स्नातकोत्तर पाठ्यक्रम की परीक्षा योजना

प्रथम सेमेस्टर सत्र 2017-18 के लिए

विषय – प्राणीशास्त्र प्रथम सेमेस्टर

M.Sc. Zoology

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णांक	
		सैध्दांतिक	सी. सी.ई	सैध्दान्तिक	सी.सी.इ
प्रथम	Biosystematics, Taxonomy and evolution	85	15	28	05
द्वितीय	Structure and Function of Invertebrates	85	15	28	05
तृतीय	Quantitative biology, biodiversity and wildlife	85	15	28	05
चतुर्थ	Biomolecules and structural Biology	85	15	28	05
	1- Practical -I	50	–	17	–
	2- Practical -II	50	–	17	–

विषय – प्राणीशास्त्र द्वितीय सेमेस्टर

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णांक	
		सैध्दांतिक	सी. सी.ई	सैध्दान्तिक	सी.सी.ई
प्रथम	Genral and Comparative animal Physiology and Endocronology	85	15	28	05
द्वितीय	Population Ecology and Environmental physiology	85	15	28	05
तृतीय	Tools and techniques in Biology	85	15	28	05
चतुर्थ	Molecular Cell Biology and Genetics	85	15	28	05
	1- Practical -I	50	–	17	–
	2- Practical -II	50	–	17	

2/8/17

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Postgraduates
As recommended by Central board of Studies and
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Session 2017-18

M.Sc. Zoology
Semester I
Paper I
Biosystematics, Taxonomy and evolution

Max.Marks. 100
Theory 85
C.C.E. 15

Unit I

. Definition and basic concepts of biosystematics taxonomy and classification.
- History of Classification.
Trends in biosystematics : Chemotaxonomy cytotaxonomy and molecular taxonomy
Dimensions of speciation and taxonomic characters.
Species concepts : species category, different species concepts, subspecies and other infra-specific categories.
Theories of biological classification: hierarchy of categories.

Unit II

- Taxonomic Characters – Different kinds.
- Origin of reproductive isolation, biological mechanism of genetic incompatibility.
- Taxonomic procedures: Taxonomic collections , preservation ,curetting, process of identification.
- Taxonomic keys,different types of keys, their merits and demerits.
- International code of Zoological Nomenclature (ICZN): Operative principles, interpretation and application of important rules: Formation of Scientific names of various Taxa.

Unit III

- Taxonomic categories.
- Evaluation of biodiversity indices.

21/8/17

- Evaluation of Shannon – Weiner Index.
- Evaluation of Dominance Index.
- Similarity and Dissimilarity Index.

Unit-IV

- Concepts of evolution and theories of organic evolution.
- Neo Darwinism and population genetics:
- A- Hardy-Weinberg law of genetic equilibrium.
- B – A detailed account of destabilizing forces:
- i- Natural selection
- ii- Mutation
- iii- Genetic Drift
- iv- Migration
- v- Meiotic Drive.
- Trends in Evolution
- Molecular Evolution
- a) Gene evolution
- b) Evolution of gene families
- c) Assessment of molecular variation

Unit – V

- Origin of higher categories
- Phylogenetic – gradualism and punctuated equilibrium.
- Major trends in the origin of higher categories
- Micro and macro evolution.

Molecular population genetics

- Pattern of changes in nucleotide and amino and sequence.
- Ecological significance of molecular variations (genetic polymorphism)

Genetic & Speciation

- Phylogenetic and biological concept of species.
- Patterns and mechanism of reproductive isolation.
- Modes of speciation (allopatry & sympatry)

Origin and Evolution & Economically important microscopes and animals.

21/8/17

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Postgraduates
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Session 2017-18

MSc Previous
Subject: Zoology
SEMESTER -I
Paper-I List of Books

Max.Marks. 100
Theory 85
C.C.E. 15

SUGGESTED READING MATERIAL

1. M. Koto-The. Biology of biodiversity-Springer
2. E.O. Wilson-Biodiversity-Academic Press Washington.
3. G.G.-Simpson-Principle of animal taxonomy Oxford IBH Publication company.
4. E-Mayer-Elements of Taxonomy
5. Bastchelet-F-Introduction to mathematics for lite scientists Springer Verlag, Berling.
6. Skoal R.R. and F.J.Robiff Biometry-Freeman, San-Francisco.
7. Snecdor, G.W. and W.G. Cocharan Statisical Methods of affiliated-East-West Press, New Delhi.
8. Murry J.D. Mathematical Biology-Springer, Verlag, Berlin.

