Volume 1

Exam-Oriented Anatomy Questions and Answers

Second Edition

Medical Council of India has reduced the duration of First Year MBBS by 6 months and introduced new pattern of questions which include long answer questions, short notes, short answer questions, clinical problems and multiple choice questions. Students are expected to know all the topics as well as specific information and minute, relevant details having clinical importance.

There is no source for the definition and the extent of contents of the various terms used in the theory questions. The author has extensively discussed these terms with eminent anatomists in India and attempted to define these terms. He is aware of the limitations and has high regard about others' views.

This four-volume book attempts to provide unique solutions to these problems for the benefit of the readers studying human anatomy and preparing for their examinations.

Contents of the Four Volumes

Volume 1
- General Anatomy
- General Histology
- Lower Limb
- Upper Limb

Volume 2
- General Embryology
- Genetics
- Abdomen
- Pelvis

Volume 3
- Head
- Neck
- Face

Volume 4
- Brain
- Thorax

Salient features of the four volumes

- The book is written using short and simple sentences.
- Four types of questions are discussed: LAQs (Long Answer Questions), SN (Short Notes), SAQs (Short Answer Questions), and OLA (One Line Answers).
- The information given in italics is the information required to answer the MCQs.
- The answers are written in the form of points by using indentation.
- Tables are introduced to save the time and display the information for immediate reference for the students and examiners.
- The relevant, simple, linear informative diagrams are drawn with the respective colours.
- Important key words, which help to memorize the subject without taxing the memory, are given.
- At the end of the book separate indexes have been given.

Shoukat N Kazi MS (Anatomy), DTCD, BSc, LLB

is currently Principal, Dr Tasgaonkar Medical College and Research Centre, Karjat, and has been Principal, Prasad Institute of Medical Sciences, Lucknow, UP. He has served as Professor of Anatomy at Rajshree Medical Research Institute, Bareilley; SRM Medical College Hospital and Research Centre, Chennai; Chennai Medical College Hospital and Research Centre, Trichy; Dr DY Patil Medical College, Pimpri; and Dr DY Patil Vidyapeeth (Deemed to be University), Pimpri, Pune. He is conducting Webinars for regular, examination going and FMGE students.

Dr Kazi is one of the popular and enthusiastic teachers of anatomy. He started his teaching profession from 1986 and dedicated completely from 1996. He has coached thousands of students.

He makes the subject very simple and appealing to the students. His efforts are to make the subject memorable. He constantly updates himself academically, spiritually and socially. He has special interest in implementing new methods of learning. His mission is to reach all the medical students and make them anatomyphilic. He is a strong positive thinker and motivator.

Students from all over world attend his Kazi Medical Classes, Pimpri, for studies. It is equipped with histology slides, bone sets, models of all topics of gross anatomy and embryology.

He was called a guest speaker in 46 colleges in Maharashtra, Karnataka, Uttar Pradesh, Gujarat, Kerala and Tamil Nadu; about 8000 students who took the benefit of his guest lectures. He has conducted over 13 workshops of one to five days interactive sessions on various anatomic regions, benefitting about 2000 students.

Dedicated to Education

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Volume 1

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Second Edition

Kazi

CBS

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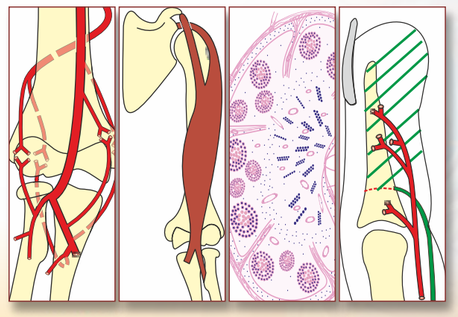

General Anatomy

General Histology

Lower Limb

Upper Limb

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High-value animation videos of human anatomy

