

CRITERION III RESEARCH, INNOVATIONS AND EXTENSION

3.5	Collaboration
3.5.1	3.5.1.1. Number of functional MoU's with Institutions of national, international importance, other universities, industries, corporate houses etc. during the year

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SATPUDA EDUCATION SOCIETY, JALGAON (JAMODI'S)

ARTS & COMMERCE COLLEGE

Warwat-Bakal Dist- Buldana

Dr. Subhash Pawar
In Charge Principal

Shri Krushnarao Ingle (Ex MLA)
President

Phone: 07266-295243

visit us at: www.acscwb.co.in

Email: 327accwba@gmail.com

SELF-DECLARATION

This is to certify that the information, reports, true copies of the supporting documents, numerical data and weblinks furnished herein are verified by IQAC and the head of institution and are found correct.

IQAC Co-ordinator
Arts and Commerce College,
Warvat Bakal



Principal
Arts & Commerce College,
Warvat Bakal Dist. Buldana

1)

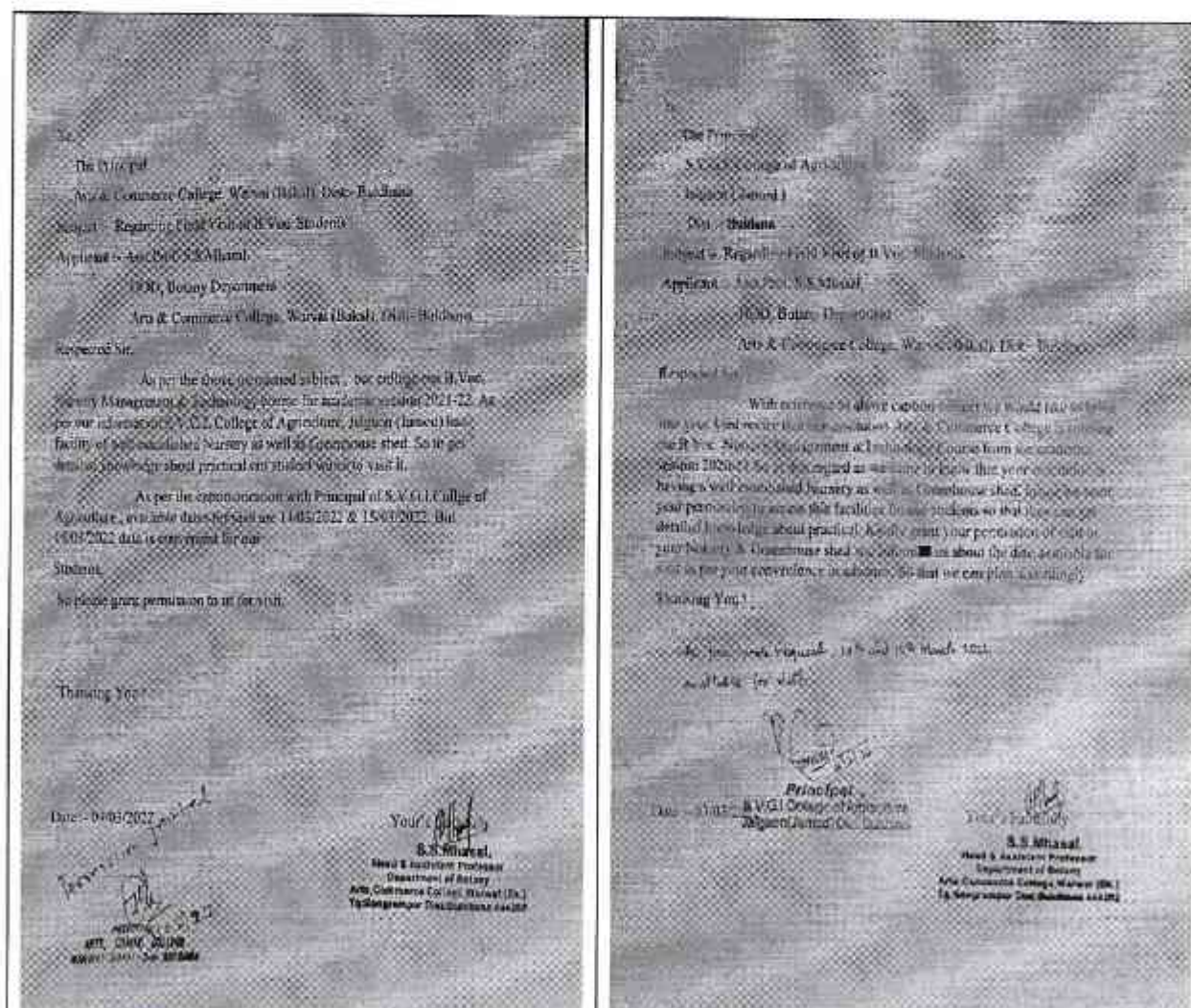
I) MoU for B.Voc. (Nursery Management & Technology) Between Arts & Commerce College Warwat Bakal

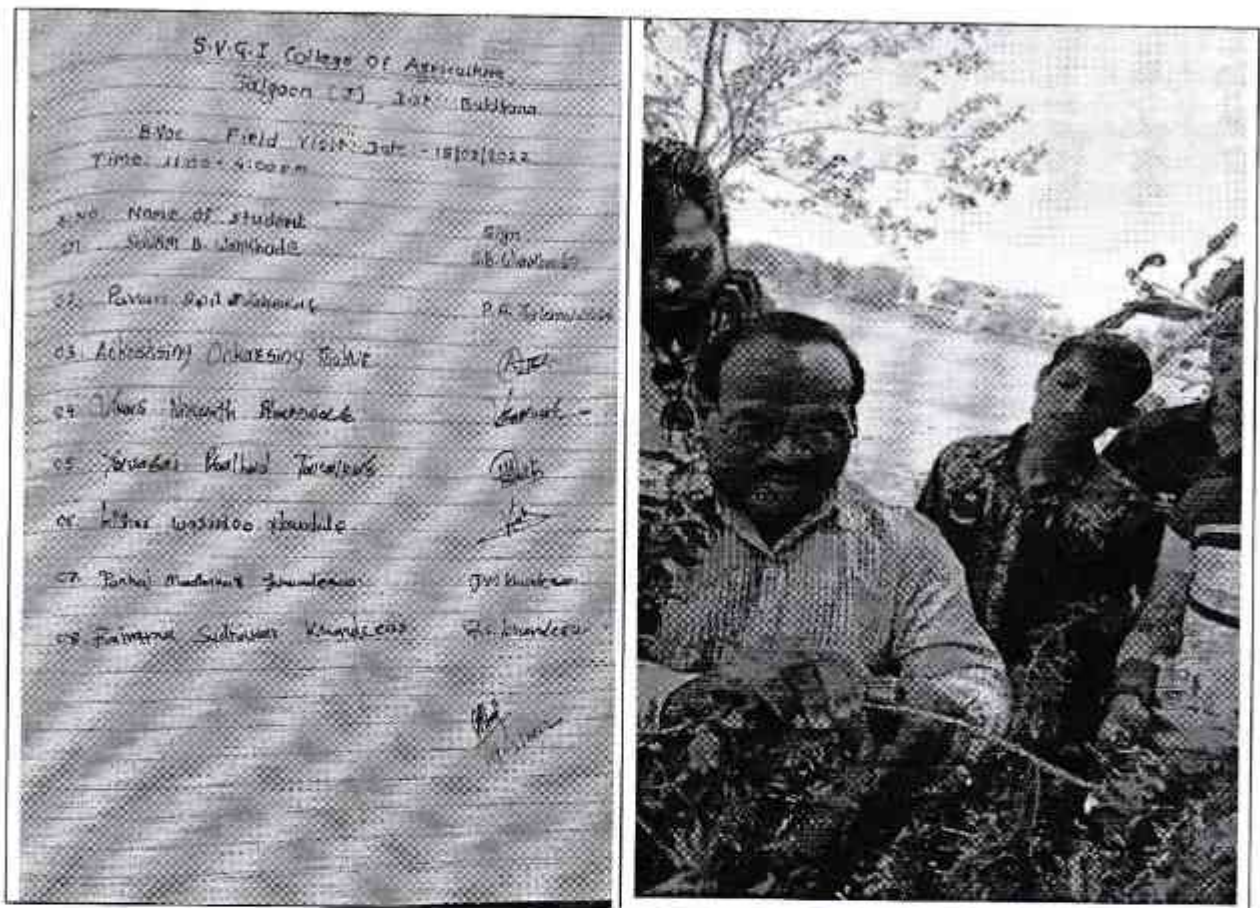
&

SGVI College of Agriculture, Jalgaon Jamod

Activity conducted under above said MoU

Sr No	Activity	Date	Topic	Name of College
1	Field visit to Agricultural nursery	15/03/2022	Workshop on vegetative propagation	SVGI College of Agriculture, Jalgaon Jamod



