MEDICINE & HEALTH CARE

Q. What are the different Indian Systems of Medicine and what are Educational and Career Opportunities in Indian System of Medicine?

For centuries man has evolved several ways of coping with illness and different societies have looked for different substances and methods that would ease pain and elevate spirits. All the ancient civilisations have thus developed their own medical systems which reflect not only specific philosophies but also appear to be influenced by the social beliefs and practices of the time. With the introduction of the Western systems of medicine well-known as the "allopathic system" and considered "modern", this ancient system came to be known as the "traditional" or "indigenous" system.

A group of experts at **WHO** sponsored meeting defined traditional medicine as "…the sum total of all knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience or observation handed down from generation to generation, verbally or in writing (American Journal of Pharmacy 1976, 148, 46-52). With the Western system of medicine, now perceived as the "mainstream system", taking deep roots all over the world, the term alternative medicine was coined to label the diverse assortment of medical practices which are outside of it. However, some experts find the term inappropriate because these therapies could never entirely replace the "mainstream system", and therefore, recommend the term "complementary medicine".

Promotion of Education and Research:

Be that as it may, India has a rich heritage of medicine and therapies. The term Indian Systems of Medicine covers both the systems which originated in India as well as outside but got adopted in India in course of time. These systems are Ayurveda, Siddha, Unani, Homoeopathy, Yoga, and Naturopathy. They have become a part of the culture and traditions of India. The National Health Policy (1983) envisaged the necessity for the Indian systems to find a role and place in the overall health care delivery system. In December 1995, the Government of India created a new Department of Indian Systems of

Medicine and Homoeopathy in the Ministry of Health and Welfare to promote these systems.

The Department has set up four Research Councils, viz., (1) The Central Council for Research in Ayurveda and Siddha, with nearly 90 research centres spread across the country, (2) The Central Council for Research in Unani Medicine, (3) The Central Council for Research in Homoeopathy, and (4) The Central Council for Research in Yoga and Naturopathy to promote research in the concerned systems of medicine. Seven National Institutions have also been set up to offer educational and research facilities in these fields, viz., (1) Rashtriya Ayurved Sansthan, (National Institute of Ayurveda) (Jaipur), (2) National Institute of Postgraduate Teaching and Research in Ayurveda (Jamnagar), (3) Rashtriya Ayurveda Vidyapeeth, (National Academy of Ayurveda) (New Delhi), (4) National Institution of Unani Medicine (Bangalore), (5) National Institute of Homoeopathy (Calcutta), (6) National Institute of Naturopathy (Pune), and (7) Morarji Desai National Institute of Yoga (New Delhi).

A National Institute of Siddha is also likely to be set up in Chennai. As a part of continuing medical education, the government has introduced a scheme to upgrade the knowledge of teachers, researchers, practitioners in Indian Systems of Medicine and Homoeopathy. In order to formulate standards for drugs, Pharmacopoeia Committees for each of these systems were also set up. They are supported by the Pharmacopoeia Laboratory for Indian Medicine, and Homoeopathy Pharmacopoeia Laboratory both located in Ghaziabad. There are 13 government assisted pharmacies and over 5,000 licensed pharmacists. The total annual turnover of the Ayurvedic drug manufacturing industry is estimated to be around Rs.1, 000 crore.

Two statutory Councils, viz., the Central Council of Indian Medicine, and the Central Council of Homoeopathy were also established for laying down and maintaining uniform standards of education as well as to regulate the professional practices in the fields of Indian Systems of Medicine and Homoeopathy, respectively. . The Central Council of Indian Medicine, through a public notice has warned that the courses in electropathy, electro homoeopathy, biochemical, alternative medicine, etc., offered by several institutions and so-called universities are not recognized by it.

Specifically, it named three Institutions which offer such courses: (1) New Delhi Medical Institute of Electropathy (9 New Mahavir Marg, Dew Delhi-110010), (2) Health and Medicine (80 Chowringhee Road, Calcutta-700020), and (3) Medical College of Alternative Medicines (3 Canal Street, Calcutta-700014). The Medical Council of India has also warned that the awards of these institutions are not valid qualifications under Indian Medical Council Act, 1956.

Educational Opportunities:

Education in the Indian Systems of Medicine and Homoeopathy is offered by colleges affiliated to universities. In States, where there are health science universities, all these colleges are affiliated to them. As stated earlier, the courses and colleges need the recognition of the Central Council of Indian Medicine, and the Central Council of Homoeopathy.

Ayurveda

Education in Ayurveda is offered at first degree, postgraduate degree and doctoral degree levels leading to Bachelor of Ayurvedic Medicine and Surgery (BAMS), MD (Ayurveda) and Ph.D (Ayurveda), respectively. As on April 1, 1998 there were 154 Ayurved Colleges affiliated to 48 universities which include one exclusive Ayurved university, viz., the Gujarat Ayurved University (Jamnagar). Many colleges have been established by the State governments. The largest concentration of colleges is in Karnataka (40) and Maharashtra (37). The total admission capacity is 6,117. Postgraduate courses are of Ayurveda hospitals in the country is 2,203 (with 31,042 beds). Besides, there are 14,048 dispensaries. The number of practitioners is of the order of 3,52,328.

Like the MBBS degree, the duration of BAMS degree course is five and a half years including one year of compulsory internship. The entry requirement is a pass in 10+2 class examination with science subjects. In most of the States, the admission is made on the basis of a common entrance test conducted along with the medicine and dentistry courses. The postgraduate course is of three year duration. In Calcutta University, the course of two year duration is also open to MBBS degree holders. A total number of 33 universities have introduced MD study one of the specialised areas.

Specialised Institutions in Ayurveda: A brief account of the educational programmes of the three National Institutes established by the Ministry of Health and Family Welfare

follows. The National Institute of Postgraduate Teaching and Research in Ayurveda located within Gujarat Ayurved University, set up by the Department of Indian System of Medicine and Homoeopathy, imparts education leading to MD (Ay) in 13 specialities of Ayurveda. It has seven teaching departments and six laboratories. The Institute also conducts Ph.D programmes. Gujarat Ayurved University, besides BAMS course, also offers five courses at its Institute of Ayurvedic Pharmaceutical Sciences and the Institute of Plant Sciences in the area of Pharmaceutical science: (1) Master of Pharmacy (Ayurveda) of two-year duration open to B.Phram degree holders, (2) Bachelor of Pharmacy (Ayurveda) of four-year duration open to candidates who have passed the 10+2 examination with science subjects; (3) Diploma in Pharmacy (Ayurveda) of two-year duration open to candidates who have passed the 10+2 examination, (4) One year PG Diploma in Medicinal Plants. And (5) M.Sc in Medicinal plants are open to graduates in Botany, Pharmacy, Agriculture or Ayurveda.

Rashtriya Ayurved Sansthan (National Institute of Ayurveda) in Jaipur, established in 1976 by the Ministry of Health and Family Welfare, besides BAMS (Ayurvedacharya) course also offers MD (Ayurveda Vachaspati) course in nine specialities. The Sansthan is affiliated to the Rajasthan University and provides guidance to Ph.D (Ayurveda) to candidates registered with the University.

The Rashtriya Ayurveda Vidyapeeth (Dhanwantri Bhavan, Road No.66, Punjabi Bagh, New Delhi), an Autonomous institution was established in 1988 with the objective of promoting the knowledge of Ayurveda through acharya-guru-shishya-parampara, and chikitsak-guru-shishya-parampara systems. It has two training programmes, viz., (a) two-year programme leading to the Degree of Membership of Rashtriya Ayruveda Vidyapeeth (MRAV), and (b) one-year training programme for studying under eminent physicians leading to the Certificate of RAV. The MRAV course is open to teachers of Ayurveda colleges holding a graduate or postgraduate degree with five years of teaching experience. There is a scheme of payment of honorarium to Gurus and stipend (Rs.3, 500 p.m.) to Shishyas during the period of study. The Certificate course is open to candidates with an Ayurveda degree and having experience in clinical practice.

Three other specialised institutions offering postgraduate programmes are: (1) Institute of Indian Medicine (Pune-411029)-Ph.D (Ay); (2) Institute of Postgraduate Education and

Research in Ayurveda (Calcutta-700009)-MD (Ay); and (3) University of Madras-Two-year diploma courses including one on ophthalmology.

Siddha:

There are only three Siddha medical colleges in the country, all located in Tamil Nadu viz., Government Siddha Medical College at Palayamkottai, Thirunelveli (Kattabomman District), Palani (624601) and Chennai (600106). All the three are affiliated to the Tamil Nadu Dr. MGR Medical University. The first degree in the subject is Bachelor of Siddha Medicine and Surgery (BSMS) of five-and-a-half year duration including one year of compulsory internship. The total number of seats is 155. The eligibility requirement is a pass in 10+2 examination with Physics, Chemistry and Biological Sciences.

The candidates should have studied in Tamil medium or have passed Tamil as a subject in Class 10. The admission is based on the performance in a combined entrance test conducted by the Directorate of Indian Medicine and Homoeopathy of the Government of Tamil Nadu for admission to first degree courses in Siddha, Homoeopathy, Ayurveda and Naturopathy. The Colleges at Chennai and Thirunelveli have MD Course in Siddha of three-year duration. Students from neighbouring countries (Sri Lanka, Malaysia, Singapore, etc.,) are also admitted to the course. There are 22 hospitals, all in Tamil Nadu, with 1,636 beds. Siddha medicine is practiced by 12,528 registered practitioners.

Unani:

As on April 1, 1998 there are 31 Unani Colleges in India, affiliated to 13 universities with an intake capacity of 1,239 offering first degree course leading to the award to Bachelor of Unani Medicine and Surgery (BUMS), also called Kamil-e-Tibb-O-Jarajat. The MD (Unani) is offered by three colleges having 55 seats. BUMS course is of five and a half year duration including one year of compulsory internship. The entry requirement is a pass in 10+2 examination. Those who have passed the Pre-Tibb examination of one year duration are also eligible. Knowledge of Arabic and Urdu is desirable. Pune University admits students who have passed the Class 10 examination, and for them the duration is 71/2 years.

Courses offered by the Aligarh Muslim University and Jamia Hamdard (New Delhi), a deemed university, have high reputation. Only three universities, viz., Aligarh Muslim University (Ajmal Khan Tibbia College, Aligarh-202002), Jamia Hamdard, and NTR

University of Health Sciences (Government Nizamia Tibbi College, Hyderabad-500002) offer MD in Unani Medicine of three-year duration. The Pre-Tibb course is available in Aligarh Muslim University and Jamia Hamdard (New Delhi). The entry requirement is a pass in Fazil (Deoband), Alim (Arabic or Aimyat Nadwa) or Farighul Tehsil from a Dare-e-Nizami Madrasah. There are 183 Unani Hospitals with 3,551 beds. The number of registered practitioners is 41,630.

