



# Government Arts and Science College Ratlam (M.P.) 457001



Phone: 07412 - 235149

E-mail: hegaaspgcrat@mp.gov.in, pgcolrtm@hotmail.com

For the session 2020-21 the syllabus have been adopted from Central Board of Studies, Bhopal and Vikram University, Ujjian for UG and PG respectively.

*Principal*  
Principal

Govt. Arts and Science College

Ratlam (M.P.)

**Principal**  
Govt. Arts & Science College  
Ratlam (M.P.)

Department of Higher Education, Govt. of M.P.  
Under Graduate Syllabus for B.Sc (Bio) 3 Year  
AS recommended by Central Board of Studies in Zoology

उच्च शिक्षा विभाग, म.प्र. शासन  
स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

Class / कक्षा	:	B.Sc I year (Session-2020-21)
Paper	:	I
Subject/ विषय	:	प्राणीशास्त्र
Title of Paper	:	अकशेरुकी
Max. Mark/ अधिकतम अंक	:	40

**इकाई I**

1. प्राणिकीय नामकरण एवं अंतर्राष्ट्रीय कोड का सामान्य अध्ययन
2. निम्नतर अकशेरुकी प्रणियों का वर्गीकरण (पारकर एवं हेजवेल का 7वें संस्करण अनुसार)  
(i) प्रोटोजोआ (ii) पोरीफेरा (iii) सीलेंट्रेटा (iv) प्लेटिहेलिमन्थीस (v) निमेटोहेलिमन्थीस
3. उच्चतर अकशेरुकी प्रणियों का वर्गीकरण (पारकर एवं हेजवेल का 7वें संस्करण अनुसार)  
(i) ऐनेलिडा (ii) आर्थ्रोपोडा (iii) मोलस्का (iv) इकाइनोडर्मेटा (v) हेमीकार्डेटा

**इकाई II**

1. प्रोटोजोआ- प्लाजमोडियम का प्रारूप अध्ययन
2. प्रोटोजोआ एवं रोग
3. पोरीफेरा- साइकॉन का प्रारूप अध्ययन
4. सीलेंट्रेटा- ओबेलिया का प्रारूप अध्ययन
5. प्रवाल एवं प्रवाल-भित्ति का निर्माण

**इकाई III**

1. हेलिमन्थस- फेसिओला का प्रारूप अध्ययन
2. नेमेटोडा के रोग एवं रोगजनक लक्षण
3. ऐनेलिडा- केंचुए (फेरीटिमा) का प्रारूप अध्ययन
4. ऐनेलिडा में देह गुहा एवं मेटामेरिज्म
5. ट्रोकोफोर लार्वा की संरचना एवं महत्व

**इकाई IV**

1. आर्थ्रोपोडा - डीग (पेलीमॉन) का प्रारूप अध्ययन
2. क्रस्टेशिया के लार्वा
3. कीटों में विभिन्न प्रकार के मुखांग
4. मानव रोगों के वाहक कीट
5. मोलस्का - पाइला का प्रारूप अध्ययन (ऐपल घोंघा)

**इकाई V**

1. इकाइनोडर्मेटा - तारा मछली की बाह्य संरचना एवं जल संवहन तंत्र
2. तारा मछली का जीवन चक्र
3. इकाइनोडर्मेटा के लार्वा
4. हेमीकार्डेटा - बैलेनोग्लासॅस का प्रारूप अध्ययन
5. बैलेनोग्लासॅस की बंधुता

Shrivastava

Dr. Sushila Shrivastava

(Sushila Shrivastava)

(Sushila Shrivastava)

(Sushila Shrivastava)

(Sushila Shrivastava)

(Sushila Shrivastava)

Dr. Shivraj Prasad Singh

Prof. & Head, Dept. of Zoology

Govt. Autonomous P.G. College, Satna (M.P.)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)

(Prof. H.S. Rathore)



**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

उच्च शिक्षा विभाग, म.प्र. शासन  
 स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
 केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