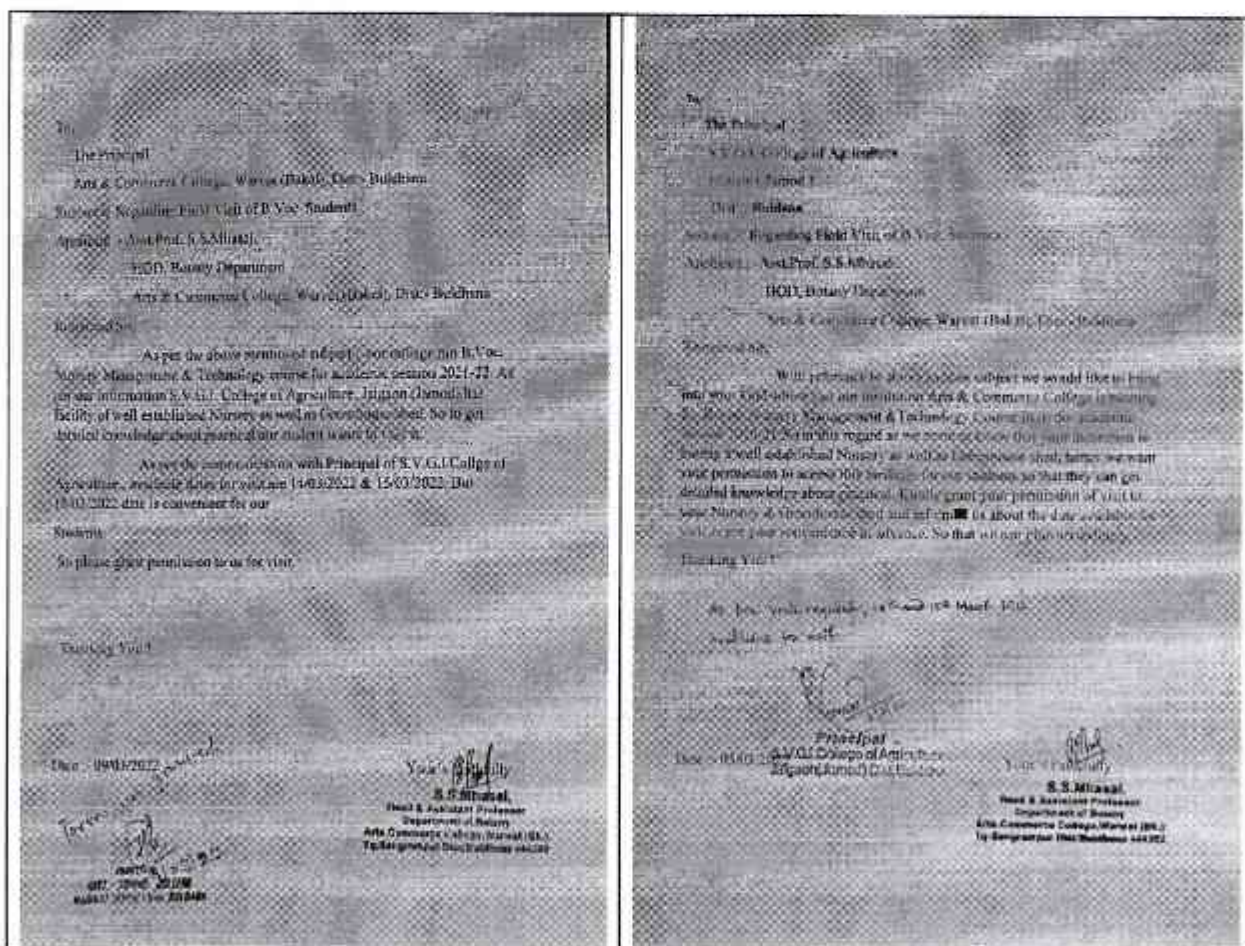


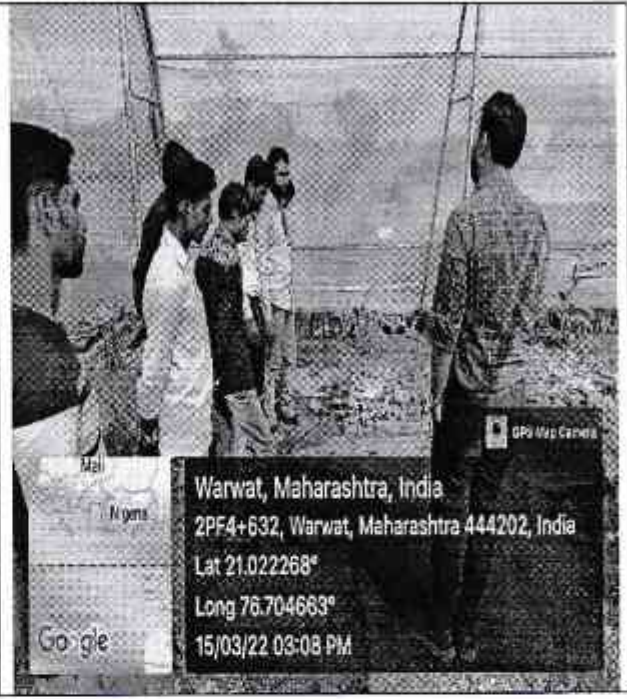
[Handwritten Signature]
 Principal
 Arts & Commerce College,
 Warvat Bakal Dist. Buldana

**II) MoU for B.Voc. (Green House Technology) Between Arts & Commerce
College Warwat Bakal
&
SGVI College of Agriculture, Jalgaon Jamod**

Activities conducted under above said MoU

Sr No	Activity	Date	Topic	Name of College
1	Field visit to Green House shade	15/03/2022	To study the working and establishment of Green Houses	SVGI College of Agriculture, Jalgaon Jamod






Principal
Arts & Commerce College,
Warwat Balaj Dist. Buldana

III) MoU between Department of zoology R.A. Arts, Shri M. K. Commerce
and S. R. Rathi Science College, Washim

&

Department of Zoology from Arts and Commerce College, Warwat Bakal tq-
Sangrampur, Dist –Buldana

Activities carried out under above said MoU

2020-21						
Sr. No.	Book Publication	ISBN no	Titel of Chapter in Book	Published by	Author	Date
1	Current Updates in Life Science	9788192362182	"Morphometric and Quantative analysis of Rotifer in Upper morna Reservoir , Medshi, Dist- Washim page no. page no.467 to 473	Pandit Jawaharlal Nehru , Study center, Shri shivaji College of art, Commerce and Science, Akola (MS) India, A national Publication	Dr. M.R. Solanke and Dr. D.S. Dubhade	22 /12/2020
2021-22						
Sr.No.	Paper presented and also Published in Journals	ISSN No.	Title of Paper	Organized /Published by	Author	
01	Journal of Emerging Technologies and Innovative Research	ISSN: 2349-5162 Impact Factor 7.95	" Morphometric study Of Copepods (zooplankton) in Upper Morna Reservoir, Medshi, Dist- Washim, Maharashtra (oral presentation"	Department of zoology and IQAC in Sant Ramdas Arts, commerce ans science college Ghansavnagi, Jalna	Dr. M.R. Solanke and Dr. D.S. Dubhade	18/12/2021

Current Updates in Life Sciences

ISSN - 0790-1822/2014



Chief Editors

Dr. Mrs. P. P. Ursula
Professor & Head, Dept. of Zoology,
Maharaja College of Arts,
Channarayana, Mysore (K.A.)