Homoeopathy:

Homoeopathy education is offered at first degree and postgraduate degree levels. The diploma level course (DHMS) has been discontinued since 1998. The first degree course leading to Bachelor of Homoeopathic Medicine and Surgery (BHMS) is available in 118 colleges affiliated to various universities having 4, 3318 seats. The entry requirement is a pass in 10+2 examination in science (including biological science). Like any other course in medicine, the duration is five and a half years including one year of compulsory internship. The largest concentration of Homoeopathy colleges (37) is in Maharashtra with 1,937 seats.

National Institute of Homoeopathy (Calcutta-700091) was established by the Government of India as a model institute to provide a high standard of teaching, training and research in all aspects of Homoeopathic system. Its BHMS course is affiliated to the Calcutta University. Of the 50 seats, 18 are reserved for candidates from States and Union Territories where no homoeopathic college exists, and two for foreign nationals.

The remaining 30 seats are filled up through an All-India Entrance Examination. It has now introduced postgraduate course in Homoeopathy –MD (Homy) of three year duration. The eligibility requirement for MD (Homy) is BHMS degree. Six other universities (Calicut University, Maharashtra University of Health Sciences, Mumbai University, NTR University of Health Sciences, Rajiv Gandhi University of Health Sciences and Utkal University) offer MD (Homy) of three years duration. The subjects of study include Materia Medica, Organon of Medicine, Case Taking and Repertorisation, Homoeopathic Philosophy.

Yoga and Naturopathy:

Imparting formal university education in Yoga and Naturopathy is a recent development. The first degree course is offered by three universities viz., (1) Rajiv Gandhi University

of Medical Sciences (SDM College (DK), 574240, INYS College of Naturopathy and Yogic Sciences, Mysore-570073). (2) Tamil Nadu Dr. MGR Medical University (at Tamil Nadu College of Naturopathy and Yoga Research, Salem-636006, and JSS College of Naturopathy and Yoga Research, Ooty-643001), and (3) NTR University of Health Sciences at Gandhi Nature Cure College, Hyderabad-500016. It is of five and half year duration. The nomenclature of the degree is Bachelor of Naturopathy and Yogic Science (BNYS).

The entry requirement is a pass in 10+2 with biology as one of the combinations. Master's degree programmes are available in three universities, viz., (1) Manipal Academy of Higher Education-M.Sc (Yoga); (2) Mangalore University-M.Sc (Yogic Science) open to graduates in all disciplines; (3) Gurukula Kangri Vishwavidyala (Hardwar-249404)-MA (Yoga); and (4) Jain Vishva Bharati-MA/M.Sc (Science of Living, Preksha Meditation and Yoga Therapy) open to B.Sc degree holders. More than 20 universities have introduces certificate and diploma (including postgraduate diploma) courses in the subject.

Promotion of Yoga and Naturopathy:

The Government of India has set up Morarji Desai National Institute of Yoga (New Delhi) as an autonomous body to propagate Yogic science and also promote facilities for training, teaching and research in the subject. It has a hospital for providing treatment. In 1998, it has introduced a diploma programme of one year duration. The Government has also established National Institute of Naturopathy is Pune which, apart from providing treatment, undertakes promotional activities for popularising Naturopathy by holding camps and seminars. The Central Council for Research in Yoga and Naturopathy provides grant-in-aid to voluntary Yoga and Nature Cure Organisations for conducting scientific research and one-year diploma courses in Yoga and Naturopathy . The Central Council also provide funds to medical and yogic institutions, such as, Defence Institute of Physiology and Allied Science (Delhi), National Institute of Mental Health and Neuro Sciences (Bangalore), Banaras Hindu University, All India Institute of Medical Sciences (New Delhi), to conduct clinical research in physiological and therapeutic aspects of yoga and naturopathy.

Career Opportunities:

The Indian systems of Medicine and Homoeopathy are still perceived by many as rural-centric and poor men's panacea for all diseases. The main reason is that compared to the Western system of medicine, the health infrastructure and services of the traditional systems are poorly supported. Only about 4% of the national health budget was allocated to the traditional sector. While State government budgets range from less than 1% (in West Bengal) to 13% (in Kerala), on an average, most States provide less than 2%.

Though the allopathy system continues to dominate the national health care scene, there is an increasing awareness among a large section of people about the beneficial aspects of the traditional systems. Many newspapers and newsmagazines carry articles on Indian Systems of Medicine and Homoeopathy. Several TV channels also air programmes on it. All these are creating awareness particularly among the upper strata of the society about the efficacy of this alternative or complementary system of health care. It is only recently that the Government of India has started paying more attention to this sector with the creation of a separate Department in the Ministry of Health and Family Welfare.

While Unani and Siddha systems are more or less restricted to certain regions, the other three viz., Ayurveda, Homoeopathy and Yoga and Naturopathy are practiced all over the country. In Particular, Ayurveda is flourishing in the private sector. As has been observed by the Independent Commission on Health in India in its Reports (Voluntary Health Association of India, 1997). "Not only are private clinics and hospitals self-financed and well-attended, some of them also compare well with the best hospitals and clinics in this field of modern medicine.

It is not, therefore, surprising that Ayurvedic practice has been gaining popularity and leading Ayurvedic physicians are setting up clinics or small hospitals and earning as well as, or even more than, their allopathic counterparts . The success story of Arya Vaidya Sala (Kottakkal, Kerala) is a case in point. Yoga and Naturopathy are also fast gaining popularity particularly among those who are victims of stress and strain of the present day hectic life style. The bane of the traditional system is the presence of a large number of quacks who dupe the unsuspecting patients. This has been eroding the confidence of people in the system. With large-scale inputs of scientific research and creation of better educational facilities, the things have started changing for the better. Apart from jobs in

government and private sectors, the Indian systems provide opportunities for a reasonably good career as private practitioners.

Q. What is Allopathy?

Allopathy is "a system of medical practice making use of all measures *proved of value* (emphasis added) in treatment of disease." In the present day context, allopathy is the most widely used and accepted system of medicine throughout the world.

The term "allopathy" was invented by German physician Samuel Hahnemann (1755-1843). He conjoined *allos* "opposite" and *pathos* "suffering" as a referent to harsh medical practices of his era which included bleeding, purging, vomiting and the administration of highly toxic drugs. These practices were based on the ancient Greek *humoral theory* which attributed disease to an imbalance of four humors (i.e., blood, phlegm, and black and yellow bile) and four bodily conditions (i.e, hot, cold, wet and dry) that corresponded to four elements (earth, air, fire, and water). Physicians following the Hippocratic tradition attempted to balance the humors by treating symptoms with "opposites." For instance, fever (hot) was believed due to excess blood because patients were flush; therefore, balance was sought by blood-letting in order to "cool" the patient. Hahnemann sought to replace allopathy with his "*law of similia*" that treated "like with like," a prescientific idea that he had discovered from reading ancient sources. Although many modern therapies can be construed to conform to an allopathic rationale (eg, using a laxative to relieve constipation), standard medicine has never paid allegiance to an allopathic principle. The label "allopath" was considered highly derisive by regular medicine.

What is Homeopathy?

Homœopathy (Home' - ee - AH' - puh - thee; sometimes spelled homeopathy) is a system of healthcare developed and introduced by the German physician Samuel Hahnemann in the late 1700's. At its heart is the phenomenon of *cure by similars*, where a substance that could *produce* disease in a healthy person (when given in excess) is used to *invite* a healing response in someone presenting with a similar disease. Homœopathy takes its name from this phenomenon of cure by similars; from the Greek, homoeo = "similar", pathos = "suffering".

This use of cure by similars actually predates homœopathy by several centuries. Hippocrates records the use of this approach to healing (c. 400BC in Greece), and we find references to it from the Oracle of Delphi, from Indian medical texts as much as 4,000 years old, and from ancient Chinese medical texts. Celsus, a physician of the Greek classical period, and Theophrastus, a Swiss physician of the 16th century, received renown for their effectiveness as physicians relying on this approach.

Hahnemann was trained as a conventional physician, at the University in Leipzig, Germany. Discouraged by the medicine of his day, and distraught at the near demise of his daughter under the care of a conventional physician, Hahnemann left the practice of medicine to write and translate books. In entertaining the question of what a viable system of medicine would involve, he came back to the historical references to cure by similars in the Hippocratic writings. From his own experiments with Chinchona bark (from a Peruvian tree, the source of Quinine), he convinced himself that Chinchona's effectiveness in treating some cases of malaria resulted from its ability to create a similar disease to which the body could respond, with a resulting healing response to both the medicine-induced condition and the malaria.

Hahnemann went on to apply this principal of cure by similars to other conditions, using many other remedies, and came to observe it as a universal law of cure; he coined the expression "Similia Similibus Curentur" ("Let likes cure likes") as the cornerstone of his homœopathic philosophy.

A second cornerstone of homœopathy is the minimum dose. The incredibly tiny doses we use in treatment came about through careful systematic experimentation by early homœopaths. While larger doses could often elicit the healing responses desired, this would often be accompanied by undesirable side effects of the medications. Reducing the dose served to minimize or eliminate these undesirable side effects. Much to the surprise of Hahnemann and his colleagues, these smaller doses also often worked much more effectively in bringing about a healing response. Although the "logic" of using such tiny doses may defy us, we observe it to work in practice, and continue to rely on these minimum doses today.

The third cornerstone of homœopathy is the use of a single remedy at any one time. In inviting a healing response, it can be confusing to the body, with unpredictable

results, to invite several responses simultaneously. Although some practitioners have deviated on this point and use combinations of remedies, Hahnemann abandoned this approach after experimenting with it himself.

Homeopathy learns about the properties of remedies through *provings*. In a proving, a number of healthy people are given excessive doses of a particular remedy, and the symptoms they develop are carefully recorded. These patterns of symptoms have been systematically recorded in books we refer to as *materia medica*. This remedy could then be used to treat a person presenting with an illness which had a similar pattern of symptoms.

The prescription of a particular remedy will be based upon the *totality of symptoms* of the individual. In taking a case, the characteristics and behavior of each symptom of the patient are recorded and used to find a matching remedy. Unlike conventional medicine, which might consider some symptoms of the individual to be unrelated to the "condition" to be treated, homœopathy views disease as a disharmony of the whole person, and considers the state of the whole person - physically, mentally, and emotionally - when finding an appropriate remedy.

Homœopathy was a popular system of medical care in the United States during the 19th century. Sociopolitical factors led to its decline in the U.S. in the early 1900's, but it has remained a prominent form of medical care in England, Germany, France, India, and parts of South America.

