



GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY FIRST YEAR

BIOLOGY - ZOOLOGY

A publication under Free Textbook Programme of Government of Tamil Nadu

Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

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NOT FOR SALE

Content Creation



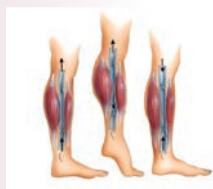
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STROKE VOLUME IS DEPENDENT
ON VENOUS RETURN

Conceptual picture with caption relating to every chapter is given in this text book.

Chapter Outline

Presents a complete overview of the chapter



Learning Objectives:

Goals to transform the classroom processes into learner centric with a list of bench marks



Amazing facts, Rhetorical questions to lead students to biological inquiry

Note:

Additional inputs to content is provided

Activity

Directions are provided to students to conduct activities in order to explore, enrich the concept.

Infographics

Visual representation of the lesson to enrich learning .

HOW TO USE THE BOOK ?



Superfluous information about a personality or day to day life experience relating to the content



To motivate the students to further explore the content digitally and take them to virtual world



ICT

To enhance digital Science skills among students

Concept Map

Conceptual diagram that depicts relationships between concepts to enable students to learn the content schematically

Glossary

Explanation of scientific terms

Evaluation

Assess students to pause, think and check their understanding

Career corner

List of professions particular to that chapter

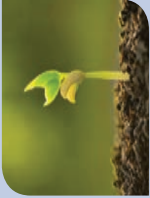
References

List of related books for further details of the topic

Web links

List of digital resources

Career options in Zoology

Courses		Institutions	Professions and Scope for Future Studies
Medical course • MBBS – Allopathy • MD • MS • BUMS – Unani • BNYS – Naturopathy • BHMS – Homeopathy • BDS – Dental • BAMS – Ayurveda • BSMS – Siddha		▶ AIIMS, New Delhi ▶ JIPMER ▶ Government & Private Medical Colleges ▶ AFMC, AMU	Civil surgeon / Civil assistant surgeon in central and state govt hospitals and in private sector. Specialist in various medical fields like Cardiologist, Endocrinologist, Neurologist, Orthopedician, Paediatrician, Haematologist, Pathologist and Anaesthetist. • Cardiology • Pulmonology • Nephrology • Diabetology • Dermatology, • Anaesthesiology • Ophthalmology • Obstetrics and Gynaecology
		▶ State Veterinary Universities & Colleges	(Veterinary Surgeon/ Veterinary Assistant Surgeon in central and state govt hospitals and in private sector). • Animal Biochemistry • Animal Biotechnology • Animal Genetics and Breeding • Animal Nutrition • Bio-Statistics • Poultry Science • Veterinary Bacteriology • Veterinary Immunology • Dairy Science • Dairy Technology • Livestock Production Management • Animal Physiology • Food Quality and Safety Assurance • Indian Traditional Foods Preservation & Packaging
Veterinary Course • B. V. Sc. (Bachelor of Veterinary Sciences)			
Agri Courses • B. Sc. (Agriculture) • B. Tech (Agriculture) • B. Sc. (Horticulture) • B. Sc. (Forestry) • B. Sc. (Sericulture) • B. F. Sc. (Bachelor of Fisheries Sciences)		▶ IARI, Delhi ▶ Agriculture Universities & Colleges 	(Agriculture Officer in state and central government service and other private employment opportunities) • Agricultural Engineer • Agronomist • Bioinformatics • Entomologist • Environmental Sciences • Fruit Sciences and Horticultural Technology • Plant Pathology • Soil science & Agro Chemistry
Para Medical courses • B. Sc. (Nursing) • B. Sc. (Trauma Care Management) • B. Pharm, D. Pharm • BPT (Bachelor of Physiotherapy) • BOT (Bachelor of Occupational Therapy) • B. Optom. (Bachelor of Optometry)		▶ All India Institutes of Medical Sciences (AIIMS), New Delhi, Bhopal, Bhubaneswar, Jodhpur, Patna, Raipur, Rishikesh. ▶ JIPMER, Puducherry ▶ All Government & Private Medical Colleges	• Nursing • Pharmacy • Anaesthesia Technician • Cardiac Technician • Dental Mechanic • Health Inspector • Medical Imaging & Technician • Medical Lab Technician • Medical X-ray Technician • Nuclear Medicine Technician • Occupational therapist • Operation Theatre Technician • Ophthalmic Assistant • Physiotherapist • Radiographic Assistant • Radiotherapy Technician • Rehabilitation Technician • Respiratory Therapy Technician • Blood Transfusion Technician
General Courses • B.Sc. Zoology • B.Sc. Dietician & Nutritionist • B.Sc. Sericulture • B.Sc. Oceanography • B.Sc. Forensic Sciences	• B.Sc. Food Technology • B.Sc. Dairy Technology • B.Sc. Mass Communication • B.Sc. Multimedia • B.Sc. 3D Animation	Government Arts and Science Colleges in TamilNadu	Zoo keepers, Creators, Bird watchers in Airports and Lab Technician.
Bachelor of Science and Education (BSc, B.Ed) M.phil in Education IDGC Ph.D		Regional Institute of Education (Mysore, Ajmeer, Bhopal, Bhuvaneswar), Shillong	BT.Assistant (Science teacher for secondary level)

*Civil Service Exams for all india services (IAS, IPS, IFoS) and other central services &*Other service exams conducted by TNPSC, IBPS, NDA, CDS, SSC and RRB.