<b>Class / कक्षा</b>	:	<b>B.Sc. 1<sup>st</sup> year (Session- 2020-21)</b>
<b>Paper</b>	:	<b>II<sup>ND</sup></b>
<b>Subject/ विषय</b>	:	<b>Zoology</b>
<b>Title of Paper</b>	:	<b>Cell Biology and Developmental Biology</b>
<b>Max. Mark/ अधिकतम अंक</b>	:	<b>40</b>

<p><b>Unit-I</b></p> <ol style="list-style-type: none"> <li>1. History of Cell Biology, Cell theory.</li> <li>2. Prokaryotic and Eukaryotic Cells.</li> <li>3. Structure and functions of Plasma membrane.</li> <li>4. Structure and functions of Golgi body, Endoplasmic reticulum, Lysosomes.</li> <li>5. Structure and functions of Mitochondria, Ribosome, Centriole.</li> </ol>
<p><b>Unit-II</b></p> <ol style="list-style-type: none"> <li>1. Structure and functions of Nucleus and Nucleolus.</li> <li>2. Structure and functions of typical Chromosome.</li> <li>3. Basic concept of Chromatin and Heterochromatin</li> <li>4. Structure and functions of Lampbrush and Polytene Chromosome.</li> <li>5. Cell cycle, Mitotic and Meiotic cell division.</li> </ol>
<p><b>Unit-III</b></p> <ol style="list-style-type: none"> <li>1. Gametogenesis</li> <li>2. Fertilization</li> <li>3. Parthenogenesis</li> <li>4. Regeneration.</li> <li>5. Stem cells sources, types and their uses.</li> </ol>
<p><b>Unit-IV</b></p> <p><b>Development of Frog:</b></p> <ol style="list-style-type: none"> <li>1. Cleavage.</li> <li>2. Blastulation.</li> <li>3. Fate map construction.</li> <li>4. Gastrulation and formation of three germinal layers.</li> <li>5. Structure of Tadpole Larva</li> </ol>
<p><b>Unit-V</b></p> <p><b>Development of Chick:</b></p> <ol style="list-style-type: none"> <li>1. Cleavage.</li> <li>2. Blastulation.</li> <li>3. Fate map construction</li> <li>4. Gastrulation</li> <li>5. Development of chick embryo upto formation of primitive streaks.</li> <li>6. Extra embryonic membranes in chicks</li> </ol>

(Dr. Neera Saini)

hwb  
(Prof. H. R. Rastogi)

Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies, Zoology

(Dr. R. Singh)

(Dr. R. Singh)

Dr. Sushila Bhowmik  
 03.06.2019

Department of Higher Education, Govt. of M.P.  
Under Graduate Syllabus for B.Sc. (Bio) 3 Years  
As recommended by Central Board of Studies in Zoology

Recommended books for B.Sc. – I Year -Zoology

Books of MP Hindi Granth Academy

- Parker & Haswall : Text book of Invertebrate Zoology
- Kotpal, RL : Invertebrate
- Rastogi, VB : Developmental Biology
- Arora, MP : Embryology
- Verma, PS and Agrawal, VK : Chordate Embryology
- Karp : Cell and molecular Biology
- Sheelar & Bianchi : Cell and Molecular Biology
- Rastogi V.B. : Introduction to cytology
- De Robertis : Cell and Molecular Biology
- Powar, CB : Cell Biology
- Verma, PS and Agrawal, VK : Cell Biology, Genetics, Molecular Biology, Evolution

*NSaha*  
(Dr. Neeta Saha)

*3/6/14*  
*Dr. Shivzsh Pratap Singh*  
Prof. & Head, Dept. of Zoology  
Govt. Autonomous P.G. College, Satna (M.P.)  
Chairman, Board of Studies, *zoology*

*SShivastava*  
*Dr. Sushila Shivastava*  
03-6-19

*lrb*  
(Prof. R.S. Pattison)

*Dr. R. Singh*  
(Dr. R. Singh)

*Dr. (to M.P.S. Board)*  
(to M.P.S. Board)

*R. Steane*

Department of Higher Education, Govt. of M.P.  
Under Graduate Syllabus for B.Sc. (Bio) 3 Years  
As recommended by Central Board of Studies in Zoology