Advantages: If used properly, Homeopathy is completely safe, free from side effects and is non-toxic and non-addictive. It can be used safely with conventional treatments and you do not need to stop medication before beginning Homeopathic treatment. Homeopathy is safe and effective for all ages, including tiny babies to the elderly.

Q. What is Ayurveda?

Ayurveda is a wholistic system of medicine from India that uses a constitutional model. Its aim is to provide guidance regarding food and lifestyle so that healthy people can stay healthy and folks with health challenges can improve their health.

There are several aspects to Ayurveda that are quite unique:

Its recommendations will often be different for each person regarding which foods and which lifestyle they should follow in order to be completely healthy. This is due to it's use of a constitutional model.

Everything in Ayurveda is validated by observation, inquiry, direct examination and knowledge derived from the ancient texts.

It understands that there are energetic forces that influence nature and human beings. These forces are called the ***Tridoshas.***

Because Ayurveda sees a strong connection between the mind and the body, a huge amount of information is available regarding this relationship.

Origin

Ayurveda is an intricate system of healing that originated in India thousands of years ago. We can find historical evidence of Ayurveda in the ancient books of wisdom known as the Vedas. In the Rig Veda, over 60 preparatison were mentioned that could be used to assist an individual in overcoming various ailments. The Rig Veda was written over 6,000 years ago, but really Ayurveda has been around even longer than that. What we see is that A yurveda is more than just a medical system. It is a Science of Life. We are all part and parcel of nature. Just as the animals and plants live in harmony with nature and utilize the Laws of Nature to create health and balance within their beings, we, too, adhere to these very same principles. Therefore, it is fair to say that Ayurveda is a system that helps maintain health in a person by using the inherent principles of nature to bring the individual back i nto equilibrium with their true self. In essence Ayurveda has been in existence since the beginning of time because we have always been governed by nature's laws.

Meaning

Ayurveda is made up of two Sanskrit words: *Ayu* which means life and *Veda* which means the knowledge of. To know about life is Ayurveda. However, to fully comprehend the vast s cope of Ayurveda let us first define "Ayu" or life. According to the ancient Ayurvedic scholar Charaka, "ayu" is comprised of four essential parts. The combination of mind, body, senses and the soul.

Mind, Body, and Sences

We tend to identify most with our physical bodies; yet, in actuality, there is more to us then what meets the eye. We can see that underlying our physical structure is the mind, which not only controls our thought processes but helps assist us in carrying out day-to-day activities such as respiration, circulation, digestion and elimination. The mind and the body work in conjunction with one another to regulate our physiology. In order for the mind to act appropriately to assist the physical body, we must use our senses as information gatherers. We can think of the mind as a computer and the senses as the data which gets entered into the computer. Smell and taste are two important senses th at aid in the digestive process. When the mind registers that a particular food is entering the gastrointestinal tract, it directs the body to act accordingly by releasing various digestive enzymes. However, if we overindulge the taste buds with too much of a certain taste, such as sweet, we may find that the ability of the mind to perceive the sweet taste is impaired; and thereby the body becomes challenged in its ability to process sweet foods. Maintaining the clarity of our senses is an essential part in allowing the mind and body to integrate their functions and help in keeping us healthy and happy individuals.

SOUL

Ayurveda also sees that before we exist in physical form with the help of the mind and senses that we exist in a more subtle form known as the soul. The ancient seers of India believed tha t we were comprised of a certain energetic essence that precluded the inhabitance of our physical entity. In fact, they hypothesized that we may indeed occupy many physical bodies throughout the course of time but that our underlying self or soul remains unchanged. What we see to help illustrate this concept is what transpires at the time of death. When the individual nears the time to leave the physical body, many of his/her desires will cease to be present. As the soul no longer identifies with the bod y, the desire to eat food or indulge in a particular activity that used to be a great source of satisfaction for that person drops by the wayside. In fact, many individuals have been documented to experience the sensation of being "out of their bodies."

These are just a few examples of how we are made up of these four components that we call life.

Principles

Now that we have a better understanding of what comprises life, let's look at some of the principles of Ayurveda and how they might affect us.

In Ayurveda we view a person as a unique individual made up of five primary elements. The elements are ether (space), air, fire, water, and earth. Just as in nature, we too have these five elements in us. When any of these elements are present in the environment, they will in turn have an influence on us. The foods we eat and the weather are just two examples of the presence of these elements. While we are a composite of these five primar y elements, certain elements are seen to have an ability to combine to create various physiological functions. Ether and air combine to form what is known in Ayurveda as the Vata dosha. Vata governs the principle of movement and therefore can be seen as the force which directs nerve impulses, circulation, respiration, and elimination. Fire and water are the elements that combine to form the Pitta dosha. The Pitta dosha is the process of transf ormation or metabolism. The transformation of foods into nutrients that our bodies can assimilate is an example of a pitta function. Pitta is also responsible for metabolism in the organ and tissue systems as well as cellular metabolism. Finally, it is pr edominantly the water and earth elements which combine to form the Kapha dosha. Kapha is what is responsible for growth, adding structure unit by unit. Another function of the Kapha dosha is to offer protection. Cerebral-sp inal fluid protects the brain and spinal column and is a type of Kapha found in the body. Also, the mucousal lining of the stomach is another example of the Kapha dosha protecting the tissues. We are all made up of unique proportions of Vata, Pitta and Ka pha. These ratios of the doshas vary in each individual; and because of this, Ayurveda sees each person as a special mixture that accounts for our diversity.

Ayurveda gives us a model to look at each individual as a unique makeup of the three doshas and to thereby design treatment protocols that specifically address a persons health challenges. When any of the doshas (Vata, Pitta or Kapha) become accumulated, Ayurveda will suggest specific lifestyle and nutritional guidelines to assist the individual in reducing the dosha that has become excessive. We may also suggest certain herbal supplemen ts to hasten the healing process. If toxins in the

body are abundant, then a cleansing process known as Pancha Karma is recommended to eliminate these unwanted toxins.

Q. What is Siddha System of Medicine?

The Siddha System of medicine is the oldest in the world. There are two ancient system of medicine in India. The Siddha which flourished in South India and Ayurvedha prevalent in North India. The word Siddha comes from the word Siddhi which means an object to attain perfection or heavenly bliss. Siddha generally refers to Athma Siddha that is the 8th supernatural power. Those who attained or achieved the above said powers are known as Siddhars. There were 18 important siddhars in olden days and they developed this system of medicine. Hence, it is called Siddha Medicine.

Basic Principles

Siddha science considers nature and man as essentially one. Nature is man and man is nature. Man is said to be the microcosm and Universe is the macrocosm because what exists in the world exists in man. Man is nothing but a miniature world containing the five elements of the various principles which constitute the minerals, vegetables and the animal kingdom. According to Siddha medical science, the Universe originally consisted of atoms which contributed to the five basic elements, viz., earth, water, fire, air and sky which correspond to the five senses of the human body and they were the fundamentals of all the corporeal things in the world.

A close relationship is found to exist between the external world and the internal system of man. Siddhars (practitioners of Siddha) maintain that the structure of the human body is a miniature world in itself. Man consumes water and food, breathes the air and thus maintains the heat in the body. He is alive on account of the life force given by ether. The earth is the first element which gives fine shape to the body including bones, tissues, muscles, skin, hair etc. Water is the second element representing blood, secretions of the glands, vital fluid etc. Fire is the third element that gives motion, vigor and vitality to the body. It also helps digestion, circulation and simulation besides respiration and the nervous system. Above all, ether is the characteristic of man's mental and spiritual faculties.

Siddha system of medicine is based on Saiva Siddhantha. Siddha is a Tamil word that is

derived from its root 'chit' which means perfection in life or "heavenly bliss".

The fundamental subjects of Siddha methodology are

1.VADHAM (ALCHEMY)

2.AITHIYAM (MEDICINE)

3.YOGAM (YOGA)

4.GNANAM or THATHUVAM (PHILOSOPHY)

Siddhars, spiritual scientists of Tamil Nadu explored and explained the reality of Nature and its relationship to man by their yogic awareness and experimental findings. They postulated the concept of spiritualism for self improvement and the practices propounded by them came to be known as the "SIDDHA SYSTEM".

Q. What is Unani Medicine?

The Unani system of medicine owes, as its name suggests, its orgin to Greece. It was the Greek philosopher-physician Hippocrates (460-377 BC) who freed Medicine from the realm of superstition and magic, and gave it the status of Science. The theoretical framework of Unani Medicine is based on the teachings of Hippocrates. After a number of other Greek scholars enriched the system considerably. Of them Galen (131-210 AD) stands out as the one who stablized its foundation, on which Arab physicians like Rhazes (850-925 AD) and Avicenna (980-1037 AD) constructed an imposing edifice. Unani Medicine got enriched by imbibing what was best in the contemporary system of traditional medicine in Egypt, Syria, Iraq, Persia, India, China and other Middle East and Far Eastern countries. It also benefited from the native medical systems in vogue at the time in various parts of Central Asia. That is why this system is known, in different parts of the world, with different names, such as, Greeco-Arab Medicine, lonian Medicine, Arab Medicine, Islamic Medicine, Traditional Medicine, Oriental Medicine etc.

In India, Unani system of medicine was introduced by the Arabs, and soon it took firm roots in the soil. When Mongols ravaged Persian and Central Asian cities like Shiraz, Tabrez and Geelan, scholars and physicians of Unani Medicine fled to India. The Delhi Sultans, the Khilijis, the Tughalaqs and the Mughal Emperors provided state patronage to the scholars and even enrolled some of them as state employees and court physicians. During 13^{th} and 17^{th} century Unani Medicine has its hey-day in India. Among those who made valuable contributions to this system in the period were, to name only a

few, Abu Baker bin Ali Usman Kashani, Sadruddin Damashqui Bahwa bin Khwas Khan, Ali Geelani, Akbar Arzani and Mohammad Hashim Alvi Khan.

The scholars and physicians of Unani Medicine who settled in India were not content with the known drugs but they subjected Indian drugs to clinical trials and as a result of their experimentation added numerous native drugs to their own system, thus further enriching its masses and soon spread all over the country and continued to hold an unchallenged sway for a long period even after the downfall of Mughal Empire.

During the British rule, Unani Medicine suffered a setback and its development was hampered due to withdrawal of governmental patronage. But since the system enjoyed faith among the masses it continued to be practiced. It was mainly the Sharifi Family in Delhi, the Azizi family in Lucknow and the Nizam of Hyderabad due to whose efforts Unani Medicine survived in the British period. An outstanding physician and scholar of Unani Medicine, Hakim Ajmal Khan (1868-1927) championed the cause of the Unani system in India. The Hindustani Dawakhana and the Ayurvedic and Unani Tibbia College in Delhi are the two living examples of his immense contribution to the multipronged development of the two Indian system of medicine, Unani Medicine and Ayurveda.

