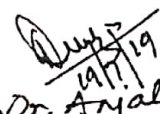


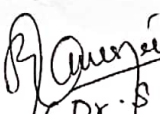
Department of Higher Education, Govt. of M.P.
Revised Under Graduate Syllabus for B.Sc. (Bio) 3 years
As recommended by Central board of Studies in Zoology 2019-20


B.Sc. I year
Subject : Zoology
Session 2019-20


Scheme of Examination

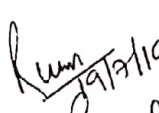
Paper	Topic of Paper	Theory		Internal Assessment		Total marks
		Max.Marks.	Min.Marks.	Quarterly Exam	Half yearly Exam	
I	Invertebrates	40	13	10	10	100
II	Cell biology & Developmental Biology	40	13			
	Practical	50	17			50

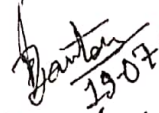

 Dr. Anjali D'Souza
 19/7/19

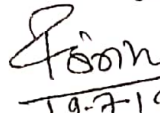

 Dr. S. Banerjee
 19/7/19



 Dr. Ruchira Chaudhary
 19/7/19


 Dr. P. Mukherjee
 19/7/2019


 Mrs. Rupa Paul
 19/7/19


 Dr. Daya Shankar Gaudam
 19/07/19


 Dr. Bijanku Singh
 19-7-19


 Dr. Navju Dixit
 19/7/19

Department of Higher Education, Govt. of M.P.

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As recommended by Central board of Studies in Zoology 2019-20

Class	- B.Sc. I year (Session 2019-20)
Paper	- I
Subject	- Zoology
Title of Paper	- Invertebrates
Max. Marks:	- 40

Unit-I

1. Elementary Knowledge of Zoological Nomenclature and International Code.
2. Classification of Lower Invertebrates (According to Parker and Haswell 7th edition)
upto Class.(i. Protozoa ii. Prorifera iii. Coelenterata iv. Platyhelminthes v. Nematelminthes)
3. Classification of Higher Invertebrates (According to Parker and Haswell 7th edition)
upto Class(i. Annelida ii. Arthropoda iii. Mollusca iv. Echinodermata v. Hemichordata)

Unit-II

1. Protozoa- Type Study of *Plasmodium*.
2. Protozoa and Diseases wsr. Malaria, Amoebiasis, Trypanosomiasis and Leishmaniasis
3. Porifera- Type study of *Sycon*
5. Coelenterata: Type study of *Obelia*.
6. Corals and Coral Reef formation.

Unit-III

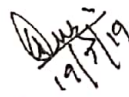
1. Helminthes- Type study of Liver Fluke (*Fasciola hepatica*)
2. Pathogenic symptoms of Nematode and diseases – Ascariasis, Trichuriasis, Enterobiasis, Filariasis and Trichinosis.
3. Annelida: Type study of Earthworm (*Pheretima*)
4. Coelom and Metamerism in Annelida .
5. Structure and significance of Trochophore larva.


Unit-IV


1. Arthropoda- Type study of Prawn (*Palaemon*)
2. Larval forms of Crustacea wsr Nauplius, Zoea, Megalopa and Mysis larva.
3. Different types of mouth parts in insects.
4. Insect as Vectors of human diseases wsr. Culex, Aedes, Anopheles mosquito & Housefly.
5. Mollusca: Type study of *Pila* (An Apple Snail)


Unit-V


1. Echinodermata- External features and Water Vascular System of Star fish (*Asterias*).
2. Life history of star fish.
3. Larval forms of Echinoderms.
4. Hemichordata – Type study of *Balanoglossus* wsr External Features.
5. Development of *Balanoglossus* wsr structure and significance of Tornaria larva.
6. Affinities of *Balanoglossus*.


19/7/19
(Dr. P. Mulchrepe)


19/7/19
(Mrs. Rina Paul)


25-07-29
(Dr. Daya Shankar
e. autam)


19.7.19
(Dr. Vijayendra Singh)


19/7/19
(Dr. Nandini Dixit)

Department of Higher Education, Govt. of M.P.

Revised Under Graduate Syllabus for B.Sc. (Bio) 3 years

As recommended by Central board of Studies in Zoology 2019-20

Class	-	B.Sc. I year (Session 2019-20)
Paper	-	II
Subject	-	Zoology
Title of Paper	-	Cell Biology and Developmental Biology
Max. Marks:	-	40

Unit-I

1. History of Cell Biology, Cell Theory.
2. Prokaryotic and Eukaryotic Cells.
3. Structure and function of Plasma membrane.
4. Structure and function of Golgi body, Endoplasmic Reticulum, Lysosomes
5. Structure and function of Mitochondria, Ribosomes and Centriole.