Shoukat N Kazi

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- General Anatomy
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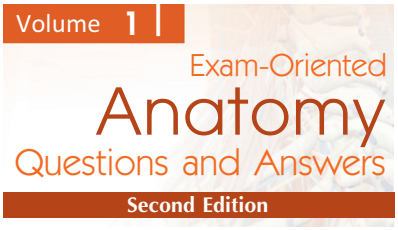
Disclaimer

Science and technology are constantly changing fields. New information, research and experience broaden the scope of knowledge. The author has tried his best in giving information available to him while preparing the material for this book. Although all efforts have been made to ensure optimum accuracy of the material, yet it is quite possible some errors might have been left uncorrected. The author, the publisher and the printer will not be held responsible for any inadvertent errors or inaccuracies.



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To

My parents

Late Haji Nizamsaheb K Kazi

Late Hajjan Mrs Jainnabbi N Kazi

My wife Kamartaj
For tolerating my preoccupation

And my daughter Sadiya
For understanding me

And

Students

For appreciating my way of teaching and
providing me a continuous stimulus to write the book

Foreword to the Second Edition

Prof SN Kazi's ***Exam-Oriented Anatomy***, 2nd edition, is going to compete with all other books on the subject available in the market. It is not only simple, digestible and very attractive but also exceptionally informative and rich into the extent that even heavy textbooks do not carry so much information. I have great respect for him, for his dedication and lust for writing book. I wish him all the best.

Dr Nafis Ahmad Faruqi
Professor
Department of Anatomy
Jawaharlal Nehru Medical College
Aligarh Muslim University, Aligarh, UP
India

Foreword to the First Edition

Prof SN Kazi's book is intended to help medical students rapidly master complex intricacies of human anatomy that is essential to clinical care.

This book was written to fulfill the need for a brief, but readable, summary of the relevant anatomy, with succinct notes on applied anatomy wherever indicated. It addresses the diverse and mounting need of medical students preparing for professional examinations. The text will not only enhance the knowledge to an extent sufficient to satisfy the examiners but will also equip the readers with the necessary understanding of applied anatomy for future practice. A recurring problem in medical education is the common inability of the students to relate the large body of factual knowledge to practical application in their future clinical training. A commendable endeavour has been made by Prof Kazi to bridge the gap between rote anatomy and clinical relevance. The mnemonics and humour in this book do not intend any disrespect for anyone, rather they are employed as an educational device, as it is well known that the best memory techniques involve the use of ridiculous association. Stephen Goldberg in his unique book titled "Clinical Neuroanatomy Made Ridiculous Simple" has already demonstrated their efficacy superbly.

Books	LAQs	SAQs	SNs	Keywords	Line diagrams	Tables
Above diaphragm	93	20	156	91	254	47
Below diaphragm	47	38	125	49	254	47

This book is not designed to replace standard reference textbooks, but rather is to be read as a companion text before appearing in an examination. This will enable the student to gain an overall perspective of essential anatomy.

My best wishes for the success of this endeavour which merits appreciation.

Prof (Dr) Mahdi Hasan
MBBS, MS (Hons.), FICS, FAMS, PhD,DSc, FNA
Professor Emeritus
INSA Senior Scientist, Department of Anatomy
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Formerly
Professor and Chairman, Department of Anatomy and
Founder Director
Interdisciplinary Brain Research Center
Dean, Principal and Chief Medical Superintendent Jawaharlal Nehru Medical College, Aligarh
Muslim University, Aligarh, UP (India)

Foreword to the First Edition

All the medical colleges in the state of Maharashtra were affiliated to eight different conventional universities in the state up to 1997. After the establishment of Maharashtra University of Health Sciences in the state in 1998, all of them were affiliated to this single state level university. Previously syllabi and pattern of examination were different but the new pattern (1 + 1½ + 2 years) of curriculum recommended by the Medical Council of India while the conventional universities were following the old (1½ + 1½ + 1½ years) pattern. First time in the examination, LAQ, SAQ and MCQ patterns were introduced by MUHS. On the background of the reduced duration for both students (for learning) and teachers (for teaching) of I MBBS, there was a need for examination-oriented revision book.