30/8/17
211

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Post Graduates
As recommended by Central board of Studies and
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Session 2017-18

Class - M.Sc.
Subject - Zoology
Paper Title - Paper II STRUCTURE AND FUNCTION OF INVERTEBRATES
Semester – III

Max.Marks. 100
Theory 85
C.C.E. 15

UNIT –I

1. Origin of metazoa
2. Organization of Coelom
   A. Acoclomates
   B. Pscudocoelomates
   C. Cociomates
3. Locomotion.
   A. Amoeboid flageller and cillary movement in protozoa
   B. Hydrostatic movement in Coelenterata
   C. Annelida and Echinodermata

UNIT –II

A: NUTRITION AND DIGESTON

Patterns of Feeding and digestion in lower metazoa, Mollusea, Echinodermata Filter feeding in polychaeta.

B: Respiration

Organs of respiration : Gills, lungs and trachea, respiratory pigments. Mechanism of respiration.

UNIT – III

EXCRETION

Excretion in lower invertebrates.
Excretion in higher invertebrates.
Mechanism of Osmoregulation.

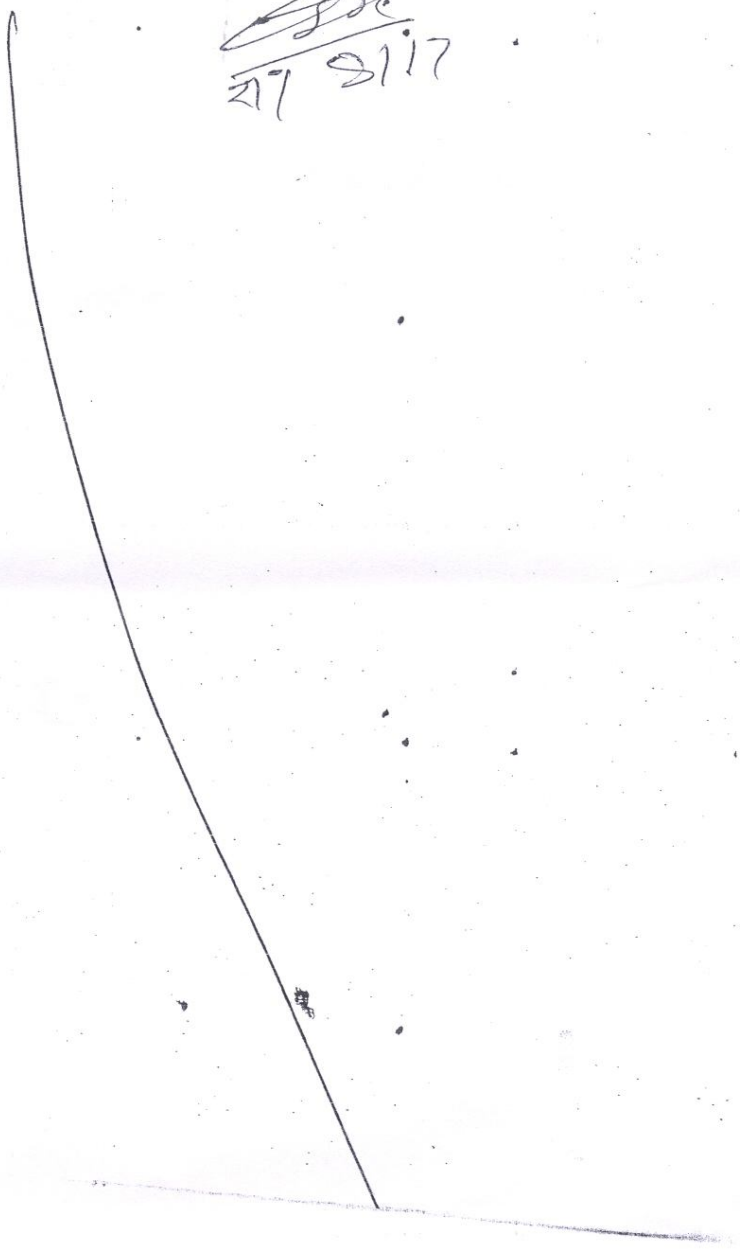
UNIT – IV

NERVOUS SYSTEM.