Dr. D. K. Kocher
Professor, Department of Botany,
Sri Chaitanya College of Arts,
Channarayana, Mysore (K.A.)

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Paper I front page

MORPHOMETRIC AND QUALITATIVE ANALYSIS OF ROTIFER IN UPPER MORNA RESERVOIR, MEDSHI, DISTRICT WASHIM, MAHARASHTRA (INDIA)

M. R. Solanke¹ and D. S. Dabholkar²
¹Department of Zoology, Arts, Commerce College, Warwat Baidal, Dist. Buldhana
²Department of Zoology, R. A. College, Washim, 431901 (MS), India
Corresponding Author: msolanke@rediffmail.com

ABSTRACT:

Rotifers are the zooplankton found mostly in fresh water reservoir. In Upper Morna reservoir which is located at Mahagaon taluka in Washim District (MS), total 18 species of rotifer are found out of 53 species of zooplankton during the study period. In which 11 *Daphnia* species, 3 *Aplousis* species, 2 *Filinia* species and 1 *Lecane*, 7 zooplankton species are recorded. Rotifers are found abundant in winter than in summer and monsoon seasons.

Keywords: Rotifer, zooplankton, Upper Morna Reservoir, Washim

Introduction:

Zooplankton are organisms of relatively small size, mostly microscopic, which have either lesser powers of locomotion or else none at all, which drift in water subject to the action of waves, currents and other physical forces of water motion. Zooplankton are important components of aquatic ecosystems, as they participate in natural purification of water and mainly act as primary consumers.

Zooplankton constitutes important food item of many carnivorous and omnivorous fish. The larvae of carp feed mainly on zooplankton. Zooplankton are the most important biotic components influencing all the functional aspects of an aquatic ecosystem, like food chain, food web, energy flow and cycling of matter, they also help for the energy conservation (Munro et al., 1998; Dabholkar and Seneta, 1999; Sinha and Islam, 2002; Islam, 2007; Park and Shin, 2007). Zooplankton mostly comprises of five classes: Protozoa, Rotifer, cladocera, copepods and Cyclopoida.

The rotifers also called as wheel animalcules are the small Aschelminthes or nematode phylum. They are characterized by presence of corona with transparent bodies and ciliated area or found three structure as anterior end with mouth i.e. a specialized pharynx with its ciliated lining. It shows variety of forms with amazing slowness in movements. Rotifers are protozoanlike organisms varying in size from 40 µm to 2 mm (1 µm = 1/1000 of mm). The

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Paper I Content

Morphometric study of copepods (zooplankton) in Upper Morna reservoir, Medshi, Dist-Washim, Maharashtra.

Dr. D. S. Dabholkar
Assistant professor and Head in zoology, Arts, Commerce College, Warwat Baidal, Dist. Buldhana, 442002.
Maharashtra and Head, Post Graduate and Research Department of Zoology, R.A. College, Dist. M.S. Channarayana and Dist. MS. Channarayana, Maharashtra, 431901.

Abstract: In the Upper Morna Reservoir in Medshi, Dist. Washim, during study of morphometric characteristics of zooplankton the zooplankton community is composed of Rotifer, Cyclopoida, Copepoda and Daphnia. Total 23 species and 29 genera of zooplankton were recorded. Number of Copepods recorded 23 species in 12 genera and 4 families. 13 genera of Copepoda all over the year (12 genera in monsoon and 12 genera in winter and 12 genera in post-monsoon). In April and May 2009/2010, 10 species of the four suborder Cyclopoida, calanoida, harpacticoida and longicarpus were recorded. In August all the three suborder Cyclopoida, calanoida, harpacticoida and longicarpus were recorded. In Cyclopoida, Cyclopus, Eurytemora, etc. are found most abundant, in Calanoida, Diaptomus or have 10 genera, harpacticoida and longicarpus suborder Diaptomus and Mysis were found in winter season.

Keywords: Zooplankton, Copepods, Medshi, Upper Morna Reservoir, Washim

Introduction:
The Upper Morna Reservoir is located in a village Medshi, just above the study in the reservoir in the area, which is used mainly for agriculture purpose, fishing purpose and some people use the reservoir for drinking and domestic use. The water is not clear and the water is polluted by the effluent from the farm (hereby it is necessary to study this). In Upper Morna Reservoir Copepods are the dominant group of 50% of Zooplankton. They are small, transparent, free living, they adapted to floating in water column. They are small, transparent, free living, they adapted to floating in water column. They are small, transparent, free living, they adapted to floating in water column. They are small, transparent, free living, they adapted to floating in water column.

Materials:
The zooplankton body of the zooplankton of suborder Calanoida, Harpacticoida and Cyclopoida. The two important characters reported by a major author. The parts of the articulation is easily determined as the Calanoida and Cyclopoida and in some Harpacticoida because of a remarkable difference in the width of the two parts. In the Calanoida, the articulation occurs between the middle of the fifth leg and the genital segment, in the Cyclopoida and the Harpacticoida, it occurs between the bases of the fourth and fifth legs.

Anterior and posterior division:
Anterior and posterior divisions of the copepod body are rostrum and sternite. The rostrum can be divided into two regions which are the head with two pairs of appendages (first antennae or rostrum-bearing antennae, maxilliped, mandible and maxilla) and the thorax with six pairs of appendages (second antennae, four pairs of well-developed swimming legs reduced to six legs 1 to 4, and one pair, leg 5, which may be modified or vestigial). Cephalic segment is referred as first body segment. In cephalopod of the head and a thoracic somite (forming the mouthparts) is sometimes a second thoracic somite bearing leg 5 also found with the head. The last few segments of the rostrum may be partially or entirely fused. The sternite, first five to six, five segments, depending on the genus or species.

Paper I

Paper IInd Front page

R. S. W. C.
Dr. M. R. Solanke,
Assistant Professor &
3.5.1 MoU supporting documents
Arts, Commerce College, Warwat Baidal, Dist. Buldhana
Tq: Sangrampur Dist. Buldhana 442001