Q. How do I know if a career in medicine might be for me?

First ask yourself what kind of future appeals to you. Do you want challenges, opportunities, a chance to make a difference? Many bright and motivated college students describe a "dream career" with the following characteristics:

Opportunity to serve: Allows you to help people.

Action: Doesn't tie you to a desk all the time.

Respect: You are an important part of your community.

Security: Allows you a good living with a secure future.

Excitement: Changes daily, so it's hardly ever boring.

Mobility: You're in demand wherever you choose to live**.**

Flexibility: Gives you lots of career options from the same education base. Few occupations meet all of these standards. None meets them better than a career in medicine.

Q. How can I know that I am the right kind of person for a medical career?

Ask yourself some questions:

Do I care deeply about other people, their problems, and their pain?

Do I enjoy helping people with my skills and knowledge?

Do I enjoy learning, gaining new understanding? Do I often dig deeper into a subject than my teacher requires? Do I understand the value of learning beyond just making good grades?

Am I interested in how the human body functions? Am I intrigued by the ways medicine can be used to improve life?

If you answered "Yes" to most of these questions, chances are you have the right kind of personality for a medical career.

Q. How do I select the right school for Higher Secondary education (10+2) to enter Medical education?

Here are some questions to ask while you consider a college or university. Your career guidance counselor or science teacher can help you find the answers. You also should consult any college admission guidebook found in your school's guidance office, local libraries, and bookstores.

Does the school have a good faculty and a reputation for high academic standards? Is it accredited?

Does it have strong science faculty with good laboratory facilities?

Does it offer all of the required courses I need for acceptance to medical school?

Does the college have a designated advisor specifically trained to help students interested in the health professions?

Does it have a good track record for having its students accepted to medical school?

Does it offer extracurricular activities that appeal to me? Are there programs to do volunteer work at local hospitals or clinics?

Are there programs where I can demonstrate leadership and compassion?

Does it "feel right" for me? Am I comfortable with its size, location, social life, and general atmosphere?

Is it affordable for me and my family?

As you select a school/college remember that just as in high school, a good liberal arts education is a key ingredient to becoming a physician along with science subjects. You'll need a strong foundation in mathematics and the sciences that relate most to medicine: biology, general chemistry, organic chemistry, and physics. But it's important for your college experience to be broad. Knowledge in the humanities or liberal arts will help you prepare for the "people" side of medicine.

Q. What subjects I should study at Higher Secondary (10+2) to study Medicine and become a Doctor?

You should study Physics, Chemistry and Biology in (10+2) to study Medicine and become a Doctor. Whether you want to study MBBS (Allopathy) or BHMS (Homeopathy) or BUMS (Unani) or BAMS (Ayurvedic) you must study Physics, Chemistry and Biology at (10+2) to become a doctor.

Q. What is medical school/college really like? I hear it's long and tough. How long? How tough?

One of the important truths is "things that come easily usually aren't worth much." Medical school/college is challenging. If you want to take responsibility for people's health and well-being, you've got to be serious about learning. Once you've been accepted, the medical school faculty and staff will do everything they can to help you succeed. In fact, more than 97 percent of entering medical students obtain their M.D. degrees.

The curriculum at many medical schools/colleges has changed in recent years. However, here's a general, quick look at what you can expect during four/five years of medical school.

During the first two years you will study the basic sciences—anatomy, biochemistry, physiology, microbiology, pathology, and pharmacology—as well as behaviorial sciences. You'll also begin learning the fundamental techniques of taking a medical history and examining patients.

Next, you'll go into the hospital and various clinics to observe and work with experienced doctors and begin to learn how to take care of patients. At this time you'll begin to

explore the wide variety of career paths within medicine, such as family practice, internal medicine, surgery, psychiatry, obstetrics and gynecology, and pediatrics.

Your final years are spent continuing your contact with patients and doctors in a clinical setting while taking elective courses.

After medical school/college you will spend three to seven years in a residency, where you will gain further experience and training in the specialty you have chosen. You already may have an idea of which specialties interest you; however, it's good to keep an open mind until your third year of medical school.

Medical school/college usually lasts four/five years. In general, during the first two years, you study the sciences basic to medicine: anatomy, biochemistry, physiology, microbiology, pathology, and pharmacology, as well as behavioral sciences; introductory patient interviewing and examination techniques; and an introduction to health care. In the third year, you gain experience with patients in hospital, clinic, and office settings in the fields of internal medicine, family medicine, pediatrics, obstetrics and gynecology, surgery, and psychiatry. The fourth year is a mix of required and elective courses where you gain additional experience caring for patients. Each medical school differs in how it organizes its educational program.

Medical school/college is tough. A lot will be demanded of you both in the volume of information you will be expected to master and the rate at which you will be expected to learn. You will need good study habits and time management skills as well as a strong academic background. You also will need to be aware of and tap into the tremendous support, guidance, and mentorship that medical school faculty and staff provide to help you succeed. Medical schools are committed to their students and their education. In general, more than 95 percent of all students enrolled succeed in earning their M.D. degree.

Toward the end of medical school you will choose a specialty; after graduation you will spend at least thee years in a graduate medical education (residency) program. During that period you must obtain a license to practice.

Q. What is a doctor's career like?

Few fields offer a wider variety of opportunities. Most doctors' professional lives are filled with caring for people and continuously learning more about the human body. Every day in communities around the country, doctors work in neighborhood clinics, hospitals, offices, even homeless shelters and schools to care for people in need.

But physicians also do many other things. Physician researchers are at work today developing exciting new treatments for cancer, genetic disorders, and infectious diseases like AIDS. Academic physicians share their skills and wisdom by teaching medical students and residents. Others work with health maintenance organizations, pharmaceutical companies, medical device manufacturers, health insurance companies, or in corporations directing health and safety programs. People with medical skills are in demand everywhere.

Q. Would medicine provide me with a good living?

Medicine has many rewards—personally, intellectually, and financially. On average, doctors make about $160,000 a year in the US, but this amount can vary depending on where physicians live and what type of medical specialty they practice. As the American health care system changes, fewer doctors are working for themselves and more are joining health care systems, often as salaried employees. In these organizations, physicians often can command salaries comparable to executives in other occupations. In India a young Doctor with MBBS plus MD/MS can earn minimum Rs. 5, 00000.00 per annum and there is no upper limit.

Q. What is a primary care doctor? What are their careers like?

About one-third of the nation's physicians are generalists—"primary care" doctors who provide lifelong medical services for you and all the members of your family. General internists, family physicians, and general pediatricians are all considered generalist doctors. They are the first doctors you consult for medical care. And they are trained to provide the wide range of services children and adults need. When patients' specific health needs require further treatment, generalist physicians send them to see a specialist physician.

Specialist physicians differ from generalists in that they focus on treating a particular system or part of the body. Neurologists who study the brain, cardiologists who study the heart, ophthalmologists who study the eye, and hematologists who study the blood are just a few examples of specialists. They work together with generalist physicians to ensure that patients receive treatment for specific medical problems as well as complete and comprehensive care throughout life.

Q15. What are the specialization courses available after MBBS?

MD Anaesthesiology
MD Anatomy
MD Biochemistry
MD Community Medicine
MD Dermatology, Venereology & Leprosy
MD Forensic Medicine
MD General Medicine
MD Hospital Administration
MD Microbiology
MD Paediatrics
MD Pathology
MD Pharmacology
MD Physiology
MD Psychiatry
MD Radio-diagnosis
MD Radio-therapy
MS General Surgery
MS Ophthalmology
MS Obstetrics & Gynaecology
MS Orthopaedic Surgery
MS Otorhinolaryngology
(This is only an indicative list not an exhaustive list)

Q. How can I become a Homeopathic Doctor?

To be come a Homeopathic Doctor, you have to complete the course BHMS. Bachelor of Homeo Medicine & Surgery (BHMS) is of 5 years duration course. 10+2 or equivalent examination passed with Physics, Chemistry and Biology is essential eligibility for an aspirant. Admission is either on the basis of marks in qualifying examination or through a competitive entrance examination.

Q. How can I become an Ayurvedic Doctor?

To be come an Ayurvedic Doctor, you have to complete the course BHMS. Bachelor of Ayurvrdic Medicine & Surgery (BAMS) is of 5 and half years duration course including internship. 10+2 or equivalent examination passed with Physics, Chemistry and Biology is essential eligibility for an aspirant. Admission is either on the basis of marks in qualifying examination or through a competitive entrance examination.

Q. How can I become a Unani Doctor?

To be come an Unani Doctor, you have to complete the course BUMS. Bachelor of Unani Medicine & Surgery (BUMS) is of 5 and half years duration course including internship. 10+2 or equivalent examination passed with Physics, Chemistry and Biology is essential eligibility for an aspirant. Admission is either on the basis of marks in qualifying examination or through a competitive entrance examination. BUMS is offered in almost 25 colleges in the country. Some other courses such as 'Kamil-E-Tibb-O-Jarahat' and 'Mahir-E-Tibb' etc. equivalent to BUMS are also in trend.

Placements of doctors trained in Unani Medicine are in Unani Medical Colleges and hospitals. After post graduation, teaching and research are also good options.

The Central Council for Research in Unani Medicine is an autonomous organization of the Ministry of Health and Family Welfare Government of India. The Council is engaged in the multifaceted research activities in the field of Unani Medicine. The areas chosen for research include clinical research, drug research, literary research, survey and cultivation of medicinal plants, and family welfare research programme. The Council is 100% financed by the Government of India funds through union Ministry of Health & Family Welfare.

Q. What is the admission procedure to enter a Medical College for completing the MBBS course and become an allopathic doctor?

To enter a Medical College in India to become an MBBS doctor, you have to appear in the Medical Entrance Test/ Pre Medical Test (PMT) conducted at National Level or State Level. Any students studying in any part of the country can appear the National Level Entrance Tests, where as the state level entrances are open only to the domicile of the state. The eligibility criteria for domicile for state level tests vary from state to state and not uniform throughout the country. You have to consult the prospectus/notification of the particular state before applying if you are not a domicile of that state.

The minimum academic eligibility for appearing in the Medical Entrance (State Level/National Level) is generally HS (10+2) with Physics, Chemistry and Biology securing minimum 50% marks. However the minimum percentage varies from state to state and exam to exam (50% or 55% or 60%). Some entrance also requires minimum 50% marks in English.

Q.Which are the All India Entrance one can appear for admission into MBBS course?