21/8/17

A. Primitive Nervous systems-Coelenterata and Echinodermata.

B. Advanced nervous system in Annelida, Arthropoda (Crustacea and Insecta) and Mollusa (Cephalopoda)



UNIT – V

A. INVERTEBRATES LARVAL FORMS AND THEIR EVOLUTIONARY SIGNIFICANCE.

A. Trematoda and Cestoda

B. Larval forms of Crustacea

C. Larval forms of Mollusea

D. Larval forms of Echinodermata.

B. 1. Structure affinities and life history of the following minor noncoelomate Phyla -

A. Rotifera

B. Entoprocta

2. Structure affinities and life history of the following minor Phyla

A. Phoronida

B. Ectoprocta

Suggested Reading Material –

1. Hyman, L.H. The invertebrates, Nol. I.protozoa through Ctenophora, McGraw Hill Co., New York

2. Barrington, E.J.W. Invertebrate structure and function. Thomas Nelson anmd Sons Ltd., London.

3. Jagerstein, G. Evolution of Metazoan life cycle, Academic Press, New York & London.

4. Hyman, L.H. The Invertebrates. Vol. 2. McGraw Hill Co., New York.

5. Hyman, L.H. The Invertebrates. Vol. 8. McGraw Hill Co., New York and London.

6. Barnes, R.D. Invertebrates Zoology, III edition. W.B. Saunders Co. Philadelphia.

7. Russel-Hunter, W.D. A biology of higher invertbrates, the Macmillan Co. Ltd., London.

8. Hyman, L.H. The Invertebrates smaller coelomate groups, Vol. V.Mc.Graw Hill Co., New York.

9. Read, C.P. Animal Parasitism. Parasitism. prentice Hall Inc., New Jersey.

10. Sedgwick, A.A. Student text book of Zoology. Vol. I,II and III. Central Book Depot, Allahabad.

11. Parker, T.J., haswell W.A. Text book of Zoology, Macmillan Co., London.

21/8/17

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Post Graduates
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Session 2017-18

M.Sc. Previous

I Sem III Paper

Quantitative biology, biodiversity and wildlife

Unit – I Quantitative biology

- Basic mathematics for biologists
- matrices and vectors
- Exponential functions
- Differential equations integration
- Periodic functions
- Sprobability distribution propertics and probability theory

Unit – II

- Experimental designing and sampling theory
- Completely randomized design and randomized block design
- Analysis of variance
- Co-relation- types of correlation
- (Karl personls coefficient correlation
- Regression

Unit – III Biodiversity

- concept and principal of biodiversity
- causes for the lose of biodiversity
- Biodiversity conservation method
- Medicinal uses of forest plant

Unit – IV Wildlife of India, types of wildlife

- Values of wildlife positive and negative
- Wildlife protection Act
- Conservation of wildlife in India
- Endangered and threatened spices

Unit – V Wildlife and conservation

- National Parks and Sanctuaries
- Project Tiger
- Project Gir lion ang Crocodile breeding project
- wildlife in M.P. with references to Reptiles Birds and mammals
- Biospheres reserves

Suggested Readings Materials

- Bataschelet. E. Introduction to mathematics for site scientist springer-verlag, berling
- Jorgenserr, S.E. Fundamental of Ecological modling E. sevier New York
- Lenderen D. Modelling in behavioral ecology. Chapman & Hall London U.K.
- Sokal, R.R. and F. J. Rohit Biometry Freeman San Francisco
- Snedecor, G.W. and W.G. cochran, statical methods, Affilited East, West Press New Delhi (Indian ed.)
- Muray , J.D. Methamatical Biology, Springer Verlag Berlin

21/8/17

- Pelon, E.C. The interpretation of ecological data : A promer on classifica ordivation.
- A. lewis – Biostatics
- B.K. Mahajan Methods in Biostatics
- V.B. Saharia wildlife in India
- S.K. Tiwari wildlife in central India
- J.D. Murrey Mathematical Biology
- Georgs & Wilians Startical method
- R.K. Tondon Biodiversity Texonomy & Ecology
- M.P. Arora An Introduction to prevantology
- P.C. Kotwal Biodiversity and conservation

21/8/17

Ist Semester

Suggested reading materials:

1. M. Koto : The Biology of Biodiversity. Springer.
2. E. O. Wildon : Biodiversity. Academic Press Washington.
3. G.G. Simpson : Principles of Animal Taxonomy. Oxford IBH Publication Company.
4. E. Mayer : Elements of Taxonomy.
5. Dobzansky : Biosystematics.
6. Dallela and Sharma : Animal Taxonomy and Museology.
7. Dodzhansky: The Genetics and origin of species. Columbia University Press.
8. Futuyama D.I. Evolutionary Biology. INC Publishers Dunderland.
9. Jha A.P. : Genes and Evolution – John Publication, New Delhi.