[Signature]
Principal,
Arts & Commerce College,
Warwat Baidal Dist. Buldhana

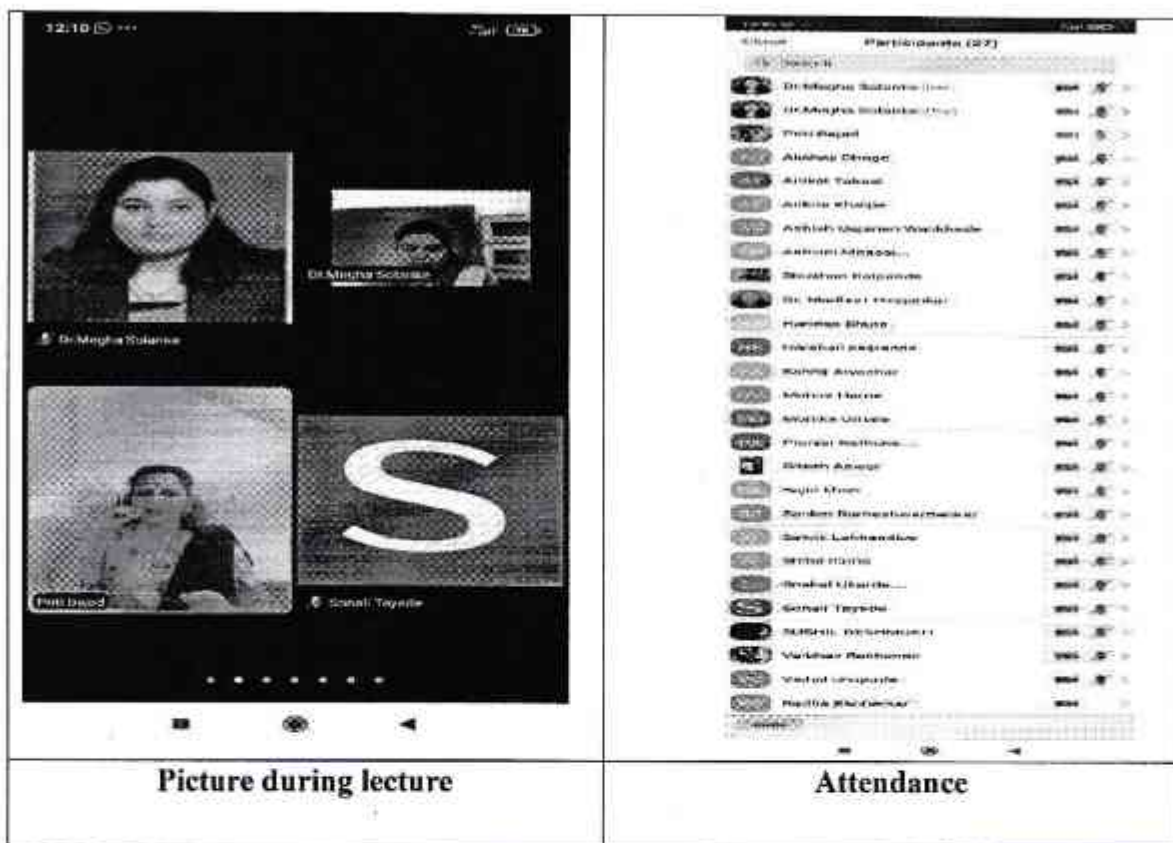
IV) MoU between Department of Zoology, Shri Muktanand College Gangapur, Dist. Aurangabad, Maharashtra
&
Art & Commerce College, Warwat Bakal, Tq. - Sangrampur, Dist-Buldana

Activities conducted under above said MoU

Sr No	Activity Guest lecture	Date	Topic	Name of College	Lecture taken in college (online mode)
1	Dr. P.N. Bajad	12/08/2021	Excretion	Shri Muktanand College, Gangapur	Arts & Commerce College, Warwat Bakal
2	Dr. M.R. Solanke	22/11/2021	Phylum Porifera	Arts & Commerce College, Warwat Bakal	Shri Muktanand College, Gangapur
3	Miss. Sonali Tayade	18/11/2021	Respiratory system	Arts & Commerce College, Warwat Bakal	Shri Muktanand College, Gangapur

1) Guest lecture by Dr Priti Bajad

<p>Arts & Commerce College, Warwat (Bulda)</p> <p>NAAC Accredited 'B' Grade</p> <p>Principal Dr. Rajendra S. Chaudhari # 02366-227626 College Code 227 E-mail: princ@artcomcollege.org / artcom@artcomcollege.org Phone No. 02366-227626</p> <p>To, Dr. P.N. Bajad Assistant Professor, Department of Zoology, Shri Muktanand College, Gangapur, Dist. Aurangabad.</p> <p>Subject: To invite for a Guest lecture based on available syllabus.</p> <p>Respected Sir, Due to the pandemic of COVID-19, students need to be engaged with online classes in maximum extent so as to not going to separate online guest lecture in Department of Zoology of Arts and Commerce college, Warwat Bakal, Tq. Sangrampur, Dist. Buldana on date 12/08/2021 at 11:00 AM.</p> <p>We are pleased to invite you as a guest to give lecture based on the topic "Excretion" from the syllabus of BSc-II Sem-IV as there your valuable knowledge will our students. Kindly accept the invitation and kindly share your any query.</p> <p>Thanking you.</p> <p>Yours faithfully, Dr. M. R. Solanke Head of the Zoology Department, Shri Muktanand College, Sangrampur, Warwat (Bulda) Dist. Aurangabad.</p> <p>Principal Dr. J. S. Chaudhari Arts & Commerce College, Warwat (Bulda) Dist. Buldana.</p>	<p>Arts & Commerce College, Warwat (Bulda)</p> <p>NAAC Accredited 'B' Grade</p> <p>Principal Dr. Rajendra S. Chaudhari # 02366-227626 College Code 227 E-mail: princ@artcomcollege.org / artcom@artcomcollege.org Phone No. 02366-227626</p> <p>Principal Dr. Rajendra S. Chaudhari # 02366-227626 College Code 227 E-mail: princ@artcomcollege.org / artcom@artcomcollege.org Phone No. 02366-227626</p> <p>Certificate of Appreciation</p> <p>It is hereby certified that Dr. P.N. Bajad, Assistant Professor, Department of Zoology, Shri Muktanand College, Gangapur, Dist. Aurangabad has delivered a Guest Lecture on 12/08/2021 at 11:00 AM regarding to the Department of Zoology, Arts and Commerce College, Warwat Bakal on the Topic, "Excretion" based on available syllabus of BSc. Dist. Buldana was very useful and valuable to supplement the knowledge of Zoology students.</p> <p>Yours faithfully, Dr. M. R. Solanke Head of the Zoology Department, Arts & Commerce College, Warwat (Bulda) Dist. Aurangabad.</p> <p>Principal Dr. J. S. Chaudhari Arts & Commerce College, Warwat (Bulda) Dist. Buldana.</p>
<p>Invitation letter</p>	<p>Appreciation letter</p>



Picture during lecture

Attendance

Dr. M. R. Solanke



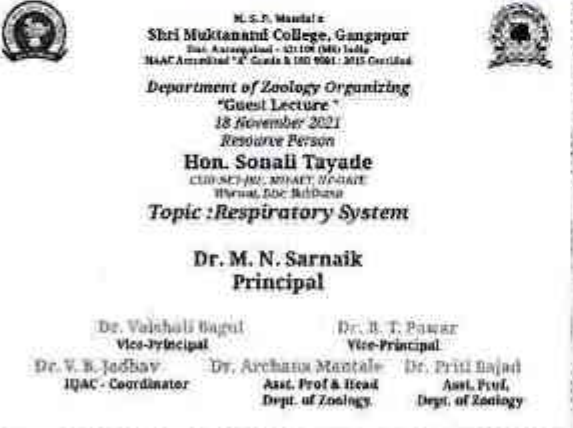
Dr.M.R.Solanke.
 Assistant Professor &
 Head of Zoology Department
 Arts, Commerce College, Warwat (Bk.)
 Tq:Sangrampur Dist:Buldhans 444202