उच्च शिक्षा विभाग, म.प्र. शासन  
स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशासित  
Class / कक्षा : B.Sc. I year (Session-2020-21)  
Subject/ विषय : Zoology Practical  
Max. Mark/ अधिकतम अंक : 50

The practical's work will be based on theory syllabus and the candidates will be required to show the knowledge of the following :-

1. Study of Museum Specimens and slides relevant to Invertebrates Studied in theory.
2. Mounting
  - (a) Prawn statocyst
  - (b) Pila: Ctenidium /redula /osphradium
  - (c) Earthworm: Septal nephridia
  - (d) Mouth parts of insects.
3. Dissection/ demonstration
  - (a) Earthworm: Digestive System, Nervous System, Reproductive System
  - (b) Prawn: Nervous System, Appendages
  - (c) Pila: Nervous System
4. Exercise related to frog and Chick embryology.
5. Exercise/ spotting related to cell biology.
  - (a) Squash preparation of onion root tip
  - (b) Stages of mitotic and meiotic cell division
  - (c) Special types of Chromosomes

**Distribution of Marks**

1. Dissection	08
2. Spotting	16
3. Mounting	04
4. Exercise related to Embryology	04
5. Exercise related to Cell Biology	04
6. Viva -voce	05
7. Practical Record	05
8. Collection	
<b>Total</b>	<b>50</b>

(Dr. Neera Sahni)

(Prof. K. S. Rathi)

Dr. Shivesh Pratap Singh  
Prof. & Head, Dept. of Zoology  
Govt. Autonomous P.G. College, Satna (M.P.)  
Chairman, Board of Studies, 2020-21

(Dr. M.M.P. Shrivastava)

(Dr. R. Singh)

Dr. Shivastava  
Dr. Sunita Shri  
03.6.19

P. S. Sahni



**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

उच्च शिक्षा विभाग, म.प्र. शासन  
 स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
 केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

Class / कक्षा	:	B.Sc. II year (Session. 2020-21)
Paper	:	I
Subject/ विषय	:	Zoology
Title of Paper	:	Vertebrates and Evolution
Max. Mark/ अधिकतम अंक	:	40

<p><b>UNIT I</b></p> <ol style="list-style-type: none"> <li>1. Origin of Chordates, Classification of phylum Chordata up to orders according to Parker and Haswell (Latest edition).</li> <li>2. <b>Urochordata:</b> Type study of <i>Herdmania</i>.</li> <li>3. <b>Cephalochordata:</b> Type study of <i>Amphioxus</i>, Affinities of <i>Amphioxus</i>.</li> <li>4. Comparison between <i>Petromyzon</i> and <i>Myxine</i>.</li> </ol>
<p><b>UNIT II</b></p> <ol style="list-style-type: none"> <li>1. Comparative account of integuments and its derivatives of Vertebrates.</li> <li>2. Comparative account of limbs and girdles of Vertebrates.</li> <li>3. Comparative account of digestive system of Vertebrates.</li> <li>4. Comparative account of respiratory system of Vertebrates.</li> </ol>
<p><b>UNIT III</b></p> <ol style="list-style-type: none"> <li>1. Comparative account of aortic arches and heart of Vertebrates.</li> <li>2. Comparative account of brain of Vertebrates.</li> <li>3. Comparative account of urinogenital system of Vertebrates.</li> <li>4. Sense organs (eye &amp; ear) of mammals.</li> <li>5. Placentation in mammals.</li> </ol>
<p><b>UNIT IV</b></p> <ol style="list-style-type: none"> <li>1. Origin of life: Modern concepts only.</li> <li>2. Lamarckism, Darwinism, De Vries.</li> <li>3. Modern synthetic theories of evolution.</li> <li>4. Adaptation and Mimicry</li> <li>5. Micro, macro and mega evolution.</li> </ol>
<p><b>UNIT V</b></p> <ol style="list-style-type: none"> <li>1. Fossils, methods of fossilization, determination of age of fossils.</li> <li>2. Study of extinct forms: Dinosaurs and Archaeopteryx.</li> <li>3. Zoogeographical distribution.</li> <li>4. Evolution of man.</li> <li>5. Geological time scale and Insular fauna.</li> </ol>