The following exams are the All India Entrance Examination for admission into MBBS/BDS courses:

ALL INDIA ENTRANCE EXAMINATIONS

(After 10+2 with science)

		Notification (Tentative)
01.	Central Board of Secondary Education, New Delhi(15% All India Seats)	December
02.	All India Institute of Medical Sciences, New Delhi	January
03.	Manipal Academy of Higher Education, Manipal	February
04.	St. John's National Academy of Health Sciences, Bangalore	March
05.	Armed Force Medical College(AFMC), Pune	January
06.	Bharati Vidyapeeth, Pune	April
07.	Mahatma Gandhi Institute of Medical Sciences, Wardha	January
08.	JIPMER	February
09.	CMC, Vellore	February
10.	Sri Ramchandra Medical College & Research Institute, Chennai	March
11.	Jawaharlal Nehru Medical College, AMU, Aligarh	March
12.	BHU Institute of Medical Sciences, Varanasi	January
13.	GGS IP University (VM Medical College), Delhi	December

(This is only a tentative list and not an exhaustive list)

In addition to the All India Entrance Tests students can also appear in various State Level Entrance Test conducted by state agencies/authorities for admission into MBBS/BDS course in a particular state.

Q. What is AIPMT and how can I appear in AIPMT for admission into a good medical college. Please tell me in detail about AIPMT and also how can I prepare for AIPMT?

For admission to 15% of the total seats for Medical/Dental Courses in all Medical/Dental colleges run by the Union of India; State Governments, Municipal or other local authorities in India except in the States of ANDHRA PRADESH AND JAMMU & KASHMIR, the Central Board of Secondary Education conducts All India Pre-Medical/Pre-Dental Entrance Examination. As per the revised scheme of examination the AIPMT examination is conducted in two stages as per the following schedule.

1. Preliminary Examination
2. Final Examination

PATTERN OF AIPMT

Preliminary Examination:

The Preliminary Examination would consist of one paper containing 200 objective type questions (four options with single correct answer) from Physics, Chemistry and Biology (Botany & Zoology) to be answered on the specially designed machine-gradable sheet using Ball Point Pen only.

The duration of paper would be 3 hours.

Final Examination:

(Only for those who qualify in the Preliminary Examination).

The finally Examination would consist of one paper containing 120 objective type questions(four options with single correct answer) from Physics, Chemistry and Biology(Botany and Zoology) to be answered on the specially designed machine-gradable sheet using Ball Point Pen only.

The duration of the paper would be 3 hours.

Language of the Question Papers:

Candidate can opt for question papers either in English or in Hindi. This option should be exercised while filling in the Application Form. It cannot be changed later.

ELIGIBILITY

The candidate should be at least 17 years of age at the time of admission or will complete the age on or before 31st December during the year of admission. To be eligible to appear in competitive entrance examination, candidate must have passed any of the qualifying examinations as mentioned in the Information Bulletin. Provided also that to be eligible for competitive entrance examination the candidate must have passed in the subjects of Physics, Chemistry, Biology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology at the qualifying examination. In respect of candidates belonging to Schedule Caste/Scheduled Tribes or Other Backward Classes the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be 40% instead of 50% for General Candidates. Those who are taking plus two examinations in the year can also appear for the entrance test provisionally subject to their fulfilling the conditions later.

INFORMATION BULLETIN AND APPLICATION FORM

Bulletin containing the Application Form and other details is available from October, or as notified and can be had against cash payment of Rs.800 /- for General Category and Rs. 450/- for SC/ST category including examination fee from notified Canara Bank branches. There is provision for submission of application online also. Visit www.aipmt.nic.in for online submission of application. Detail about AIPMT is also available at CBSE website www.cbse.nic.in . To prepare for PMT you have to study your course material well and clear your concepts in Physics, Chemistry and Biology to answer objective type questions and application of various concepts. You can also buy some guidebook for PMT from the market and study these along with your course book. Regular coaching or Correspondence course will also help you in this matter.

How can I join AIIMS or CMC after completing (10+2)? Kindly let me know in detail about admission procedure of AIIMS and CMC, Vallore.

In order to join AIIMS you have to appear in the competitive examination after completing your +2 (HS) with physics, chemistry and biology. The competitive entrance Examination will be of 3 1/2 hours duration and will have one paper consisting of 200 objective type (multiple choice and reason-assertion type) questions, from Physics, Chemistry, Biology and General and General Knowledge. The details of distribution of marks are as follows:

Subject	Total Marks
Physics	60
Chemistry	60
Biology (Botny and Zology)	60
General Knowledge	20
Total	200

The general standard of the Competitive Entrance Examination will be that of 12th class under the 10+2 Scheme/Pre-Medical/Intermediate science or an equivalent. **No syllabus for the examination has been prescribed by AIIMS.**

Each year **50 seats** are available for admission to the graduate medical course, leading to the award of the degree of M.B.B.S. of the All India Institute of Medical Sciences. Out of these, **7 (seven) seats** are reserved for the Scheduled Castes, 4 **(four) seats** are reserved for the Scheduled Tribes and 5 **(five) seats** are reserved for the Foreign Nationals nominated by the Government of India. The remaining **34(thirty four) seats** are filled by the general candidates on the basis of a competitive examination. If requisite numbers of suitable candidates are not available to fill the seats reserved for the Scheduled Castes, the same are filled out of the candidates belonging to the Scheduled Tribes and vice versa. In case suitable candidates are not available from the above two reserved categories, the vacant seats are filled by the candidates from the general category.

CMC Vallore also conducts an all India Competitive Examination for admission into MBBS course. The performance in this examination is the basis of being called for interviews and final selection. The Entrance Examination is conducted on the basis of

10+2 Syllabus. The test is of Multiple choice and contain questions on Physics, Chemistry, Biology and General Ability). The total number of seat for MBBS course in CMC is 60.

Christian Medical College is affiliated to the Dr. MGR Medical University. The minimum qualification for admission to the MBBS course as prescribed by the University is the "Higher Secondary Examination or the Indian School Certificate Examination, which is equivalent to 'ten plus two' Higher Secondary Examination, taken after a period of 12 years of studies; the last two years of study comprising of physics, chemistry and Biology, with English at a level not less than the core course for English as prescribed by the National Council for Educational Research & Training, after the introduction of the 10 + 2 + 3 years educational structure as recommended by the National Committee on Education".

"Candidates should have passed in English and obtained 50% marks aggregate in Physics, Chemistry and Biology, taken together, both at qualifying and competitive examinations".

Only candidates who qualify the written test are called for the interviews. The MBBS course is of four and a half year's and is followed by one year of Compulsory Rotating Residential Internship. The course is taken in three stages, following a short foundation course which provides basic principles of Communication, Ethics and Problem Based Learning. The first stage is for 12 months and covers the basic sciences of Anatomy, Physiology and Biochemistry. The next stage is for 18 months and includes Pharmacology, Pathology, Microbiology and Forensic Medicine. The last stage is for 24 months and covers Ophthalmology, Otorhinolaryngology, Community Medicine, General Medicine, Paediatrics, Surgery, Orthopaedic Surgery and Obstetrics & Gynaecology.

For more information on the admission calendar and Prospectus etc, write to: Registrar, Christian Medical College, Vellore, 632 002, Tamilnadu.

As both the entrance examinations are highly competitive and few students from this region make it, you have to prepare from now for the admission test of AIIMS and

CMS. The following books may be helpful for preparing AIIMS/CMC admission test along with your (10+2) text books:

(1) Physics by H.C.Verma

(2) Chemistry by O.P.Agarwal and Physical Chemistry by R.C.Mukharjee

(3) Biology by M.P.Kaushik and Ramesh Gupta

(4) Tata McGraw Hill Publication in Physics, Chemistry, Biology

(5) Medical entrance guide by any reputed publisher.

Q. What is the admission procedure of Armed Forces Medical College? How can I get admission in AFMC?

Advertisements for admission/ recruitment appear in the leading news papers of the country in the month of December every year, for MBBS course. Candidates are required to submit their application forms in the prescribed format, along with other necessary documents mentioned therein.

The AFMC is affiliated to Maharashtra University of Health Science, Nashik and is recognised by the Medical Council of India.

Admission to MBBS course is based on written examination. The written examination is held on 1st Sunday of May. Successful candidates are called for interview in June for the courses starting in July. Admission is subject to medical fitness.

PROSPECTUS AVAILABILITY:

Prospectus is available on sale at all Major City GPOs/ HPO's/ Pos from the date of advertisement for approximately one month. The present cost of the prospectus is Rs. 250/-.

Course Duration:

The duration of MBBS course is four and a half year followed by internship of one year.

Service Liability:

Students have compulsory liability to serve as Commisioned Officers in the Armed Forces Medical Services. The offer of the type of commission will depend on the vacancies available. The candidates' parents/guardians are required to sign a bond agreement at the time of admission.

ELIGIBILITY AND QUALIFICATIONS TO APPEAR IN THE ENTRANCE EXAMINATION GENERAL:

A candidate seeking admission to the MBBS course is eligible to take the entrance examination if he/she fulfills the following criteria:

A candidate should be a citizen of India or be a subject of Nepal or Bhutan or a person of Indian origin migrated from Pakistan or any other foreign country with the intention of permanently settling in India. Must be unmarried. Marrying during the course is not permitted. Should be medically fit as per prescribed standards by the Govt. of India, Ministry of Defence

Must have attained the age of 17yrs on 31st Dec of the year of application, but must not have attained the age of 22 years on that date(Not more than 24 years in case of candidates who have passed or are appearing in final B Sc examinations).

Academic Qualifications:
Candidate must have passed all the subjects opted for in the first attempt of the qualifying examinations as a regular candidate with English, Physics, Chemistry and Biology taken simultaneously and securing not less than 60% of the aggregate marks in these 3 science subjects taken together and not less than 50% marks in English and 50% marks in each of the science subjects. They must have also passed an examination in Mathematics of the 10th standard.
Number of Seats:
A total of 130 students (105 boys & 25 girls) will be admitted.
Syllabus For the Examination:
The general standard of the entrance examination will be that of 11th and 12th class under the 10+2 scheme/pre-medical/intermediate science or an equivalent examination of the State Education Board/Indian University
Method of Selection:

Candidates who are found provisionally eligible as per the criteria of eligibility, will be called at one of the examination centres to appear in the competitive examination on 1st Sunday of May. Issue of admit cards. however does not necessarily mean acceptance of eligibility which will be further scrutinized at subsequent stages of selection.

The written examination centre will be allotted to candidates depending upon the administrative arrangements for the examination and availability of adequate seating capacity.

The Roll Number of the candidates who qualify for interview based on the above written examination will be published in the leading newspapers.

Interview of Candidate:

On the basis of their performance in the written examination selected candidates in order of roll numbers will be called for an interview to be held in the month of June at AFMC, PUNE. The exact date of the above interview will be intimidated to the selected candidates. Request for change of date of interview will NOT be entertained. The candidates will be required to produce originals of all certificates/mark sheets at the time of interview. All candidates will produce result or proof of having appeared in the qualifying examination held, at the time of interview (if the result of such examination has not been declared).