Principal

Principal
 Arts & Commerce College,
 Warwat Bakal Dist.Buldhan

2) Guest lecture By Miss Sonali Anil Tayade

 <p>Shri Muktanand College GANGAPUR, DISTRICT, GANGAPUR, DISTRICT, 431001, MS.</p> <p>Dr. M. N. Sarnaik Vice-Principal</p> <p>Subject & content description of the Resourse Person as "Guest Lecture" Resourse Person Dr. M. N. Sarnaik, Vice-Principal, Shri Muktanand College, Gangapur, Dist. Gangapur, MS. 431001.</p> <p>It is an honor and privilege to invite you as a "Resource Person" for the "Guest Lecture" on the topic "Respiratory System" on 18/11/2021 at 11:00 a.m. in the Department of Zoology, Shri Muktanand College, Gangapur, Dist. Gangapur, MS. 431001.</p> <p>With regards, Dr. M. N. Sarnaik Vice-Principal</p>	 <p>Shri Muktanand College GANGAPUR, DISTRICT, GANGAPUR, DISTRICT, 431001, MS.</p> <p>Dr. M. N. Sarnaik Vice-Principal</p> <p>Subject & content description of the Resourse Person as "Guest Lecture" Resourse Person Dr. M. N. Sarnaik, Vice-Principal, Shri Muktanand College, Gangapur, Dist. Gangapur, MS. 431001.</p> <p>It is an honor and privilege to invite you as a "Resource Person" for the "Guest Lecture" on the topic "Respiratory System" on 18/11/2021 at 11:00 a.m. in the Department of Zoology, Shri Muktanand College, Gangapur, Dist. Gangapur, MS. 431001.</p> <p>With regards, Dr. M. N. Sarnaik Vice-Principal</p>
<p align="center">Invitation letter</p>	<p align="center">Appreciation letter</p>
 <p>M. S. S. Mantale Shri Muktanand College, Gangapur Dist. Gangapur - 431001 (MS) India NAAC Accredited "A" Grade & ISO 9001: 2015 Certified</p> <p>Department of Zoology Organizing "Guest Lecture" 18 November 2021 Resource Person Hon. Sonali Tayade M.Phil, M.Sc, M.A, M.Ed Thiruv. Doc. Bibhava</p> <p>Topic :Respiratory System</p> <p>Dr. M. N. Sarnaik Principal</p> <p>Dr. Vaishali Bagul Vice-Principal Dr. V. B. Jadhav IQAC - Coordinator</p> <p>Dr. B. T. Pawar Vice-Principal Dr. Archana Mantale Asst. Prof & Head Dept. of Zoology</p> <p>Dr. Priti Bajaj Asst. Prof, Dept. of Zoology</p>	<p>All students are hereby informed to join the Guest Lecture on 18/11/2021 at 11:00 a.m. Topic: Respiratory System Speaker: Sonali Tayade https://meet.google.com/eog-nvzs-rmu</p> <p>Join the 🗨 above Google meet link.</p>
<p align="center">Brochure of Guest lecture</p>	<p align="center">Link of Guest lecture</p>



Picture during lecture



Presentation

Dr. M. R. Solanke

Dr. M. R. Solanke.
 Assistant Professor &
 Head of Zoology Department
 Arts, Commerce College, Warwat (Bk.)
 Tq: Sangrampur Dist: Buldhana 444202



Principal

Principal
 Arts & Commerce College,
 Warwat Bk. Dist. Buldana

3) Guest lecture By Dr. Megha Ranjit Solanke

<p style="text-align: center;">Invitation letter</p> <p style="text-align: center;">M. S. P. Mandals Shri Muktanand College, Gangapur Dist. Sangli, Maharashtra MAAC Accredited "A" Grade & DIO-881, 2012 Certified</p> <p style="text-align: center;">Department of Zoology Organizing "Guest Lecture" 22 November 2021 Resource Person Hon. Dr. Megha Solanke M.S., Ph.D., Ph.D. Arts and Commerce College, Warwat, Buldana Topic : Phylum: Porifera</p> <p style="text-align: center;">Dr. M. N. Sarnaik Principal</p> <p style="text-align: center;">Dr. Vinodh Kagal Dr. N. Y. Pawar Vice-Principal Vice-Principal</p> <p style="text-align: center;">Dr. V. B. Jadhav Dr. Archana Mantale Dr. Prithi Dajad IQAC - Coordinator Asst. Prof & Head Asst. Prof. Dept. of Zoology Dept. of Zoology Dept. of Zoology</p>	<p style="text-align: center;">Appreciation letter</p> <p>All faculty members are hereby informed to join the Guest Lecture on 22/11/2021 at 11:00 a.m. Topic: Phylum Porifera Speaker: Dr. Megha Solanke https://meet.google.com/cog-nvzs-rnu</p> <p>Join the# above Google meet link,</p>
<p style="text-align: center;">Brochure of Guest lecture</p>	<p style="text-align: center;">Link of Guest lecture</p> <p style="text-align: center;">https://meet.google.com/cog-nvzs-rnu</p>
<p style="text-align: center;">Picture during lecture</p>	<p style="text-align: center;">Presentation</p>

V) MoU of Dnyanpath publication Amravati through Dr. Pankaj Chaudhari sir with Dr M. R. Solanke

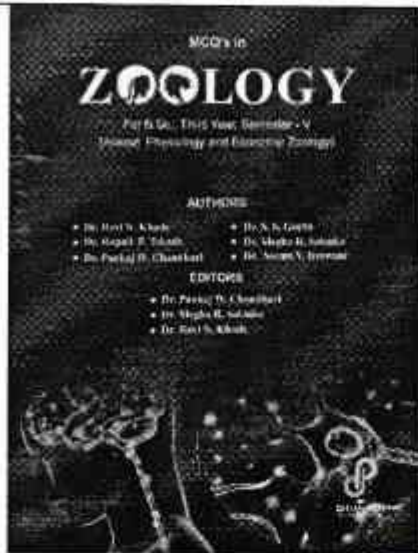
MOU of Dr. Megha R. Solanke

Department of Zoology of Arts & Commerce College has memorandum of understanding (MOU) with Department of Zoology of Shri Vittal Rukhmini Mahavidyalay, Sawana Under this MOU Dr. Megha R, Solanke wrote chapter in MCQ's book named as MCQ's in Zoology for B.Sc II (sem III and IV) B.SC IIIrd (sem V and VI) year and Editor of sem V book.

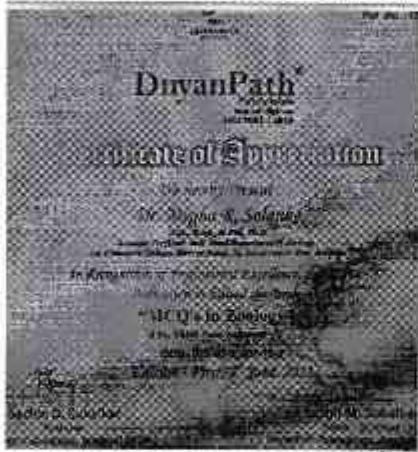
Sr. No.	Name of Book	ISBN Number		Publication	Date
1	Book Name: B.Sc III sem V (Animal Physiology and Economic Zoology) Chapter: UNIT-V (Agriculture Zoology and Economic Importance of Insect)	ISBN13: 978-93-91331-15-3 (Author and Editor)	Editor	Dhyanpath Publication , Amravati	01/06/2021
2	Book Name: B.Sc II sem III (Life and Diversity of chordate and concept of evolution) Chapter: UNIT-III (Class Aves and Mammals)	ISBN: 978-93-91331-14-6 (Author)	Author	Dhyanpath Publication , Amravati	01/06/2021
3	Book Name: B.Sc II sem IV (Advanced Genetics and Animal Ecology) Chapter: UNIT-III (Sex Determination)	ISBN13: 978-93-91331-44-3 (Author)	Author	Dhyanpath Publication , Amravati	01/06/202
4	Book Name: B.Sc III sem V (Animal Physiology and Economic Zoology) Chapter: UNIT-V (Agriculture Zoology and Economic Importance of Insect)	ISBN13: 978-93-91331-15-3 (Author and Editor)	Author	Dhyanpath Publication , Amravati	01/06/2021
5	Book Name: B.Sc III sem VI (Molecular Biology and Biotechnology) Chapter Name: UNIT-IV (Mutation)	ISBN 13: 978-93-91331-45-0 (Author)	Author	Dhyanpath Publication , Amravati	01/06/2021