It is really a great pleasure for me to introduce this book on human anatomy written by one of my ex-colleagues, Dr SN Kazi. I have gone through the manuscript of this book which adequately covers the subject. Usually students have to purchase separate books for anatomy, histology, embryology, general anatomy, genetics, etc. Dr. Kazi has tried to cover all these branches in simple language with the help of computerized line diagrams. It is designed to meet the need of the undergraduate exam going students. Most of the information are given in tabular forms, easy to compare and remember and clinical applications of the subject have been touched adequately.

The book speaks the long experience of the author in the subject and will minimize the stress and strain of a medical student during pre-examination period. I congratulate the author for this venture and wish the book great success.

Shingare PH
Professor and Head, MS
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Director of Medical Education and Research,
Maharashtra
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Ex-Controller of Exam, MUHS, Nashik
Ex-Chairman, BoS Preclinical, MUHS, Nashik
Member of BoS Preclinical Faculty of
Medicine and Faculty of Dentistry, MUHS
Ex-Vice Dean UG, Grant Medical College, Mumbai
Ex-Vice Dean PG, Grant Medical College, Mumbai

Preface to the Second Edition

I am very much excited to present the 2nd edition. Initially I thought it will not take much time, but as I started preparing for the 2nd edition, new ideas start clouding in my mind and the ideas went on increasing.

In the last 15 years, I received many feedbacks about inadequate answers, too much simplicity of the text, too many mnemonics. I reviewed various books on memory techniques and came with various ideas. I am happy to share the experiences of teaching in different parts of country. In north and central part of India, the main barrier is writing skills. The students are either from Hindi medium or language of regional medium. The immediate challenges after joining medical course is communication and managing vast syllabus.

I have made an attempt to write in very simple language. In the first reading only, the student should be able to understand the contents. I have used the symbols for most of the words. It is rightly said "A picture is equal to thousands of sentences. A cartoon is worth of thousands of pictures". **Visual memory** works better for the pictures than the texts. **Colours** have deep impact than black and white. Kinesthetics have far more effect as compared to auditory and visual. Combined effects of auditory, visual and kinesthetic have profound effect on memory.

A sincere attempt is made not only to give the contents of the subject, but also to make the student remember the subject by using various techniques. The author has attended the lectures of the many anatomists, studied the delivery of lectures. He has picked up the concepts and presented in the form of book. The book is collections of techniques used by well-known anatomists of India.

Memory Technique

1. Association memory
   - A. Day-to-day examples: City bus for ascending and descending tracts.
   - B. Association of letters
     - a. After "C" to recollect the nuclei of cerebellum.
     - b. ABCD for the normal constrictions of oesophagus
     - c. Ruffini for red and Krause for cold receptor. This was contributed by **Dr Nandedkar madam**, a senior anatomist from AFMC.
   - C. Association of digit 10 for 4 important information of oesophagus.
     - a. Length of oesophagus
     - b. Constrictions of oesophagus
     - c. Opening in diaphragm at 10th thoracic vertebra
     - d. First mark on the paediatric Ryles tube.
2. Use of one's hand for representation of various structures and relations
   - A. Branches of splenic artery
   - B. Intermuscular spaces
   - C. Use of 3 fingers for transpyloric plane at lower 1st lumbar
   - D. Branches of basilar artery
   - E. Tributaries of coronary sinus
3. Framing the rules for registration of information
   - A. Rule of alternate framed by honorable late Padmashree Dr Mahdi Hasan to
     - a. Recollect the

I. Paired and unpaired branches of abdominal aorta
II. Peritoneal and retroperitoneal structures.

b. Dropping the alternate letters to recollect the names of extrapyramidal tracts.

B. Use of jiggle "Carotico parotico Tonsilii Tympani" to complete the distribution of glossopharyngeal nerve. This is contributed by famous anatomist and surgeon Dr Kadasne, author of many textbooks.