On the basis of the above test and interview two merit lists, one for boys and one for girls, will be drawn up and admissions will be offered only to candidates in accordance with their merit position. Individual letters of admission will be sent only to selected candidates who would be required to join AFMC. The remaining candidates will be on waiting list. The result will be published by the DGAFMS in the newspapers.

SC/ST Candidates:

Ten seats are reserved for SC/ST candidates provided :

The SC/ST candidates must qualify in the written examination and come within the zone to be called up for interview.

They must come within the first 500 in the final combined merit list of boys and girls.

MEDICAL STANDARDS:

The candidate must be in good physical and mental health and free from any disability likely to interfere with the efficient performance of duty in the Armed Forces. Medical examination will be done by a Board of Officers at AFMC Pune, prior to admission to the College. Medical Board will categorize as Fit and Unfit, in accordance with the prescribed standards. (Also visit www.afmc.nic.in for more information).

Q24. How Can I join JIPMER (Jawaharlal Institute of Post-graduate Medical Education and Research)? What is the procedure for admission?

The various courses offered at JIPMER are as follows:

I. Under-graduates Courses:

1. M.B.B.S.	-	98	Seats
2. B.Sc. (Nursing)	-	75	Seats
3. B.Sc. (Medical Laboratory Technology)	-	30	Seats
4. B.Sc.(Medical Radiation Technology)	-	4	Seats
5. B.Sc.(Operation Theatre Technology)	-	4	Seats
6. B.Sc.(Perfusion Technology)	-	4	Seats
7. B.Sc.(Dialysis Technology)	-	4	Seats
8. B.Sc.(Nuclear Medicine Technology)	-	4	Seats

II. Post-graduates Courses:

1.	M.D. and M.S.	-	124	Seats
2.	M.Sc.(Medical Biochemistry)	-	9	Seats
3.	M.Sc.(MLT-Microbiology)	-	4	Seats
4.	M.Sc. (Medical Biometrics & Information)	-	5	Seats
5.	Ph.D.	-	18	Seats

III. Super Specialty Courses

1.	D.M. (Cardiology)	-	3	Seats
2.	D.M. (Neurology)	-	2	Seats
3.	D.M. (Neonatology)	-	1	Seat
4.	D.M. (Clinical Immunology)	-	1	Seat
5.	D.M. (Clinical Pharmacology)	-	1	Seat
6.	D.M. (Clinical Hematology)	-	1	Seat
7.	M.Ch. (Cardio Thoracic Surgery)	-	3	Seats
8.	M.Ch. (Urology)	-	3	Seats
9.	M.Ch. (Neurosurgery)	-	1	Seat
10.	M.Ch. (Surgical Gastroenterology)	-	2	Seats

IV. <u>Fellowship Courses</u>

1.	Fellowship in Diabetology	-	3	Seats
2.	Fellowship in Pediatric Critical and Emergency Care	-	2	Seats
3.	Fellowship in Oncology	-	2	Seats
4.	Fellowship in Tropical Parasitology	-	1	Seat

V. <u>Other Courses (Sponsor Course) / Certificate Course:</u>

1.	Medical Record Officer	-	15	Seats
2.	Medical Record Trainee	-	15	Seats
3.	P.G. Diploma in Public Health Management	-	20	Seats
4.	One year certificate course in Blood Banking Technology	-	4	Seats
5.	Nine months certificate course in Emergency Medical Trauma Technician	-	20	Seats

Admission Procedure:

I. M.B.B.S.

<u>How to apply:</u>

Admission for MBBS course will be carried out for every year. Notification will be published every year in all major News Papers of India. Application form and prospectus will be available in State Bank of India, JIPMER Campus and can be

obtained in person or by post by paying the prescribed fee in cash or by bank demand draft. Online application will be available on the website www.jipmer.edu.in

II. P.G. Degree Courses

1. M.D. (General Medicine)
2. M.D. (Anatomy)
3. M.D. (Pathology)
4. M.D. (Microbiology)
5. M.D. (Physiology)
6. M.D. (Pharmacology)
7. M.D. (Pediatrics)
8. M.D. (Anesthesiology)
9. M.D. (Dermatology)
10. M.D. (Biochemistry)
11. M.D. (Community Medicine)
12. M.D. (Radiotherapy)
13. M.D. (Radio-Diagnosis)
14. M.D. (Transfusion Medicine & Immunology Hematology)
15. M.D. (Forensic Medicine)
16. M.D. (Psychiatry)
17. M.D. (Pulmonary Medicine)
18. M.S. (Obstetrics & Gynaecology)
19. M.S. (General Surgery)
20. M.S. (Orthopedics Surgery)
21. M.S. (Ophthalmology)
22. M.S. (Oto-Rhino-Laryngology)

How to apply:

Admission for all the course will be carried out for every year. Notification will be published in the month of December every year in all major News Papers of India. Application form and prospectus will be available in State Bank of India, JIPMER Campus and can be obtained in person or by post by paying the prescribed fee in cash or by bank demand draft. Online application will be available on our website also. www.jipmer.edu.in

III. Ph.D. (Full Time)

Sl. No.	Subject	Seats
1	Anatomy	2
2	Physiology	2
3	Biochemistry	2
4	Pathology	2

5	Microbiology	2
6	Pharmacology	4
7	Clinical Immunology	2
8	Clinical Pediatrics	2
TOTAL		18

How to apply:

Admission for the above course will be carried out for every year. Notification will be published in the month of May every year in all major News Papers of India.

IV. M.Ch.

Sl. No.	Subject	Seats
1	Urology	3
2	Cardiothorasic Surgery	3
3	Neurosurgery	1
4	Surgical Gastroenterology	2
TOTAL		9

How to apply:

Admission for the above course will be carried out for every year. Notification for will be published in the month of May every year in all New Papers of India and application form and prospectus available in State Bank of India, JIPMER Campus and can be obtained in person or by post by paying the prescribed fee in cash or by bank demand draft.

V. Para-Medical & Other Courses

Admission for paramedical courses will be carried out for every year. Notification will be published in the month of May in all New Papers of India and application form and prospectus will be available in State Bank of India, JIPMER Campus and can be obtained in person or by post by paying the prescribed fee in cash or by bank demand draft.

Candidates are admitted for all the paramedical courses based on Common Entrance Examinations conducted by the Institute.

Q. How can I join Manipal Academy of Higher Education to become a Doctor?

The undergraduate entrance process is based on the candidates rank in the **All India MAHE Under Graduate Entrance Test (UGET).** Eligibility: General Category - Indian Nationals, pass in 10+2, A level, IB, American 12th grade or equivalent with Physics, Chemistry, Biology and English and 50% in PCB. Admissions are through merit in the entrance test.

Test Pattern: In all there will be three question papers with multiple choice objective type questions.

For detail please visit MAHE website www.manipal.edu .

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Andhra Pradesh?

Engineering, Agriculture & Medical Common Entrance Test (EAMCET) is conducted by JNTU or one of the State Universities of Andhra Pradesh (on rotation) for admission to MBBS/BDS/B.Pharm/BAMS/BUMS/BHMS courses in the state of Andhra Pradesh (www.apemacet.org).

Admission is open to Indian Nationals and residents of Andhra Pradesh. The following are considered as State residents:

(i) Candidates who have resided in the State for 10 years excluding periods of study outside the state; (ii) Candidates either of whose parents have resided in the state for 10 years; (iii) Candidates either of whose parents/spouses of those in state/central, Public Sector, Local Bodies, Universities employed within the state at the time of application. (iv) Candidates should have passed or appeared for the final year of Intermediate Examination (10+2 pattern) with Biology, Physics and Chemistry as optional including practical tests in these subjects, **OR** any examination (10+2 pattern) with Biology, Physics and Chemistry including practical tests in each of these subjects, recognized as equivalent to Intermediate by the Board of Intermediate Education, A.P.

(v) Candidates should complete 17years of age as on 31st December of the year of admission. There is no upper age limit.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Assam?

Common Entrance Examination (CEE) is conducted for admission to first year MBBS/BDS courses in medical colleges and one dental college of Assam. Admission is open to Indian nationals and native/permanent residents of Assam (20 years). Children of the employees of the State Government posted outside the state, including officers allotted to Govt of Assam from All India Services are exempted from the clause. The age limit is 17-24 years on 31st December of the year of admission. Admission is on the basis of merit in the Common Entrance Examination. The CEE consists of 3 papers on the syllabus of Assam Higher Secondary Education Council in Physics, Chemistry and Biology (Botany & Zoology). Each paper carries 100 marks. Exemption from CEE: (a) Nominated candidates; (b) Candidates ranked within first ten position in the qualifying exam of Assam Higher Secondary Education Council securing at least 75% aggregate marks in Physics, Chemistry and Biology.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Bihar?

Combined Medical Education Entrance Test (CMEET) is conducted for admission to MBBS/BDS/BAMS/BHMS courses in the state of Bihar. Admission is open to Indian citizens and Bihar native. The following satisfy the Bihar natives: (a) Candidates whose father/mother have been resident of Bihar for 10 years; (b) Children of Central Govt employees serving in the state; (c) Children of State employees/members of All India Services of Bihar cadre; (d) Candidates whose parents are not alive may apply with 10 years residence certificate from DM. Seats are also available for Govt of India, TISCO, Coal Mines Welfare Organization nominees.

The lower age limit is 17 years and no prescribed upper age limit. Selection is on the basis of merit in the CMEET which is HS (10+2) standard. The test is conducted in Physics, Chemistry and Biology.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Delhi?

The University of Delhi holds Common Entrance Examination for admission to MBBS/BDS at 3 medical colleges: Lady Hardinge Medical College, Maulana Azad Medical College and University College of Medical Sciences. Govt of India nominees (from Arunachal Pradesh, Andaman & Nicobar Islands, Dadar & Nagar Haweli, Ladakh, Manipur, Meghalaya, Mizoral, Nagaland, Sikkim and Tripura) and children/widow of Armed personnel disabled/killed in action are exempted from CEE.

Academic qualification for appearing in CEE is 12 year Senior Secondary (10+2) conducted by CBSE, New Delhi (except Patrachar Vidyalaya and Open School) with Physics, Chemistry, Biology and English (Core or Elective) securing minimum 50% aggregate marks in these subjects **from the recognized schools conductiong regular classes situated within the Territory of Delhi.** The lower age limit is 17 years on 31st December of the year of admission. The CEE consists of two papers of (i) Physics & Chemistry (ii) Botany & Zoology. Each paper is of generally two and half hours duration and carries 600 marks each. The questions are of objective type.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Haryana?