Correspondence documents

<p style="text-align: center;">MEMORANDUM OF UNDERSTANDING</p> <p>1. PARTIES ENTERING INTO THE AGREEMENT</p> <p>This agreement is entered into, on 10 May 2023, by and between the following two Parties:</p> <p>First Party: Dr. PANKAJ W. CHAUDHARI Assistant Professor & Head Department of Zoology Sri Vishal Kulkarni Mahavidyalaya Sangli, Chief Editor Growth Metrics Zoology Cell: +91 902258890 Email: 2025pwnk@chaudhari@gmail.com</p> <p style="text-align: center;">AND</p> <p>Second Party (Author) Full Name: Dr. Megha Ranjit Soman Head and Assistant professor of Zoology Department Art, Commerce College, Wajir, Sakinaka, Dist. Buldana, Mob No 9022558487 Email: megha31@gmail.com</p> <p>OBJECTIVE OF THE AGREEMENT</p> <p>The objective of this Agreement is to define a working relationship between the parties for publication and distribution of books under ISBN.</p> <p>Terms and conditions of agreement:</p> <p>1. The second party will pay Rs. 1,000/- (One Thousand Rupees only) as the processing charges to the first party as following account details:</p> <p>Name: Dr. PANKAJ W. CHAUDHARI</p>	<p>Name: Bank of Maharashtra A/C: 00211219190 IFSC code: BMX0000001 Bank's web or Fax No: 020-26000000 2. The Author's copy of books and payment receipt will be sent to the publisher: 2025pwnk@chaudhari@gmail.com or 9022588900 on 11 May, 2023.</p> <p>3. The author will be responsible for material submitted for the publisher's customers.</p> <p>4. The ownership of books will be of the first party.</p> <p>5. 5000/- will be provided to each book by the first party.</p> <p>Sign of the first party:</p> <p> Dr. Pankaj W. Chaudhari</p> <p>Full Name: Dr. Megha Ranjit Soman Head and Assistant professor of Zoology Department Art, Commerce College, Wajir, Sakinaka, Dist. Buldana, Mob No 9022558487 Email: megha31@gmail.com</p> <p>Address: Dr. Megha R. Soman Wadevat colony, Near Sakinaka Building, Sakinaka, Buldana Pincode: 431007</p> <p>Sign of the second party: (Please mention your complete name, address, telephone, college/institute, email, contact number)</p> <p> Dr. Megha Ranjit Soman Head and Assistant Professor Art, Commerce College Wajir, Sakinaka, Dist. Buldana Pincode: 431007</p> <p></p>
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Unit - I : Respiration 1-9

- Structure of mitochondria, Cytochrome C and Cytochrome C oxidase
- Mechanism of oxidative phosphorylation and electron transport
- Respiration - significance in animals
- Humoral and hormonal control of respiration

Unit - II : Circulatory System 10-19

- Structure of blood vessels and capillaries
- Flow of blood through the heart
- Regulation of blood flow

Unit - III : Muscle Physiology 20-30

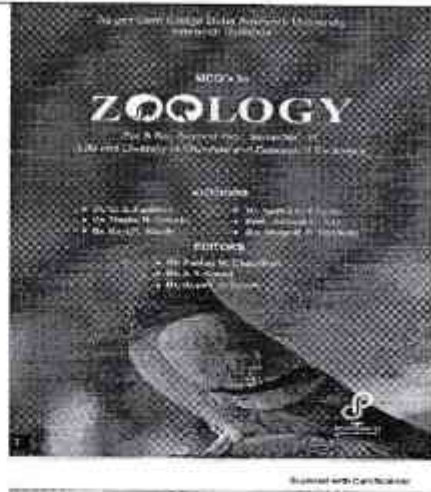
- Types of muscle - striated, non-striated and cardiac muscles
- Chemical composition of muscle
- Excitation-contraction coupling
- Energy requirements for muscle contraction
- Relaxation of muscle

Unit - IV : Nervous System 31-40

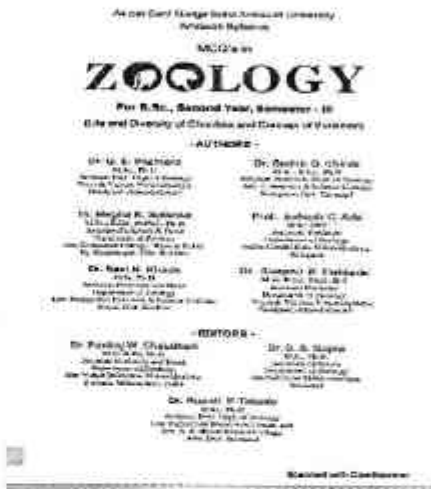
- Structure of nerve cells and axons
- Propagation of nerve impulses
- Reflex actions
- Neurotransmission

Chemical constituents

- Carbohydrates, lipids and proteins
- Enzymes
- Minerals and vitamins



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Unit - I : Phylum Chordata: Origin of Chordates 1-9

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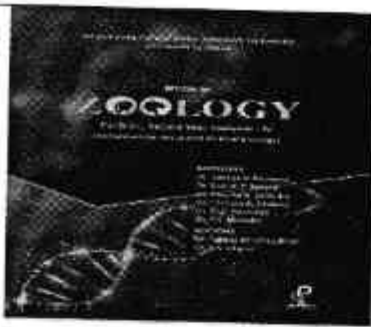
- Type study: Frog
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As per Sansi Garha State University, Amritsar
ZOOLOGY
 For B.Sc., Second Year, Semester - I
 (General Science and subject Zoology)



As per Sansi Garha State University, Amritsar
ZOOLOGY
 For B.Sc., Second Year, Semester - I
 (General Science and subject Zoology)

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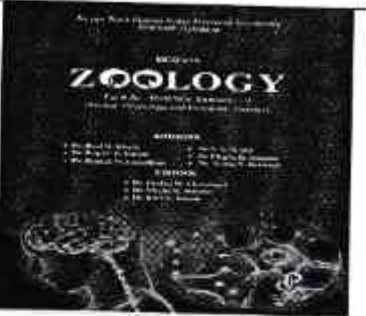
Unit - IX : Zoology 81-90

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Sex Determination

(A) MULTIPLE CHOICE QUESTIONS

1. Sex determination in humans is based on the presence of...
 (A) XX chromosomes (B) XY chromosomes
 (C) YY chromosomes (D) XX and XY chromosomes



As per Sansi Garha State University, Amritsar
ZOOLOGY
 For B.Sc., Third Year, Semester - II
 (Animal Physiology and Economic Zoology)



As per Sansi Garha State University, Amritsar
ZOOLOGY
 For B.Sc., Third Year, Semester - II
 (Animal Physiology and Economic Zoology)

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UNIT - V

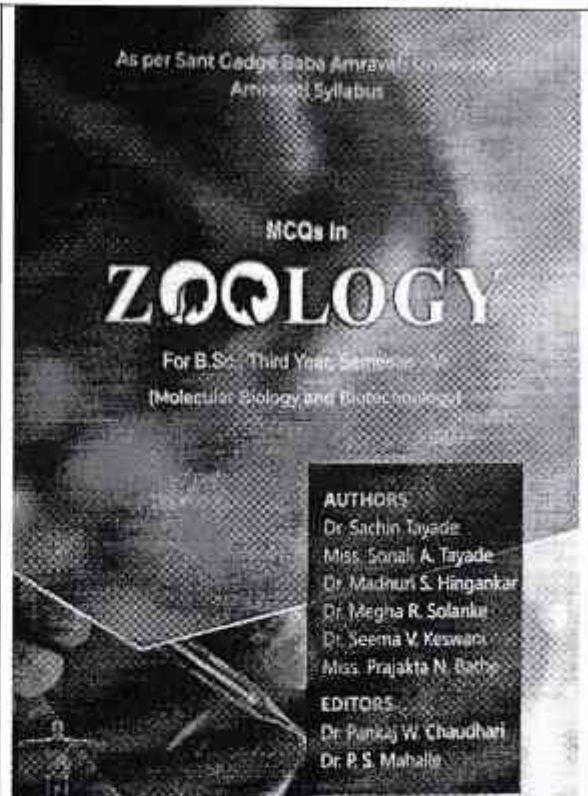
Agricultural Zoology
Economic Importance of Insects

1. The pestiferous species of honey bee is...
 (A) Apis mellifera (B) Apis dorsata
 (C) Apis cerana (D) Apis florea

VI) MoU of Dnyanpath publication Amravati through Dr. Pankaj Chaudhari with Miss Sonali A. Tayde

Department of Zoology of Arts & Commerce College has memorandum of understanding (MoU) with Department of Zoology of Shri Vittal Rukhmini Mahavidyalay, Sawana. Under this MoU Miss Sonali Anil Tayade wrote chapter IInd of MCQ's book named as MCQ's in Zoology for B.Sc IIIrd year Semester 6 (Molecular biology and Biotechnology).