C. Use of fingers to differentiate to walls of artery and vein. This is contributed by Dr Krishna Garg madam, editor of world famous textbook *BD Chaurasia's Human Anatomy*.

4. Link technique
5. Meaning of words
   A. Dura—hard, durable B. Dia—in between
6. Peg technique Mnemonic—Laila Loves Majnu for the branches of lateral cord of brachial plexus.
7. Simile: Course of hepatic artery represented by badly driven nail. Referred from Surgical Synopsis.
8. Picture mnemonic to represent Cri du chat syndrome.
9. Stories
   A. A girl from South and boy from Chandigarh had friendship in Jaipur. They got married in Jaipur but marriage could not survive because of different culture and food habit. They got divorced. Boy went back to Chandigarh and got married in own community. This story is appealing for origin, course and distribution of accessory nerve. The story was fabricated by Dr Aruna Mukherjee, a well-known anatomist.
   B. A story of water pipe for the course of internal pudendal artery.
10. Text in simple English.
11. Things added with religious sentiments: Dr Mysorekaraneminent, Professor of AFMC, used to teach functions of thalamus by giving simile of thalamus to God Nandi and cerebrum with Lord Mahadev.
12. The concept of mind mapping, introduced by Tony Buzan, is used to depict the branches of brachial plexus.
13. Use of celebrities
    A. Mary Kom—action of serratus anterior
    B. Ajay Devgn for overriding of horse to make understand the features of Fallot's tetralogy.
14. Use of key **advertisements** as the keywords—PRO V for features of Fallot's tetralogy.
15. Use of airplane and navies for reminding suprascapular artery and nerve, above and below the suprascapular ligament.
16. Use of pictures of anatomy students whose passion is body building. A photo of Wasim Khan is used to display the actions of sternal and clavicular head of pectoralis major.
17. Fruit of pine tree to show pineal body.
18. Use of symbols and pictures of muscles to boost the memory.

It was a feedback from the passed-out students that there is mismatch between what is taught in applied anatomy in the first year and what is expected in clinical posting. To fill up the gap, the author has reviewed the applied anatomy from physician, general surgeon, ENT surgeon, ophthalmologist, orthopaedic surgeon, and geneticist. The author has reviewed various regions from senior anatomists.

All the feedback has been meticulously rectified.

Separate boxes are introduced for the understanding of the subject and for memorization.

Shoukat N Kazi

Acknowledgements to the Second Edition

I recollect the days, when I determined to write for the second edition. I thought of getting all the books of anatomy that are freely available and accessible. I collected books from all the old book bazar in Delhi, Mumbai, Pune, Pimpri, Lucknow, Ahmedabad, Rajkot. I am very much thankful to Dr TC Singel, Professor, Department of Anatomy, Zydus Medical College, who took me to various old bookstores in Ahmedabad and made them available. He also lent me the library books. It was a great help. I could get the books which are not available in any of the college library. I am very much grateful to him.

I cannot afford to forget the continuous encouragement given by Mr Bhagwan Yadav, Chairman, Managing Director, Prasad Institute of Medical Sciences, Lucknow.

Scanning of the book was done by our office staff, namely Prajakta, Rhutuja. I am thankful to them. I need to mention the name of Mr Rehan Ansari, (HR, Prasad Institute of Medical Sciences, Lucknow) who got the books scanned in a very short time.

There were vital technical issues, because of which I was handicapped. The problems were resolved by my nephew, Mr Wahab Kabir Kazi. I am very much thankful to him.

The basic suggestions of diagrams were made by a corel artist Mr Sanjay, CBS Publishers & Distributors. I am thankful to him.

I am really lucky to have the contributions from many professors.

To start with, Mrs Jasmine Naik drew some of the diagrams in corel draw but because of her child's health she could not continue. The work was continued by Mrs Zeenat Shaikh. She really put her heart in diagrams. She learnt all the intricacies of anatomy subject and gave her 100% to make the diagrams right. She is very much concerned for the success of the book.