Career options in Zoology

Master of science and Education (MSc, B.Ed)		Regional Institute of Education (Mysore, Ajmeer, Bhopal, Bhuvanagar)	P.G. Assistant (Zoology, teachers, professors in colleges/universities higher secondary level)
Master of science in Zoology		Government arts and science colleges in TamilNadu - Madras University	Researchers in variegated subjects in zoology and life science, Scientist, Environmental- yist, Dietician and Nutritionist
Master of science in Marine Zoology		National institute of Oceanography ► Andhra University (Visakhapatnam) ► Anna University (Chennai) ► Dr. Babasaheb Ambedkar Marathwada University Marine Research Laboratory (Maharashtra) ► Bharathidasan University (Tiruchirappalli)	Career opportunities in National Marine park and Marine Engineers
Master of science in zoology with specialization in Medical Microbiology		► Co-operative institute of health science (Kerala) ► Dolphin institute of Bio-Medical and Natural Science (Dehradun) ► Himalayan University (Arunachal Pradesh)	- Lab Technician - Medical Imaging and technician - Nuclear Medicine - Health Inspector - Blood transfusion technician - Respiratory therapy technician
Master of philosophy and Ph.D in Zoology		► State Universities	Professor, Research scholar Scientist in University, Documentarist in National Geographic Channel, Animal clinics, National parks, Museum Fisheries and aquaculture Pharmaceutical companies, animal trainers.
Medicine Related Entrance Exams			
Exam	Selection Process & Test Pattern	No. of Questions	Tentative Schedule
NEET www.aipmt.nic.in Time: 3 Hours Timing: NA Mode: Pen and Paper	Physics Chemistry Biology Total Questions	45 45 90 180	Form out: Last week of Jan. Last Date: 1st week of March Test Date: 1st week of May Negative Marking: +4/-1 Marks: 720 Forms Available: Online
AIIMS All India Institute of Medical Sciences www.aiimsexams.org Time: 3.5 Hours Timing: NA Mode: Computer based	Physics Chemistry Biology GK Total questions	60 60 60 20 200	Form out: Mid Jan Last Date: Mid Feb Test Date: Mid May Negative Marking: +1/- 1/3 rd Marks: 200 Forms Available: Online
JIPMER Jawaharlal Institute of Postgraduate Medical Education & Research www.jipmer.edu.in Time: 2.5 Hours Timing: NA Mode: Computer based	Physics Chemistry Biology Logic & Quantitative Reasoning English Comprehension Total Questions	60 60 60 10 10 200	Form out: Last week of March Last Date: 1st week of May Test Date: 1st week of June Negative Marking: Nil Marks: 800 Forms Available: Online
- The Details given above are tentative and have been prepared as per trends of previous years. - Please visit individual exam/institute website for exact details.			

Famous National Institutes for Biologists



AIIMS

Undergraduate Courses (UG)

- MBBS
- B.Sc Nursing (post Certificate)
- B.Sc. (Hons.) Nursing
- Paramedical Courses (PM)
- B.Sc. (Hons.) Ophthalmic Techniques
- B.Sc. (Hons.) Medical Technology

Postgraduate Courses (PG)

- M.D/M.S/M.D.S
- M.Ch. (5 year course)
- M.Sc. / M. Biotechnology

IARI

Undergraduate Courses (UG)

- Agricultural chemicals
- Agronomy
- Bioinformatics
- Entomology
- Horticulture
- Molecular biology and biotechnology
- Environmental sciences
- Plant pathology
- Plant genetic resources
- Nematology
- Microbiology



JIPMER

Undergraduate Courses (UG)

- M.B.B.S
- B.Sc Nursing
- B.Sc Allied medical Sciences
- B.Sc. Medical Laboratory Technology
- B.Sc. Cardiac Laboratory Technology
- B.Sc. Dialysis Technology
- B.Sc. Neuro Technology
- B.Sc. Nuclear Medicine Technology
- B.Sc. Operation Theatre Technology
- B.Sc. Perfusion Technology
- B.Sc. Radiotherapy Technology
- BASLP (Bachelor in Audiology & Speech Language Pathology) (Collaboration with AIISH, Mysore. RCI approved)

Postgraduate Courses (PG)

- General Surgery
- Obstetrics & Gynaecology
- Ophthalmology
- Orthopedic Surgery
- Oto-Rhino Laryngology (E.N.T.)