MBBS/BDS Entrance Examination is conducted by Maharshi Dayanand University for admission into MBBS/BDS courses in the state of Haryana. Admission is open to Resident of Haryana. Candidates should have studied class X, XI and XII standard from an institution located in Haryana. Govt of India nominees are exempted. The academic eligibility is same with other state level entrance mentioned above and minimum age is 17 years on 31st December of the year of admission. There is no prescribed upper age limit. The entrance test consists of papers on Physics & Chemistry (combined) and Botany & Zoology (combined) of 2 hours duration each with objective type questions of 300 marks. A merit list of candidates (1.5 to 2 times) prepared for interview. Weight age is given for sports participation.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Himachal Pradesh?

Admission to MBBS courses in Himachal Pradesh is based on merit in competitive examination (except govt nominees) conducted by Himachal Pradesh University, Shimla.

Academic qualification is 12 years Senior Secondary/ Pre-Medical with Physics, Chemistry and Biology securing 50% aggregate marks including practical and a mere pass in English. BSc degree holders securing 50% marks with any three subjects Botany, Zoology, Chemistry, Physiology, Human Anatomy, Biochemistry and Physics are also eligible. Such candidates should have passed (10+2) exam with Physics, Chemistry and Biology.

Children of Himachalis (15 years stay) and Employees of State Govt/autonomus bodies are eligible for admission. Age limit is 17-25 years on 31st December of the year of admission.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Karnataka?

Ans: State Level Common Entrance Test (CET) is conducted by the Common Entrance Test Cell, Government of Karnataka for admission to all professional colleges including MBBS/BDS in Government and private colleges for both **Free Seats and Payment Seats in** affiliated colleges of Universities of Bangalore, Gulbarga, Karnataka, Kuvempu, Mangalore & Mysore (MAHE conduct separate test).

ACADEMIC ELIGIBILITY : The applicant should have passed Karnataka 2nd PUC / 12th std. or equivalent exam with PHYSICS, CHEMISTRY & BIOLOGY as optional subjects with ENGLISH as one of the languages of study and obtained at least 50% marks in the PCB group, provided that for Dental course, the candidate must also have secured 50% of marks in English language. (40% in the case of SC / ST / Category-I candidates.) For admission to these courses, the applicant should have completed the age of 17 years as on 31st December of the year appearing the CET.

All seats in Government colleges and 50% seats in private colleges are open to Karnataka students. **Payment seats:** 50% seats in private colleges are open to Karnataka and other state candidates. The following satisfy the Karnataka student clause:

(a) The candidate should have studied and passed in one or more Government or Government recognised educational institutions located in the State of Karnataka for a minimum period of SEVEN academic years commencing from I standard to 2nd PUC / 12th standard as on 1st July of the year in which the Entrance Test is held

and has appeared and passed SSLC/10th standard or 2nd PUC / 12th standard examination from Karnataka State. In case of the candidate who had taken more than one year to pass a class or standard, the years of academic study is counted as one year only.

(b) The candidate should have studied and passed I and II year Pre-University Examination or equivalent examination within the State of Karnataka from an Educational Institution run or recognised by the State Government and that either of the parents should have studied in Karnataka for a minimum period of SEVEN years, which should be evident from the certificates issued by the concerned institutions.

(c) In the case of candidates whose mother tongue is Kannada, Tulu or Kodava and who are residing outside the State of Karnataka but within the territory of India as on 1st July of the year of admission, such candidates should have passed the qualifying examination from an University or Board or any other Institution located outside Karnataka. Provided also that the candidate shall undergo a test which will be conducted by the CET Cell on to establish his ability to speak, read and write Kannada.

(d) A candidate whose mother tongue is Kannada, Tulu or Kodava and who resides in disputed Kannada speaking area of South Sholapur or Akkalkot or Jath or Gadhinglaj Taluks of Maharashtra State or Kasargod Taluk of Kerala State. The candidate shall undergo a test which will be conducted by the CET Cell to establish his ability to speak, read and write Kannada.

(e) In the case of a candidate who is son or daughter of defence personnel who has worked continuously in Karnataka as on any day between 1st July of the preceding year to 30th June of the year of admission. The candidate should have studied and passed the qualifying examination from any Government or Government recognised educational institution located in Karnataka.

(f) Son or daughter of serving defence personnel who at the time of joining the defence service had declared his/her hometown a place in the State of Karnataka. Proof of such domicile should be obtained and produced by obtaining the extract from the Record Office of the Defence unit.

(g) In the case of a candidate who is a son or daughter of a defence personnel who had served in Karnataka for at least one year and is posted on duty directly to the disturbed areas of Jammu and Kashmir or North-East and whose family is permitted by Defence Authorities to continue to stay in Karnataka. Such candidate should have studied and passed the qualifying examination from any Government or Government recognised educational institution located in Karnataka.

(h) Son or daughter of an ex-servicemen who at the time of joining the defence service had declared a place in Karnataka as his home town, proof of such domicile should be obtained and produced from the "Deputy Director, Department of Sainik Welfare and Resettlement".

(i) In the case of a candidate being a son or daughter of an employee of the Union Government or an employee of the Union or Karnataka State Government Undertaking or Joint Sector Undertaking, who is liable to be transferred anywhere in India as per the terms and conditions of his employment and has worked in Karnataka as on any day from 1st July of previous year to 30th June of the year of entrance test and such candidate has studied and passed the qualifying examination from any Government or Government recognised educational institutions located in Karnataka.

(j) Son or daughter of a working or retired employee of the Union Government or employee of Union or Karnataka State Government undertaking or Joint Sector undertaking where such employee; (a) had declared to the employer at the time of joining service any place in Karnataka to be his home town; and (b) had studied in any Government or Government recognised educational institution or institutions located in Karnataka for not less than seven years at any time between 1st standard and 12th standard, or Pre-University Examination; and (c) was or is liable to be transferred anywhere in India as per the terms and conditions of his employment.

(k) Son or daughter of Members of Parliament elected from Karnataka.

(l) Son or daughter of serving or retired employee :(a) belonging to All India Service of Karnataka cadre; and (b) of the Karnataka State Government, who has served

or is serving outside the State of Karnataka during the period corresponding to Candidate's study outside the State from 1st standard to 2nd PUC or 12th standard examination can be added to make up the seven year study within Karnataka as required under clause (a) above.

NOTE: Son or daughter in the various Clauses / Eligibility Criteria / Conditions specified above means only natural born son or daughter.

Q.What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Kerela?

Common Entrance Examination (CEE) is conducted for admission to MBBS, BDS, B.Pharm, BSc (MLT) and BSc (Nursing) courses in the state of Kerela. Admission is open to Indian citizens of Kerala origin. Seats are also reserved for Govt of India/Pondicherry/Children of Defence personnel killed/disabled/missing or Ex-service man/ Anglo Indian Community candidates.

Academic qualification required is Pre-degree examination of Universities of Kerela or equivalent (10+2) with Physics, Chemistry and Biology with 59% aggregate marks. BSc degree holders with Physics, Chemistry, Zoology, Botany/Biochemistry with 50% marks in the main and subsidiary subjects taken together are also eligible. Such candidates should have passed the qualifying exam with Physics, Chemistry and Biology. The minimum age required for admission is 17 years on 31st December of the year of admission. Selection is on the basis of merit in CEE conducted at various centers in the state. The exam is of (10+2)/Pre-university standard and consists of two papers in Physics & Chemistry and Biology (Zoology & Botany) The questions are of objective type multiple choice.

Q. What is the admission procedure for admission in state Medical Colleges for MBBS in the state of Madhya Pradesh?

Pre-Medical Test (PMT) for admission to MBBS/BDS is conducted by Professional Examination Board, Madhya Pradesh, Bhopal for admission into the medical colleges in the state. Admission is open to Indian citizens and MP native. The following satisfy the MP nativity: (a) Bonafide resident of MP (b) Candidates should have been educated in educational institutions in the state for 3 consecutive years during the 5 years immediately preceding the year of admission (c) Children of a pensioner/employee of MP

Govt or Central Govt/ Public Sector Undertaking/ Officers of All India Service on MP cadre. Academic qualification is 12 years Sr. Secondary (10+2) with Physics, Chemistry and Biology. The minimum age required for admission is 17 years on December 31st of the year of admission. Admission is on the basis of merit in the PMT.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Tamil Nadu?

Tamil Nadu Professional Course Entrance Examinations (TNPCEE) is conducted by ANNA UNIVERSITY, Madras for candidates who seek admission to professional courses in Tamil Nadu offered by Anna University, Government Colleges, Government Aided and Private Professional Colleges coming under the Perview of the Directorate of Medical Education, Office of the Commissioner of Indian Medicine & Homeopathy, Tamil Nadu Agricultural University, Tamil Nadu Veterinary & Animal Sciences University for free seats and payment seats

The candidates selected under the payment seat category have to pay higher tuition fees than the candidates selected under the free seat category. Both free seats and payment seats will be filled by the Government of Tamil Nadu. These Entrance Examinations are applicable to candidates belonging to Tamil Nadu or those who satisfy the nativity/domicile requirements specified for admission to the Professional Courses by the respective admitting authorities.

Other State Candidates are not admitted through TNPCEE to Professional Courses offered by the Directorate of Medical Education; the Office of the Commissioner of Indian Medicine & Homeopathy, Tamil Nadu Agricultural University and Tamil Nadu Veterinary and Animal Sciences University, other State Candidates will not be permitted to appear in the Entrance Examinations for admission to those courses.

QUALIFICATIONS:

12 years Higher Secondary (Academic) or equivalent with Physics, Chemistry, Biology (Botony & Zoology) taken together securing 60% marks in each subject and 70% (140 out of 200) aggregate marks. BC/SC & ST candidates securing 55-60 % and 40% marks in each Science subject are also eligible for admission.

AGE:

Below 21 years on July1 (24 years for SC/ST) of the year of admission.

DOMICILE:

Candidates whose parents have permanent residence in the State are eligible. *Exemptions :* Candidates who have studied from Class 9th to Qualifying Examination in the State; Children of Defence Personnel of TN origin who have passed 10th exam from theState.

SELECTION:

Admission will be made on the basis of the performance of the candidates in the Qualifying Examination (Higher Secondary Course or equivalent) and in the TNPCEE in the ratio 200:100. The Entrance Examination is conducted in the last week of June. It comprises of papers - Mathematics, Biology and Physical Sciences (Physics & Chemistry). The candidates have to appear for either two or all the three papers of the Entrance Examination corresponding to the courses to which they seek admission.

HOW-TO-APPLY:

Prospectus cum Application Form for TNPCEE can be obtained in the month of January/February from the specified Government colleges on Payment. Forms may be obtained from the Secretary TNPCEE, Anna University, Chennai-25

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Rajasthan?

A Joint *Pre-Medical Test* (PMT) for admission to the 1st year MBBS/BDS Course for the Medical Colleges in the state of Rajasthan is conducted by University of Rajasthan.