*V. S. Sahai*  
 (Dr. Neera Sahni)

*S. R. Rathi*  
 (Dr. A. N. S. Rathi)

*Shiv*  
 3/6/19  
 Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies, Zoology

*Dr. R. Singh*  
 (Dr. R. Singh)

*S. Shrivastava*  
 Dr. Sushila Shrivastava  
 03.06.19

*S. Shrivastava*



**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

उच्च शिक्षा विभाग, म.प्र. शासन  
 स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
 केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

<b>Class / कक्षा</b>	:	<b>B.Sc. II year (Session-2020-21)</b>
<b>Paper</b>	:	<b>II</b>
<b>Subject/ विषय</b>	:	<b>Zoology</b>
<b>Title of Paper</b>	:	<b>Animal Physiology and Bio-Chemistry</b>
<b>Max. Mark/ अधिकतम अंक</b>	:	<b>40</b>

**Unit I: Nutrition and Metabolism**

1. Physiology of digestion in Mammals.
2. Protein Metabolism: Deamination, Decarboxylation, Transamination of amino acids and Ornithine cycle.
3. Carbohydrate metabolism: Glycogenesis, Gluconeogenesis, Glycogenolysis, Glycolysis, and Citric acid cycle.
4. Lipid Metabolism-Beta oxidation of fatty acids.

**Unit II: Respiration, Excretion and Immune System**

1. Mechanism and Physiology of respiration in mammals (transport of gases, chloride shift).
2. Physiology of Excretion- urea and urine formation in mammals.
3. Osmoregulation and excretory product.
4. Innate and acquired immunity, immune cells and lymphoid system, immune response: cellular and humoral immunity

**Unit III: Regulatory Mechanisms of Enzymes and role of Vitamins**

1. Thermoregulation.
2. Definition, nomenclature and classification of enzymes.
3. Mechanism and regulation of enzyme action.
4. Co-enzymes
5. Vitamins

**Unit IV: Neuromuscular Co- ordination**

1. Types of neurons.
2. Physiology of nerve impulse conduction.
3. Types and structure of Muscles.
4. Theory of muscle contraction and its biochemistry.

**Unit V: Endocrine system**

1. Structure and functions of Pituitary gland.
2. Structure and functions of Thyroid gland.
3. Structure and functions of Adrenal gland.
4. Structure and functions of Parathyroid, Thymus and Islets of Langerhan's.
5. Physiology of Male and female Sex hormones.

(Dr. Neeraj Sahai)  
 H.S. Rathore

Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies

Dr. R. Singh  
 Dr. Sushila Shrivastava  
 03.6.19

**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

**Recommended books for B.Sc. – II Year -Zoology**

Books of MP Hindi Granth Academy

Parker & Haswall	: Text book of Vertebrate Zoology
Kotpal, RL	: Vertebrate
Jordan, EL and Verma, PS	: Chordate Zoology
Rastogi, VB	: Organic Evolution
Singh and Chaturvedi	: Organic Evolution
Ernst W. Mayr	: Evolution and the Diversity of life
Colbert	: Evolution
Verma, PS and Agrawal, VK	: Cell Biology, Genetics, Molecular Biology, Evolution
Verma PS	: Animal Physiology
Nigam, HL	: Animal Physiology
Wood, DW	: Principle of Animal Physiology
Berry, AK	: Animal Physiology and Biochemistry
Prosser, CL	: Comparative Animal Physiology
Goyal and Shastri	: Animal Physiology
Shrivastava, HS	: Biochemistry
Lehninger	: Biochemistry

*NS Sahi*  
 (Dr. Neera Sahi)

*Shivastava*  
 Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies, Zoology

*Shivastava*  
 Dr. Sustula Shivastava  
 03.6.19

*R. Singh*  
 (Dr. R. Singh)

J. Starke

*vs Ralho*

**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

उच्च शिक्षा विभाग, म.प्र. शासन  
 स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
 केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