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<p>1. PARTIES ENTERING INTO THE AGREEMENT</p> <p>This Agreement is entered into, on 23 May 2023 by and between the following two Parties:</p> <p>First Party: Dr. PANKAJ W. CHAUDHARI Associate Professor & Head Department of Zoology Shri Vittal Rukhmini Mahavidyalaya, Sawana Chief Editor, Books MCQs Zoology Cell: +91 9055889996 Email: 307869494@rediffmail.com</p> <p style="text-align: center;">AND</p> <p>Second Party (Author) Full Name: Miss Sonali Anil Tayade Associate professor in Zoology Arts and Commerce college, Warananagar, Jalgaon Author Books MCQs Zoology Cell no. -917762982878 Email: sonalitamayade@gmail.com</p> <p>OBJECTIVE OF THE AGREEMENT The objective of this Agreement is to define a working relationship to determine the parties for publication and distribution of books under terms.</p> <p>Terms and conditions of agreement: 1. The second party will pay Rs. 2000/- (Two thousand Rupees only) as the printing charges to the first party on following account details:</p>	<p>Name: Dr. PANKAJ W. CHAUDHARI Bank: Bank of Maharashtra A/C: 6012155986 IFSC code: MAH0000047 Google pay or Pay TM number: 8053285501</p> <p>2. The duly signed copy of MOU and payment receipts will be sent by the authors to 2009pankajchaudhari@gmail.com or 9055388996 on 11 July 2023</p> <p>3. The ebook will be available international websites for worldwide customers.</p> <p>4. The copyrights of ebook will be at the first party.</p> <p>5. ISBN will be provided to each book by the first party.</p> <p>Sign of the first party:</p> <p> Dr. Pankaj W. Chaudhari Associate Professor & Head of Zoology Shri Vittal Rukhmini Mahavidyalaya, The Maharashtra District Sawana</p> <p>Sign of the Second Party:</p> <p></p> <p>Full Name: Miss Sonali Anil Tayade Postal Address: Bahulnagar, Bichitra taluka Behind Anandnagar, Amravati, 444602 Assistant professor of Zoology Arts and Commerce College, Warananagar, Jalgaon Author Books MCQs Zoology Cell no. -917762982878 Email: sonalitamayade@gmail.com</p>



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MCQ's in
ZOOLOGY
 For B.Sc., Third Year, Semester - VI
 (Molecular Biology and Biotechnology)

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UNIT - II

DNA Replication

(A) MULTIPLE CHOICE QUESTIONS

1. First demonstration of semi conservative replication of DNA takes place in
a) *Escherichia coli* b) *Streptococcus pneumoniae*
c) *Salmonella typhimurium* d) *Drosophila melanogaster*
2. Which of the following enzyme is used to join the Okazaki fragments
a) DNA polymerase b) DNA ligase
c) Primase d) Endonuclease
3. Which code is repeated in spinocerebral ataxia disease
a) CAG b) TTT c) AAA d) GAC
4. Which of the following enzyme is responsible for unwinding of DNA?
a) Ligase b) Hexonuclease
c) Helicase d) Topoisomerase
5. Gene as unit of recombination is called as
a) Cistron b) Recon c) Muton d) None of these
6. First Jumping gene is discovered by
a) Matthew Meselson b) Franklin Stahl
c) Morgan d) Barbara McClintock

Dr. M. R. Solanke

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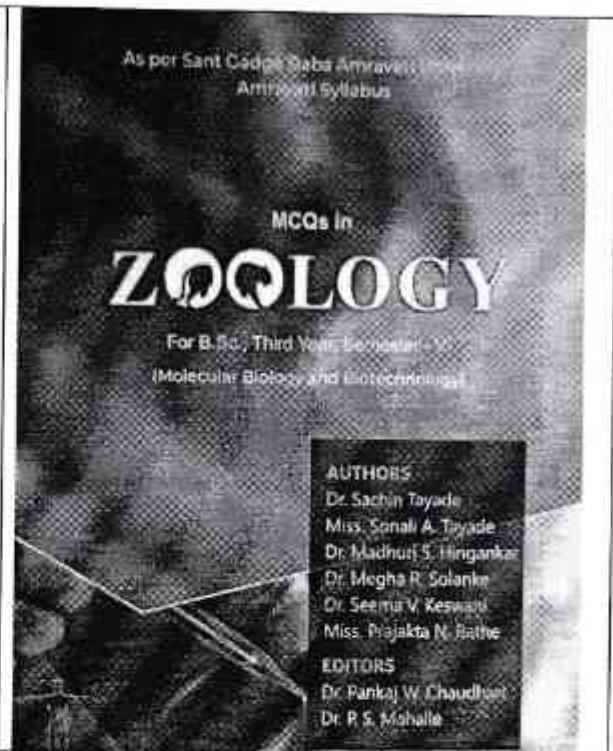
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Department of Zoology of Arts & Commerce College, Warwat Bakal has memorandum of understanding (MoU) with Department of Zoology of Shri Vitthal Rukhmini Mahavidyalay, Sawana. Under this MoU Dr Madhuri Sudhakar Hingankar wrote chapter IIIrd of MCQ's book named as MCQ's in Zoology for B.Sc IIIrd year Semester 6 (Molecular biology and Biotechnology).

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As per Sant Gadge Baba Amravati University
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C O N T E N T

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UNIT - III
Genetic Code

(A) MULTIPLE CHOICE QUESTIONS

- The DNA molecule is coded for
 - Maintenance of the cell
 - Reproduction of the cell
 - Both (a) and (b)
 - None of the above
- The Nucleotide sequence in DNA is coded for synthesis of different proteins which control
 - Cell regulation
 - Cell Growth
 - Cell division
 - All of the above
- The information deposited on nucleotide sequence of DNA is to synthesize protein this process is known as
 - Protein Synthesis
 - Central Dogma
 - Both (a) and (b)
 - None of the above
- The steps that involved in Central Dogma of Protein synthesis are
 - DNA $\xrightarrow{\text{transcription}}$ mRNA $\xrightarrow{\text{translation}}$ Protein
 - DNA $\xrightarrow{\text{transcription}}$ rRNA $\xrightarrow{\text{translation}}$ Protein
 - DNA $\xrightarrow{\text{transcription}}$ tRNA $\xrightarrow{\text{translation}}$ Protein
 - DNA $\xrightarrow{\text{transcription}}$ sRNA $\xrightarrow{\text{translation}}$ Protein
- During Protein synthesis information coded on the nucleotide sequence of DNA is transcribed to
 - mRNA
 - rRNA
 - tRNA
 - None of the above