The repeated editing of the text and layout of diagrams, sequencing of questions, was done untiringly by Miss Parveen Shaikh and Mrs Jyoti Dhage. In addition to editing, Miss Parveen Shaikh has kept an eye on all the activities and coordinated in a very efficient way. They are the backbones of the book, without their help, the quality of the book was not possible. I am really blessed to have the staff, namely Miss Parveen Shaikh, Mrs. Jyoti Dhage and Mrs Zeenat Shaikh. Mrs Maya Bhujbal, and Mr Uday Jadiye, who have helped in minute layout of the book.

I am indebted for the help my brother Mr Kabir Kazi has extended to me. He has helped me in organizing guest lectures, workshops and made me tension free to write the book. It was a continuous support to me.

The continuous inspiration and motivation was given by my brothers Mr Shikandar, Allabaksh and Najir Kazi.

The technical support was given by Mr YN Arjuna Senior Vice-President—Publishing, Editorial and Publicity, and his team. He has understood me and helped without any hesitation.

The real financial help was extended by Mr Satish Kumar Jain, CMD, CBS Publishers & Distributors. His help was stress bursting to me. The quality of the book has reached only because of his timely help, and the patience he has shown to me. We have very good bonding for so many years.

I am really thankful from the bottom of my heart to Mr Varun Jain, Director, who is dynamic in implementing various technology in the books. The animation of neuroanatomy and upper limb and abdomen is being introduced, only because of his initiation. I owe him a lot.

The real tolerance and patience were given by my better half Mrs Kamartaj and my daughter Miss Sadiya. I did not give any time and attention to family activities. I appreciate their understanding.

Special Thanks

I am extending my sincere and special thanks to the following persons, without whom the book would not have been completed.

- **Dr PH Shingare,** Professor and Head, Department of Anatomy, Grant Medical College, Mumbai, has meticulously corrected the text and has given solutions to diagrams. He has tolerated my disturbance at odd hours in his busy schedule.
- **Dr (Mrs) Kanaklata Iyer,** Professor of Anatomy at Somaiya Medical College, Sion, Mumbai, has really given a breakthrough to the problems of diagrams. She has helped out rightly by sparing her valuable time through her busy schedule by taking keen interest. She has contributed diagrams of gross anatomy of abdomen, inferior extremity and general embryology.
- **Dr Savgaonkar,** Professor of Anatomy at BJ Medical College, Pune, has drawn histology diagrams of abdomen section. He being my close friend, understood the difficulties and offered his help by completing the diagrams in very short time.
- **Dr Anjali Dhamangaonkar,** Associate Professor, in Anatomy at GS Medical College, Mumbai, has contributed to the general embryology diagrams. It was very difficult for her to give some time. But her desire to help me has solved the problems.
- **Dr Manvikar Purushottam Rao,** Lecturer in Anatomy at Dr DY Patil Medical College, Pimpri, has drawn some of the diagrams of general histology. He is the main push for animation work.
- **Dr Kadasne DK,** the author of *Kadasne's Textbook of Anatomy (Clinically-oriented),* has allowed me to use some of the diagrams from his book.
- **Dr Umarji,** Professor and Head, Department of Anatomy, Krishna Institute of Medical Sciences, Karad, has drawn a few diagrams of general anatomy.

Shoukat N Kazi

Contributors

Arudyuti Chowdhury MS, DGO

Associate Professor, SRM Medical College, He was my roommate at SRM Medical College, Chennai. Dr Arudyuti Chowdhury is constant motivators. He has helped me in all the activities. His word of suggestion is important for me.

Ashok Kumar Rawat MS (Ortho)

Assistant Professor, Department of Orthopedics, Associate Professor, Prasad Institute of Medical Sciences, Lucknow.

He has helped in giving fine touch of applied aspects of joint.

Gangane

Professor and Head, Department of Anatomy, Medical College, Navi Mumbai. Thank you very much for finding time for approving the contents.