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Semester wise Syllabus for Postgraduates
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Session 2017-18

Max.Marks. 100
Theory 85
C.C.E. 15

Class: M.Sc.
SEMESTER - I
Paper: IVth Paper
BIOMOLECULES AND STRUCTURAL BIOLOGY

Unit – I
Chemical Foundation of bilogy

- PH, PK, acids bases, buffers, weak bonds
- Free energy, resonance, isomerisation
- Acid soluble pool of living tissues – aminoacids, monosaccorides, oligosaccharides, nucleotides, peptides.
- Nanoparticles
- Biomaterials

Unit – II

1. Primary, Secondry, tertiary and quaternary structures of proteins, protein folding and denaturation
2. DNA & RNA: Double helical structure of DNA, Structure of RNA, role of RNA in gene expression
3. DNA replication, recombination and repair
4. Functional importance of lipid storage and membrane lipids
5. Membrane channels and pumps

Unit – III

1. Basic concepts of metabolism. Coupled and interconnecting reactions of metabolism cellular energy recources and ATP synthesis
2. Glycolysis and glyconeogenesis
3. Citric acid cycle
4. Oxidative phosphorylation : Protein and it's regulation
5. Fatty acid metabolism: Synthesis and degradation of fatty acids

Unit – IV

1. RNA synthesis and splicing
2. Biosynthesis of amino acids
3. Biosynthesis of nucleotides
4. Biosynthesis of membrane lipids and steroids
5. Protein synthesis

Unit – V

1. Enzymes: Terminologies, classification and basics of enzyme kinetics
2. Mechanism of enzyme catalysis
3. Regulation of enzyme action
4. Concept of free energy and thermodynamic principals in biology
5. Energy rich bonds, compound and biological energy transducers

Suggested Readings:

1. Voet, D. and J.G. Voet. Biochemistry John Wiley & Sons.
2. Freifelder, D. Physical Biochemistry W.H. Freeman & Co.
3. Segal, I.H. Biochemical calculations John Wiley and Sons
4. Creighton, T.E. Protein Structure and Molecular Properties W.H. Freeman & Co.
5. Freifelder, D. Essentials of Molecular Biology
6. Wilson, K. and K.H. Goulding A Biologists Guide to Principals and Techniques of Practical Biochemistry
7. Cooper, T.G. Tools of Biochemistry
8. Hawk, Practical Physiological Chemistry
9. Garret, R.H. and C.M. Grisham. Biochemistry. Saunders college Publishers.

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Postgraduates
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Session 2017-18

Class: M.Sc.
SEMESTER - I
Practical : Ist

	M,M, 50
1. Spotting – Classification and identification of various phylum.	10
2. One major dissection of various systems of invertebrates – Squilla, Prawn, Sepia, Loligo.	10
3. One minor dissection- Grosshopper, Honeybee, Echinus, Starfish, Aplysia.	5
4. Mounting material - permanent balsum mount	5
5. Spottings related with Adaptation. Homologics, Analogics and modification of month parts : 5	
6. Viva Voce. 10	
7. Pratical Records, collection	5
Total Marks	50

21/8/17

Department of Higher education, Govt. of M.P.
Semester wise Syllabus for Postgraduates
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Session 2017-18

Class: M.Sc.
SEMESTER - I
Practical : IInd

M,M, 50

1.	Problem based on Biodiversity and wild life. Mammals and Fishers group (Spots 5 +5)	20
2.	Exercise on mean, mode, & Median.	5
3.	Cell division preparation of slid on Meiosis & Mitosis.	5
4.	Preparation of different types of chromosomes.	5
5.	Viva – Voce	10
6.	Practical Record and collection.	5
Total Marks		50

21/6/17