**Class / कक्षा** : **B.Sc. II year (Session-2020-21)**  
**Subject/ विषय** : **Zoology Practical**  
**Max. Mark/ अधिकतम अंक** : **50**

1. Demonstration of commercially available species of locally available Fishes (Computer simulation technique).
2. Study of museum specimens (Vertebrates)
3. Study of specimens of evolutionary importance (*Limulus, Latimeria, Dianosaurs, Archeopteryx, Peripatus, etc.*).
4. Osteology: Limb and girdles of *Frog, Varanus, Pigeon and Rabbit*.
5. Detection of Protein, Carbohydrate and Lipid / Study of activity of Human salivary enzyme.
6. Hematological Experiment- RBC and WBC counting / Blood grouping/ Estimation of Hemoglobin.
7. Histological study of various endocrine glands: T.S. of Thyroid, T.S. of Pituitary gland, T.S. of Adrenal gland, T.S. of Testis, T.S. of Ovary.
8. Histological study of Digestive and Visceral organs: T.S of Stomach, T.S of Intestine, T.S of Pancreas T.S. of Liver, T.S of Lungs and L.S. of Kidney.

**Distribution of Marks**

1. Dissection	06
2. Spotting related to evolution	04
3. Spotting (4 specimens, 2 Bones, 2 Slides)	16
4. Biochemical test / Enzyme activity	05
5. Hematological Experiment	05
6. Viva -voce	04
7. Record	05
8. Collection	05

Total 50

(Dr. Neeta Sahni)

*Dr. Shivesh Pratap Singh*  
 Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies, Zoology

*Dr. Sushila Shrivastava*  
 Dr. Sushila Shrivastava  
 03-6-19

(Dr. M. D. Chandra)

*Dr. R. Singh*  
 (Dr. R. Singh)

I-stamp

**Department of higher Education, Govt. of M.P.**  
**Under Graduate Syllabus for B.Sc. (Bio) 3 Years**  
**As recommended by Central Board of Studies in Zoology**

उच्च शिक्षा विभाग, म.प्र. शासन  
 स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम  
 केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुसंसित

<b>Class / कक्षा</b>	:	<b>B.Sc. III year (Session-2020-21)</b>
<b>Paper</b>	:	<b>I</b>
<b>Subject/ विषय</b>	:	<b>Zoology</b>
<b>Title of Paper</b>	:	<b>Genetics</b>
<b>Max. Mark/ अधिकतम अंक</b>	:	<b>42<sup>1/2</sup></b>

**UNIT I : Heredity and Genetic material**

1. Mendel's laws of heredity.
2. Variations- sources and types
3. Structure, molecular organization and function of DNA and RNA and types of RNA
4. DNA replication in Prokaryotes.
5. Nucleosome (Solenoid model)

**UNIT II Gene Expression**

1. Genetic Code
2. Transcription in Prokaryotes
3. Translation in Prokaryotes
4. Gene expression: Regulation of protein synthesis and Lac operon model.
5. Split gene, overlapping gene, pseudo gene

**UNIT III : Linkage and Chromosomal aberration**

1. Linkage and crossing over- Types and significance
2. Sex determination- Chromosomal and genetic balance theory.
3. Sex linked inheritance (Haemophilia, colour blindness)
4. Structural and numerical changes in chromosomes
5. Mutation-Types and Mutagens

**UNIT IV : Human Genetics**

1. Human Karyotype
2. Human Genome Project
3. Multiple allele and inheritance of blood group
3. Autosomal and Sex Chromosome Syndromes in human
4. Genetic diseases in human- Sickle cell anaemia, Albinism and Thalassemia

**UNIT V : Genetic Engineering**

1. Recombinant DNA technology and Gene Cloning
2. Polymerase chain reaction.
3. Blotting- Southern and Northern
4. DNA finger printing
5. Gene therapy

*(Dr. N. Taha)*  
 Dr. N. Taha

*(Dr. Shivesh Pratap Singh)*  
 Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)

