paper:I

**LIFE AND DIVERSITY OF ANIMALS - I
(Non-Chordata)**

Marks 40+10

Periods 45

Unit I 11

1. Introduction of Non-chordates

2. Protozoa:

General Characters and classification up to class level.

Plasmodium vivax-

Structure, Life Cycle, Pathogenicity and Control Measures.

3. Porifera:

General Characters and classification up to class level.

Sycon:

General Morphology, different types of cells.

Economic Importance of Porifera

Unit II 11

1. Coelenterata:

General Characters and classification up to class level.

Polymorphism in Coelenterata.

Coral, and Coral reefs, its Economic Importance.

2. Platyhelminthes:

General Characters and classification up to class level.

Taenia solium: Structure and life cycle

3. Nematohelminthes.

Ascaris: Structure and life cycle.

Unit – III 12

1. Annelida:

General Characters and classification up to class level.

Role of Earthworm in Agriculture.

2. Arthropoda:

General Characters and classification up to class level.

Cockroach :

External Morphology, Digestive system, Respiratory system, Nervous system.

Economic Importance of Insects

Unit IV

11

1. Mollusca:

General Characters and classification up to class level.

Economic Importance of Mollusca.

2. Echinodermata:

General Characters and Classification up to class level.

Star Fish

External Morphology and Water vascular system.

3. Hemichordata:

General Characters and Affinities.

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UNIVERSITY, NANDED**

B.Sc. First Year

Semester- I

Paper – II

CELL BIOLOGY

Marks – 40+10

Periods- 45

UNIT- I

- | | |
|---|-----------|
| 1. Introduction of Cell Biology | 12 |
| 2. Microscopy (An elementary idea) | |
| a) Light microscopy | |
| b) Electron microscopy | |
| 3. Types of cells: | |
| a) Prokaryotic cell structure | |
| b) Eukaryotic cell structure | |
| 4. Plasma membrane: | |
| a) Structure | |
| i) Bimolecular model, | |
| ii) Trilaminar model, | |
| iii) Lattice model, | |
| iv) Fluid mosaic model, | |
| v) Micellar model, | |
| b) Composition | |
| c) Functions. | |

UNIT- II

11

- | | |
|----------------------------------|--|
| 1. Endoplasmic reticulum: | |
| a) Structure | |
| b) Functions | |

2. Golgi complex:

- a) Structure
- b) Functions

3. Mitochondria :

- a) Structure
- b) Functions

4. Ribosomes :

- a) Structure
- b) Functions

UNIT – III

11

1. Lysosomes :

- a) Structure
- b) Functions

2. Nucleus:

- a) Structure
- b) Functions

3. Nucleolus:

- a) Structure
- b) Functions

4. Chromosome :

- a) Shape – (metacentric, submetacentric ,Acrocentric and Telocentric,)
- b) Structure
- c) Functions
- d) Polytene and Lampbrush chromosomes

UNIT – IV

11

1. Cell cycle:

- a) Phases
- b) Mitosis and its significance
- c) Meiosis and its significance

2. Cytology of cancer:

Malignant and Non-malignant

**SWAMI RAMANAND TEERTH MARATHWADA
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B.Sc. First Year

Semester –II

Paper: III

Marks 40+10

period: 45

**1. LIFE AND DIVERSITY OF ANIMALS - II
(CHORDATA)**

Unit : I

10

1. Introduction of Chordates.

2. Protochordata:

Urochordata:- General characters, concept of retrogressive metamorphosis.

Cephalochordata: General Characters.

3. Agnatha:

Cyclostomata : General characters of cyclostomes.

Unit II

12

1. Pisces:

General characters and classification of Pisces up to class level.

Scoliodon (Dogfish):

External characters, Digestive system,

Respiratory system, Circulatory System, Nervous system.

Economic Importance of Fishes.

Unit III

11

1. Amphibia:-

General characters and classification up to order level.

Parental care in amphibians.

Summer and Winter sleep in Frog.

2. Reptilia:

General characters.

Poisonous and Non poisonous snakes.

Importance of snake Venom.

3. Aves:

General characters.

Flight Adaptations in birds.

Migration of birds.

Units IV

12

1. Mammals:

General characters and classification up to order level.

2. Rat-

External characters,
Digestive system (Anatomy),
Respiratory system,
Circulatory system.
Nervous system - Brain and spinal cord
Eye and Ear.