IIT (Chennai)

- Biological Sciences - Dual Degree (BS & MS)



NDRI

Undergraduate Courses (UG)

- B. Tech. (Dairy Technology)

Postgraduate Courses (PG)

- Dairy Microbiology
- Dairy Chemistry
- Dairy Technology
- Dairy Engineering
- Animal Biochemistry
- Animal Genetics & Breeding
- Livestock Production & Management
- Animal Nutrition
- Animal Physiology
- Dairy Economics
- Dairy Extension Education
- Animal Biotechnology
- Agronomy (Forage production)
- Animal Reproduction, Gynecology and Obstetrics
- Food Quality and Safety Assurance

NIN (Hyderabad)

- M.Sc (APPLIED NUTRITION)
- POST-GRADUATE CERTIFICATE COURSE IN NUTRITION



SIDDHA

PG programme in Siddha

- Maruthuvam
- Gunapadam
- Pura Maruthuvam
- Varma Maruthuvam
- Siddhar Yoga Maruthuvam
- Kuzhandhai Maruthuvam
- Noi Nadal
- Nanju Maruthuvam

PH.D PROGRAMME

- Maruthuvam
- Gunapadam
- Sirappu Maruthuvam
- Kuzhandai Maruthuvam
- Noi Nadal
- Nanju Maruthuvam



IVRI

- MVSc
- BVSc & AH
- Animal Biochemistry
- Animal Biotechnology
- Animal Genetics and Breeding
- Animal Nutrition
- Bio-Statistics
- Epidemiology
- Livestock Economics
- Livestock Production and Management
- Livestock Products Technology
- Poultry Science
- Veterinary Bacteriology
- Veterinary Extension Education
- Veterinary Gynaecology and Obstetrics
- Veterinary Immunology
- Veterinary Medicine
- Veterinary Parasitology
- Veterinary Pathology
- Veterinary Pharmacology
- Veterinary Physiology
- Veterinary Public Health
- Veterinary Surgery & Radiology
- Veterinary Virology

National Diploma

- National Diploma in Animal Husbandry (NDAH) Division of Animal Nutrition
- National Diploma in Animal Reproduction (NDAR) Division of Animal Reproduction
- National Diploma in Veterinary Biological Products (NDBP) Division of Biological Products
- National Diploma in Equine Husbandry, Medicine and Surgery (NDEHMS)
- National Diploma in Fodder and Feed Technology (NDDFT) Division of Animal Nutrition
- National Diploma in Meat and Meat Products Technology (NDMPPT) Division of Livestock Products Technology
- National Diploma in Poultry Husbandry (NDPH) CARI
- National Diploma in Preventive Veterinary Medicines (NDPVM) Div. of B & M

PhD

- Veterinary Bacteriology/BVSc & AH with Master's degree in concerned discipline
- Veterinary Immunology/BVSc & AH with Master's degree in Vet. Microbiology/Vet. Immunology/Health/Avian Diseases/ Vet. Microbiology/Virology/ Bacteriology/ Pathology/Biotechnology/Avian Diseases/Parasitology/ Animal Biochemistry with minor in Vet. Immunology
- Veterinary Medicine/B.V.Sc.& AH with Master's degree in concerned discipline
- Veterinary Bacteriology/BVSc & AH with Master's degree in Vet. Bacteriology/Vet. Virology/ Vet. Microbiology/ Vet. Public Health/ Avian Diseases/ Vet. Immunology/Epidemiology/ Biotechnology
- Veterinary Extension Education/BVSc & AH with Master's degree in concerned discipline/ Vet. Medicine/ Vet. Gynaecology & Obstetrics/ Vet. Surgery/ Animal Nutrition
- Animal Nutrition/B.V.Sc. & AH with Master's degree in concerned discipline.
- Livestock Production and Management/B.V.Sc.& AH with Master's degree in concerned discipline.
- Livestock Products Technology/B.V.Sc.& AH with Master's degree in concerned discipline.
- Poultry Science/B.V.Sc. & AH with Master's degree in concerned discipline.
- Animal Biochemistry/B.V.Sc. & AH with Master's degree in concerned discipline.
- Animal Biotechnology/BVSc & AH with Master's degree in Biotechnology/ Animal Biotechnology/Animal Biochemistry/ Microbiology/ Immunology/ Virology
- Animal Genetics and Breeding/BVSc & AH with Master's degree in concerned discipline





HIGHER SECONDARY FIRST YEAR

BIOLOGY - ZOOLOGY



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BIOLOGY - ZOOLOGY

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E-book



Assessment



DIGI links



Lets use the QR code in the text books ! How ?

- Download the QR code scanner from the Google PlayStore/ Apple App Store into your smartphone
- Open the QR code scanner application
- Once the scanner button in the application is clicked, camera opens and then bring it closer to the QR code in the text book.
- Once the camera detects the QR code, a url appears in the screen. Click the url and goto the content page.