*(Dr. Vinodini Singh)*  
 Dr. Vinodini Singh  
 28-4-17  
 Dr. Vinodini Singh

*(Dr. Vinodini Singh)*  
 Dr. Vinodini Singh  
 Dr. Vinodini Singh  
 Dr. Vinodini Singh

Govt. Autonomous P.G. College, Satna (M.P.)  
 Rewa



B.Sc. - III Year - Zoology

Books of MP Hindi Granth Academy

- Lewin : Genetics (Latest Edition Strickberger : Genetics)
- Gardner, MJ : Principles of Genetics
- Singh, BD : Genetics
- Singh, BD : Biotechnology
- Gupta, PK : Genetics
- Gupta, PK : Molecular Biology and Genetic Engineering
- Verma, PS and Agrawal, VK : Genetics
- Purohit : Biotechnology
- Kohli and Ansar : Economic Zoology
- Kohli : Ecology
- Odum, EP : Fundamental of Ecology
- Sharma PD : Environmental Biology and Toxicology
- Natrajan, SS : A Manual of Fresh Water Aquaculture
- Upadhaya : Economic Zoology

Pal Ajay : Cellular & Molecular Biology  
 Pragya Khanna : Cell & Molecular Biology

HS Rathore  
 28.4.17  
 (Prof. H.S. Rathore)  
 Brij  
 28.4.17  
 (Dr. Rowshu Singh)  
 V.S.K.  
 (Dr. N. S. Khan)

28/4/17  
 Dr. S. Shrivastava  
 R. Shrivastava  
 28/4/17  
 (Dr. Raju Shrivastava)  
 A.M.  
 28.4.17  
 (Dr. Vinodini Nigam)  
 28/04/17  
 (Dr. Anita Solanki)

Dr. Shivesh Pratap Singh  
 Prof. & Head, Dept. of Zoology  
 Govt. Autonomous P.G. College, Satna (M.P.)  
 Chairman, Board of Studies, A.P.S. University, Rewa  
 28/4/17  
 (Dr. Celica Yadav)  
 Shobhu  
 28.4.17  
 (Dr. Shobhu Shobhu)  
 (Dr. C. Raju)

## Under Graduate Syllabus for B.Sc. (Bio) 3 Years

## As recommended by Central Board of Studies in Zoology

उच्च शिक्षा विभाग, म.प्र. शासन

स्नातक कक्षाओं के लिए त्रिवर्षीय पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल प्राणीशास्त्र द्वारा अनुशंसित

Class / कक्षा : B.Sc. III year (Session-2020-21)

Subject/ विषय : Zoology Practical

Max. Mark/ अधिकतम अंक : 50

The practical's work will be as per theory syllabus and the candidates will be required to show the knowledge of the following :-

1. Study of fresh water, marine and terrestrial fauna, Major carps, Common stored grain pest and vegetable pest
2. Water analysis – Dissolve Oxygen, pH, Hardness, Turbidity.
3. Study of Ecosystems and maintenance of Aquarium
4. Study of instrument related to Genetics- Centrifuge, PCR, Gel electrophoresis, DNA finger printing.
5. Wild life - Endangered species.
6. Life cycle of silkworm, Honey Bee, Lac insect

## Distribution of Marks

1. Spotting	12
2. Analysis of water	04
3. Exercise based on wildlife	05
4. Ecosystem	04
5. Study of Instruments	05
6. Problem on Genetics	05
7. Life Cycle	05
8. Viva -voce	05
9. Practical Record and collection	05

Total	50
-------	----

Dr. Shivesh Pratap Singh  
Prof. & Head, Dept. of Zoology  
Govt. Autonomous P.G. College, Satna (M.P.)  
Chairman, Board of Studies, A.P.S. University, Rewa

Dr. Utkarsh Yadav Gajaru  
Dr. Shobha Shauchi  
28/4/17

Prof. H.S. Rathore  
(Prof. H.S. Rathore)  
Dr. Rajiv Shevatar  
Dr. M.S. Chauhan  
Dr. Vinodini Nigam  
28/4/17  
28/4/17  
28/4/17  
28/4/17  
28/4/17