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

B.Sc. First Year

Semester –II

Paper: IV

DEVELOPMENTAL BIOLOGY

Marks – 40+10

Periods- 45

UNIT- I

11

1. Introduction of Developmental Biology

2. Gametogenesis:

- a) Spermatogenesis
- b) Oogenesis

3. Types of eggs

- a) On the basis of amount of yolk
- b) On the basis of distribution of yolk

UNIT- II

11

1. Gametes of frog:

- a) Structure of sperm
- b) Structure of ovum

2. Frog Embryology:

- a) Fertilization
- b) Cleavage

- c) Blastulation
- d) Gastrulation
- e) Formation of three germinal layers

3. Regeneration in Non- chordates and chordates

UNIT – III

12

1. Chick Embryology:

(Extra-embryonic membranes)-

- a) Yolk sac, structure and its functions
- b) Amnion ,structure and its functions
- c) Chorion ,structure and its functions
- d) Allantois ,structure and its functions

2. Placentation in mammals:

Classification on the basis of

- a) Mode of origin
- b) Mode of distribution of villi
- c) Functions of Placenta

3. Organizer:

- a) Concept
- b) Structure

UNIT- IV

11

1. Stem Cell:

- a) Sources
- b) Types – Embryonic, Haemopoitic, Adult, Nervous
- c) Role of stem cells in human welfare

2. Embryo Transfer Techniques:

- a) Gamete Intra-Fallopian Transfer (GIFT)
- b) Test tube baby
- c) Infertility in male
- d) Infertility in female

3. Parthenogenesis:

- a) Natural
- b) Artificial

SWAMI RAMANAND TEERTH MARATHWADA

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B.Sc. First Year

PRACTICAL

Paper V

(Practical's Based on theory papers of Semester- I & II)

Marks 100

- 1) Study of at least two museum specimens from invertebrate phyla (protozoa to Echinodermata and Hemichordate)
- 2) Study of at least two museum specimens from protochordata to mammalia
- 3) **Demonstration based on Models, Charts and Computer Aided Techniques :**
 - i) Cockroach, Digestive system, Nervous system .
 - ii) Scoliodon: Digestive system, Heart and ventral Aorta, Afferent arteries, Brain
 - iii) Mouth parts of Cockroach
 - iv) Trachea of Cockroach
 - v) Salivary glands of Cockroach
 - vi) Neries Parapodia
 - vii) Mountings of Scales (by Local Available Fishes)
Ctenoid and Cycloid.
- 4) Skeleton of Rat/Rabbit: Atlas Vertebra, Thoracic Vertebra, Pectoral Girdle, Pelvic Girdle, Humerus, Femur, Tibia-Fibula, Radius-ulna (**Models / Charts**).
- 5) Study of permanent slides of mitosis.
- 6) Squash preparation of Onion root tips.
- 7) Study of permanent slides of meiosis.
- 8) Squash preparation of Onion buds.
- 9) Study of permanent slides of Frog Embryology (Any Five).
- 11) Study of permanent slides of Chick Embryo: 18 hrs., 24 hrs., 36 hrs., 48 hrs., 72 hrs. stages.

12) Short excursion/ study Tour is compulsory.

Note: Submission:

- i) Practical record book duly signed by the teacher in charge/Head of the Department.
- ii) Five permanent stained micro preparations.
- iii) Excursion report.

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED
Faculty of Science
B.Sc. First Year
Sub:- Zoology
(Non chordates, Cell Biology, Chordates and Developmental Biology)
Practical Examination
Paper (V)**

Time- 4 Hours

Marks 100

Center No.

Batch No

Date:

- Q.1 Demonstrate ----- so as to explain its -----System and leave a labelled diagram (Scoliodon- Digestive System, Heart, Ventral aorta and brain.) 20
- Q.2 Demonstrate ----- so as to explain its -----System and leave a labelled diagram. (Cockroach- Digestive System and Nervous System.) 10
- Q.3 Spotting : Identify and Describe as per instructions (1 - 10 Spots) 30
(4- invertebrate, 3- vertebrate, 1- Bone,1- Frog Embryo slide ,1- Chick Embryo slide)
- Q.4 Prepare a permanent stained micro preparation of material provided. 10
(Mounting of Scales of local available fishes)
- Q.5 Prepare a temporary Squash preparation of ----- for Mitosis/ Meiosis. 10
(Identify, sketch and describe any one stage)
- Q.6 Record Book. 10
- Q.7 Excursion report and submission of slides 10

Note : Demonstration of animals through Models, Charts and Computer Aided Techniques