Jyoti Kulkarni

Professor in Anatomy in Nepal

She has gone meticulously in all the texts and diagrams of books and given valuable suggestions. The quality of the book is definitely improved because of her suggestions. I am very much obliged and thankful for her help.

Manvikar

Professor and Head, Department of Anatomy, Padmashree, Dr DY Patil Medical College, Pimpri, Pune. Thanks very much for giving genetic inputs.

MC Srivastav

Medical Superintendent and Associate Professor of Medicine, Prasad Institute of Medical Sciences, Lucknow. He is kind enough to add EKG changes in blockage of coronary arteries.

Murugan Kutty Gopalan

BSc, MBBS, DMA (USA)

Head, Departments of Medical Illustrations, Digital Health, Clinical Skills Simulation Center and Telemedicine, Amrita Institute of Medical Sciences and Research Center, Kerala, India. He is involved in the **Simulation-Based Medical Education** in giving training in various clinical skills. He is intensely working on introducing new generation **Medical Haptics**, **Robotic Surgery, Cardiac-Neuro-Ortho interventional Simulaids** for the super-specialty branches in Medicine and Surgery. He has won several regional, national and international awards for his innovative illustrative works.

All histology diagrams of 2nd edition are fabricated by Dr Gopalan. Apart from contributions to the book, he is my very close friend, whose door I can knock for any help any moment. I am heavenly blessed to have a friend like Dr Gopalan.

He is courageously fighting his health issue like a warrior. I know him since last 15 years. He is very much energetic. The energy and enthusiasm have increased many folds after he met his health issue. I think adverse situations boost his energy. I do not know from where he gets energy to do such activities. I pray God to give him long healthy life.

Nayana Karodpati

Professor (ENT, DYPMC), Pimpri, Pune

She edited the text and added the topics which are of clinical importance. Hearty thanks for the help.

P Vatsalaswamy MD

Director of DYPMC, Pimpri, Pune

In spite of her busy administrative activities and family commitments, she could spare time and could help me. I am very much obliged.

She has reviewed superior extremity. She has gone in details of each word of text and given the feedback.

Salamat Khan

Professor of Surgery, Prasad Institute of Medical Sciences, Lucknow. Dr Salamat Khan has voluntarily helped me in reviewing applied anatomy of limbs, abdomen, head, neck, face, thorax, and brain. He has gone word to word and gave the suggestions. I salute him for his help.

Sunita Nayak

Assistant Professor

All India Institute of Medical Sciences, Patna

Ubaidur Rehman

Medical Superintendent, Prasad Institute of Medical Sciences, Lucknow. He has helped in updating ophthalmology chapters. I was lucky to be associate with him.

Vaishali Bharambe MD, PhD

Ex-professor, DY Patil Medical College, Pimpri, Pune

Presently she is working as a Professor and Head, Symbiosis Medical College, Pune. She was very much busy in preparation of PhD. In spite of her hectic schedule, she could review the diagrams of lower limb. I owe her.

Vinod Kathju

Former additional Principal, Dr SN Medical College, Jodhpur

I am very much thankful for his kind guidance and contribution

Upper Limb: Animation

Sr. No.	Duration	Topic
BP1	4.25	Introduction to nerve plexus
BP2	1.23	Objectives of the video
BP3	2.23	Formation of brachial plexus
BP4	1.23	Fixation of brachial plexus
BP5	0.50	Anatomy of brachial plexus
BP6	1.41	Nomenclature of brachial plexus
BP7	1.13	Branches of brachial plexus
BP8	2.05	Branches from cords and details of nerve
BP9	1.10	Details of each nerve
BP10	3.41	Nerve to serratus anterior
BP11	1.35	Applied anatomy of nerve to serratus anterior
BP12	2.58	Suprascapular nerve
BP13	1.37	Nerve to subclavius
BP14	1.19	Branches of lateral cord
BP15	7.02	Musculocutaneous nerve

These high-value animation videos are available on **CBSiCentral App** through scratch code.
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