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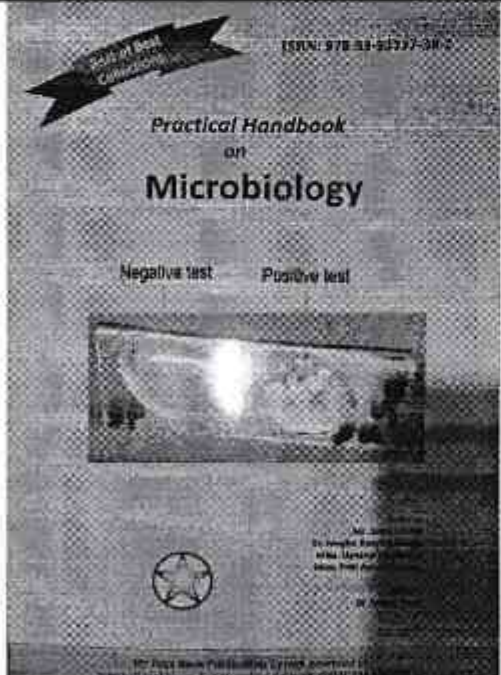



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VIII) MoU of Rajesh Dhakane founder international Journal of Microbial science for Book Publication with Dr. Megha R. Solanke

Dr. Megha R. Solanke Head and Assistant Professor in Zoology, Department of Zoology of Arts & Commerce College, Warwat Bakal has memorandum of understanding (MoU) with Rajesh Dhakane Founder International journal of Microbial Sciences. Under this MoU Dr Megha R. Solanke wrote M.Sc. (Microbiology) Practical Handbook As per Syllabus by Sant Gadge Baba Amravati University Amravati on dated 12 April 2021.

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	<p style="text-align: center;"></p> <p style="text-align: center;">Practical Handbook of Microbiology</p> <p style="text-align: center;">Author: Dr. Megha R. Solanke Assistant Professor - Department of Microbiology, Arts, Commerce College of Education and Commerce, Warwat Bakal, Warwat, Dist. Amravati, Maharashtra. Head and Assistant Professor, Department of Zoology, Arts, Commerce College, Warwat Bakal, Warwat, Warwat, Dist. Amravati, Maharashtra, India.</p> <p style="text-align: center;">Dr. Solanke Head and Assistant Professor, Department of Microbiology, Arts, Commerce College of Education, Warwat Bakal, Warwat, Dist. Amravati, Maharashtra, India. Head and Assistant Professor, Department of Zoology, Arts, Commerce College, Warwat Bakal, Warwat, Warwat, Dist. Amravati, Maharashtra, India.</p> <p style="text-align: center;">Dr. Megha R. Solanke Assistant Professor, Department of Microbiology, National Education Society's College of Arts, Commerce and Education, South Survey, Chhatrapati Sambhaji Maharaj, Maharashtra, India.</p> <p style="text-align: center;">ISBN: 978-81-92237-38-1 Edition: 1 (2021) ISBN: 978-81-92237-39-7</p> <p style="text-align: center;">Copyright: All rights reserved. Reproduction of this book through any means without permission of the original author is strictly prohibited. Any violation of this will be a punishable crime under Indian Intellectual Property Rights Act.</p> <p style="text-align: center;">© International Journal of Microbial Science 2021. All rights reserved. www.ijm-science.com</p> <p style="text-align: center;">To contact: rajesh@ijm-science.com</p> <p style="text-align: center;">Publisher: My Rays Book Publication Center, Powered by International Journal of Microbial Science, GtY - 61 3702472, Warwat, Warwat, Dist. Amravati, Maharashtra, India. Publisher: 9822792472, Maharashtra, India.</p> <p style="text-align: center;">Note: To purchase this book, please use a valid bank account number and transfer to the author's account. Author: Book Writing and Publication Copyright © is the property of Dr. Megha R. Solanke, Head and Assistant Professor, Department of Zoology, Warwat Bakal, Warwat, Warwat, Dist. Amravati, Maharashtra, India.</p> <p style="text-align: right;">1</p>

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IX) MoU of Rajesh Dhakane founder international Journal of Microbial science for Book Publication with Dr. Madhuri Sudhakar Hingankar

Dr. Madhuri Sudhakar Hingankar, Assistant Professor in Zoology, Department of Zoology of Arts & Commerce College, Warwat Bakal has memorandum of understanding (MoU) with Rajesh Dhakane Founder International journal of Microbial Sciences. Under this MoU Dr Madhuri Sudhakar Hingankar wrote M.Sc.I Semester I Practical II (Analytical Biochemistry and Instrumentation) Practical Handbook As per Syllabus by Sant Gadge Baba Amravati University Amravati on dated 12 April 2021.

<p>MY RAYS BOOK PUBLICATION CENTER Powered by International Journal of Microbial Science MEMORANDUM OF UNDERSTANDING</p> <p>1. PARTIES ENTERING INTO THE AGREEMENT This agreement is entered into on 12 April 2021 between the following two Parties:</p> <p>First Party: Rajesh Dhakane, FOUNDER International Journal of Microbial Science (http://www.ijms.com) CIN: U81378RJ3479 Email: rajesh@ijms.com</p> <p style="text-align: center;">AND</p> <p>Second Party (Author): Full Name: Dr. Madhuri Sudhakar Hingankar</p> <p>OBJECTIVE OF THE AGREEMENT: The objective of this agreement is to create a working relationship between the parties for jointly authoring and publishing of books together.</p> <p>Terms and conditions of agreement: 1. The second party will pay INR 2,000/- (Two Thousand Rupees only) as the advance charges to the first party on following account details: Account holder: International Journal of Microbial Science Account number: 30200100179997 IFSC Code: UJ09080202 For Foreigners: PayPal email id: rajeshdhakane@paypal.com</p> <p>2. The duly signed copy of MoU shall be given immediately to the author at rajesh@ijms.com</p> <p>3. Each author will get 5% share in total profits of the book after publication and a free of charge proof. The profit will be considered after deducting costs of printing, marketing and distribution.</p> <p>4. The ebook will be available on international websites for worldwide customers.</p> <p>5. The copyrights of the ebook will be at the first party.</p> <p>6. ISBN will be provided to each book by the first party.</p>	<p style="text-align: center;"></p> <p>Sign of the first party:</p> <p>Sign of the second party:</p> <p><i>Madhuri Hingankar</i></p> <p>DR. MADHURI SUDHAKAR HINGANKAR ASSISTANT PROFESSOR DEPARTMENT OF ZOOLOGY ARTS AND COMMERCE COLLEGE, WARWAT BAKAL TQ. NANDED, DIST. BULDHANA Dist. Buldhana, Maharashtra Pin No. 432116/42 SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI Pune Maharashtra campus, 1st floor, Jyoti building, Dr. Prakash Nalage Institute, Shri. VIKRANT NARAYAN</p> <p>Bank Details of the second party: DR. MADHURI SUDHAKAR HINGANKAR DR. BANK ANDT A/C NO. 048110430034279 IFSC CODE: UJ09000544 Bank: UBI BANK AKOT</p>
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**M.Sc. I Sem I Practical II
(Analytical Biochemistry and Instrumentation)**
Practical Handbook
As per syllabus by Sansi, Gujarat Sansi Amravati University, Amravati

Authored by
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Dr. Madhuri S. Hingarkar
Edited by
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**M.Sc. I Sem I Practical II
(Analytical Biochemistry and Instrumentation)**

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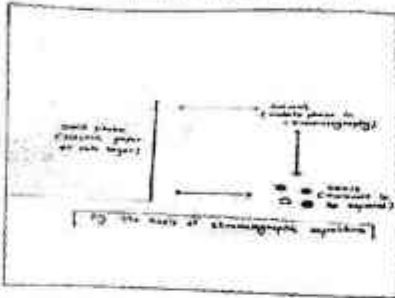
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Chromatography is a method for separating mixtures into their individual components. All chromatographic techniques are based on the same concept. At least one requires a stationary phase of a solid or a liquid adsorbed on a mobile phase of a liquid or a gas. The mobile phase with components of the mixture moves along the stationary phase. Depending on their affinity for the stationary and mobile phases, different components move at varying speeds. A very uniform absorbent paper material is used as the stationary phase of paper chromatography.



The Retention factor (Rf) also known as the retardation factor

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