Unit-II

1. Structure and function of Nucleus and Nucleolus.
2. Structure and function of typical Chromosome.
3. Basic Concept of Chromatin and Heterochromatin .
4. Structure and function of Lampbrush and Polytene Chromosomes
5. Cell Cycle wr. Amitosis, Mitotic and Meiotic cell division.

Unit-III

1. Spermatogenesis in Vertebrates
2. Oogenesis in Vertebrates
3. Fertilization in Vertebrates
4. Parthenogenesis
5. Regeneration
6. Stem cells: Sources, types and their uses.

Unit-IV


Development of Frog

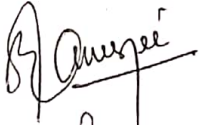
1. Cleavage.
2. Blastulation
3. Fate map construction
4. Gastrulation upto formation of three germinal layers
5. Structure of Tadpole larva and its metamorphosis.


Unit-V

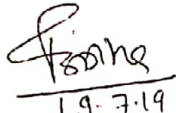
Development of Chick


1. Cleavage
2. Blastulation
3. Fate map construction
4. Gastrulation
5. Development of chick embryo upto formation of primitive streaks.
6. Extra embryonic membranes in chicks.


19/7/19
(Dr. P. Mulherjee)


Runa
19/7/19
(Mrs. Runa Paul)


Shankar
29-07-19
(Dr. Daya Shankar Gautam)


Priyanka
19-7-19
(Dr. Priyanka Singh)


Nandini
19/7/19
(Dr. Nandini Dixit)

Department of Higher Education, Govt. of M.P.
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Class	B.Sc. I year (Session 2019-20)
Subject	Zoology Practical
Max. Marks:	50

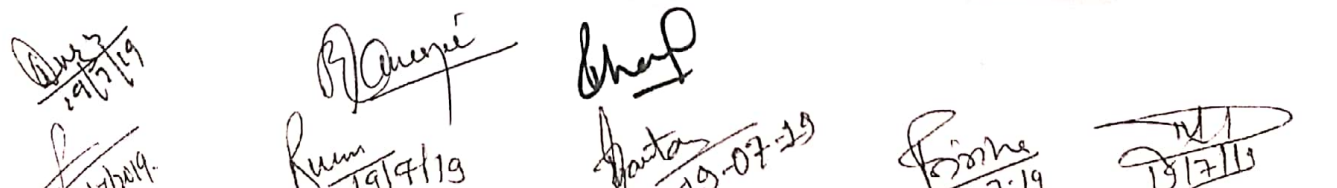
The Practical's work will be based on theory syllabus and the candidates will be required to show knowledge of the following -

1. Study of Museum Specimens and slides relevant to invertebrates studied in theory
2. Mounting (Temporary Mounting) /Comment upon whole mount
 - a) Prawn- Statocyst
 - b) Pila - Ctenidium / Radula/ Osphradium
 - c) Earthworm – Septal Nephridia
 - d) Mouth parts of insects
3. Dissection / Demonstration –
 Dissection of cultured animals /Computer simulation technique/ Flag labeling on artificial model
 - a) Earthworm: Digestive system, Nervous system and Reproductive system.
 - b) Prawn: Nervous system, Appendages
 - c) Pila: Nervous system
4. Exercise related to Frog and Chick Embryology.
 Study of Embryological Slides / Permanent Mount
5. Exercise/spotting related to cell biology-
 - a) Identification of Mitochondria in buccal smear.
 - b) Squash preparation of onion root tip
 - c) Identification of Stages of Mitotic and Meiotic Cell Division through permanent slide.
 - d) Study of special types of Chromosomes through permanent slide.

Distribution of Marks

Time: 3 hours	MM. 50
1. Dissection	08
2. Spotting (8 spots)	16
3. Mounting	04
4. Exercise related to Embryology	04
5. Exercise related to Cell Biology	04
6. Viva - Voce	04
7. Practical Record	05
8. Collection	05

	Total 50 Marks


 (Dr. P. Mukherjee) (Ms. Rina Paul) (Dr. Dayashankar Gautam) (Dr. Priyanka Sengar) (Dr. Manju Dixit)

B.Sc. I year – Zoology

Books of M.P.Hindi Granth Academy

1. Parker & Haswell : Textbook of Invertebrate Zoology
2. Kotpal R.L. : Invertebrate
3. Rastogi ,V.B. : Developmental Biology
4. Arora M.P. : Embryology
5. Verma P.S & Agrawal V.K. : Chordate Embryology
6. Karp : Cell and Molecular Biology
7. Sheelar & Bianchi : Cell and Molecular Biology
8. Rastogi ,V.B. : Introduction to Cytology
9. De Robertis : Cell and Molecular Biology
10. Powar C.B.: Cell Biology
11. Verma P.S & Agrawal V.K. : Cell Biology ,Genetics ,Molecular Biology& Evolution

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CDR-S. Banerjee

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