QUALIFICATIONS:

A pass in the 1st year Science exam of the three year Degree Course (Pass/Hons) of the University in Rajasthan; Higher Secondary Science (10+2) Exam or any other exam recognised as equivalent therein with English and Medical group of subjects (Physics, Chemistry and Biology). *OR* BSc Exam of an Indian University recognised by Rajasthan University with not less than three of the following subjects : Chemistry, Botony and Zoology provided further that he/she has passed the earlier Qualifying Examination with English and Medical group of the subjects.

AGE: 17 years on December 31 of the year of admission.

DOMICILE:

Candidate who has studied for at least 3 years continuously as a regular student in a recognised institution in the State or whose father/mother has continuously resided in the State for a period of at least 10 years and he/she (candidate)has studied for 5 years in a recognised institution in Rajasthan or whose father/mother is an employee with 3 years' service on October 1 of the year of admission of the Rajasthan Government (including officers of All-India Service borne on the State cadre) Undertaking, Corporation, Municipal Boards, Improvement Trust formed under the Act incorporated in Rajasthan , a University or Higher Secondary Board in Rajasthan or whose father/mother is permanent employee of Indian Defence Service and is either of Rajasthan origin irrespective of his place of posting or is posted in Rajasthan at the timeof last date of the application for admission.

SELECTION:

All the candidates except those belonging to Govt of India nominees are to appear at the PMT held by the University of Rajasthan, Jaipur in the subjects of Chemistry, Physics, Botony and Zoology. Question Papers in all the subjects are set in English as well as in Hindi. Each paper is of 2 hrs duration and is of 300 marks. The questions are of Multiple Choice Objective-Type. Selection is based on the merit in the test.
The candidates may obtain General Guidelines for PMT and Application Forms in April from the controller of Examinations, PMT, Rajasthan University, RA Podar Institute of Management, Jawahar Lal Nehru Marg, Jaipur-302004 on cash payment or by sending a Bank Draft through Registered post.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Punjab?

A *Joint Entrance Examination* Pre-Medical Test (PMT) for admission to the first year MBBS/BDS/BAMS courses for the above medical colleges in the State is held by one of the Universities. 15% of total seats are filled through All-India Entrance Test for MBBS/BDS courses held by CBSE, New Delhi.

QUALIFICATIONS:

10+2 or equivalent with at least 50% (45% for SC/ST) aggregate marks in the four

compulsory subjects English, Physics, Chemistry and Biology. Those awaiting the result of qualifying exam may also apply.
AGE: 17 years of age on December 31 of the year of admission.
DOMICILE: PMT is open to candidates from Punjab only. *Exceptions* : November 1984 riot affected displaced persons can also apply for admission.
SELECTION: Selection is based on merit in PMT. The Pre Medical Test is of objective type, multiple choice questions in Physics, Chemistry and Biology of $1^1/_2$ hrs duration each. The exam is on the pattern of CBSE. Candidates are also required to appear in the Interview.
HOW TO APPLY: Application Form together with Prospectus and Syllabus can be obtained from the University conducting the Entrance Test and the Principals of the Medical Colleges during the month of April of the year of admission on cash payment or by Registered Post.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Orissa?

A *Joint Entrance Examination* (JEE) for admission to the first year MBBS/BDS course for the above medical colleges in the State is held by one of the College. 15% of total seats are filled through All-India Entrance Test held by CBSE, New Delhi.
OUALIFICATIONS: 12 years Senior Secondary/Intermediate Science with English, Physics, Chemistry and Biology (Botony and Zoology) securing at least 50% marks in the `Science subjects' taken together. Candidates who have appeared in the qualifying Examination are also eligible. Candidates should be medically fit.
AGE: 17 years of age on December 31 of the year of admission.
DOMICILE: Permanent residents of Orrisa, Sons/daughters of the employees of the Central/State/Govt Undertaking/Members of All-India Services (Orissa Cadre) serving in Orisa, Children of Defence personnel serving in the State, Orissa students living in outlying Oriya speaking tract of the neighbouring states of Orissa.
SELECTION: Merit in the Entrance Examination (2 hrs duration - 150 marks). The test consists of one question paper of Multiple Choice Objective-Type Questions covering

Physics, Chemistry, Biology and English of Qualifying Examination standard.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Maharashtra?

State level procedure has been formed for admission to all seats in Government/ Municipal Medical Colleges (14 MBBS, 4 BDS) and 'Free Seats' and 'Payment Seats' in Private Colleges (15MBBS/BDS)as per Supreme Court directive. The scheme is applicable to degree courses in the Faculty of Medicine, Dental, Ayurvedic,Homeopathic, Unani and Nursing (MBBS, BDS, BAMS, BHMS,BUMS,BNursing). All seats in Government Colleges and Private Colleges (50% Free and 50% Payment seats) are to be filled up on the basis of merit. Private Colleges have free seats and payment seats on 50:50 basis. The candidates for payment seats have to pay higher fees as prescribed. Separate notifications are issued for admission to (1) Government/Private Colleges (MBBS, BDS, BAMS, BHMS, BNursing) (2)Municipal Colleges (3)Pharmacy Colleges.
QUALIFICATIONS:
12 years Higher Secondary with Physics, Chemistry, Biology (Botony & Zoology) and English with 50% of total marks (40% for BC) in single attempt from a school in Maharashtra.
AGE: 17 years on December 31 of the year of admission.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Gujrat?

There are common rules and regulations for admission in the Government Medical Colleges of Gujarat for admission to the MBBS/BDS course on the basis of marks obtained in the qualifying examination (10+2).
15% of total seats are filled by the All-India Pre-Medical/Pre-Dental Entrance Test conducted by CBSE, New Delhi.
QUALIFICATIONS: Higher Secondary Exam (Science Stream) under 10+2 educational pattern of the Gujrat Higher Secondary School Education Board or CBSE from any school in Gujrat with at least 55% (45% for SC/ST/NT/DT) marks in the subject of Physics, Chemistry, Biology, Mathematics and English.

AGE: 17 years on December 31 of the year of admission. **DOMICILE:** Candidates should have passed 12 years Senior Secondary exam from the institutions located in Gujrat state. *Exceptions :* Sons/daughters of All-India Service Officers allotted to Gujarat state.Sons/daughters of State Govt employees who have been posted outside the state.

SELECTION:

Admission is made strictly on merit on the basis of marks obtained in the Qualifying Examination.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of Goa?

Admission to Goa Medical College is made on the basis of the merit in qualifying examination in Physics, Chemistry and Biology. The candidate should have passed Senior Secondary Examination after a 12 years' study with Physics, Chemistry, Biology and English securing 50% (40% for SC/ST) aggregate marks, in Physics, Chemistry and Biology. Candidate should be medically fit. Candidates should have been residents of Goa for 10 years (5 years for candidates whose parents are of Goan origin) and they should have passed the qualifying (11th and 12th) exam from Goa. EXEMPTIONS: Children of regular State Govt./Central Govt. employees (including Defence Personnel) transferred to and serving/served in the state and Ex-Servicemen; they should have passed the 11th and 12th exam from Goa. The minimum age should be 17 years on December 31 of the year of admission.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of J&K?

Admission to MBBS/BDS in Medical/Dental Colleges is made through an Entrance Test. It is open to those who have passed qualifying exam. from J &K. Children of permanent residents of State; children of officers belonging to J&K State who are on deputation to Central Governmentand children of permanent residents of Defence personnal and other paramilitary forces serving in various parts of the country/outside are considered exceptions.

QUALIFICATIONS:

Higher Secondary Exam (Science Stream) under 10+2 educational pattern with English, Physics, Chemistry and Biology with at least 50% (40% for reserved categories: SC, Gujjar & Bakerwal and candidates from Leh and Kargil areas) aggregate marks in PCB. Candidates should be medically fit.

AGE: 17 years on or before December 31 of the year of admission.

DOMICILE**:** Admission is open to candidates who have passed Qualifying Examination from an Institute in J & K. *Exceptions :* Children of permanent residents, State Employees serving in Government Offices/Public Sector Undertaking outside of the State;Children of Officers belonging to J & K State who are on Deputation to Union Government; Children of permanent resident in Defence and Parliament forcs serving anywhere.

SELECTION:

Admission is made strictly on merit on the basis of marks obtained in the Qualifying examination. The examination is held in Physics, Chemistry and Biology of $1^1/_2$ hours duration. In case of tie, candidates obtaining higher marks in Biology/ Chemistry are given preference.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state Uttar Pradesh?

Combined Pre-Medical Test (CPMT) for admission to the 1st year MBBS/BDS /BHMS/ BAMS /BUMS Courses is held by one of the concerned Universities in the State by rotation and in accordance with the directions of the State Government. 15% of total seats are filled on All-India basis through All-India Entrance Test conducted by CBSE, New Delhi.

QUALIFICATIONS:

Pass in Intermediate Science Examination or equivalent with Physics, Chemistry and Biology are eligible to appear in the Test. Such candidates as have appeared at the Intermediate Examination of the year of admission can also appear in the test provisionally.

AGE**:** 17 years of age on December 31 of the year of admission.

DOMICILE:

· Bonafide residents of Uttar Pradesh.

· Wards of employees of Govt of India serving in UP.

· Displaced students registered in UP.

· Children of Indian nationals who have been repatriated from other countries.

· Wards of employees in Defence services (Army, Air Force, Navy) serving in any part of country, provided the wards have passed the Qualifying Examination from UP.

· Children of Public Sector Undertaking employees serving in UP.

SELECTION: A competitive Examination is held in Zoology, Botony, Chemistry, Physics, and Hindi containing Objective-Type questions in English and Hindi medium. The Hindi language paper will be of 1 hour duration and will be of qualifying nature only. All other papers (I: Chemistry and Physics and II: Zoology and Botony) are of 2 hrs each.

Q. What is the procedure for admission in state Medical Colleges for MBBS in the state of West Bengal?

A Joint Entrance Examination (JEE)for admission to MBBS/BDS Courses is held by the Central Selection Committe constituted by the Government of West Bengal. 15% of total seats are filled on All-India basis through All-India Entrance Test conducted by CBSE, NewDelhi.

QUALIFICATIONS: Passed in Intermidiate Examination of WB council of Higher Secondary education or equivalent exam. recognised by concerned University(Calcutta, Burdwan & North Bengal) with the prescribed subjects English, Physics Chemistry, Biology and Vernacular or any other fifth subject having full marks not less than 100 and pass marks not less than 30 in the above subjects.

AGE: 17 years of age on December 31 of the year of admission.

DOMICILE: To be eligible for admission the respective categories of candidates shall be citizen of India and either have been residing in the state of West Bengal uniterruptedly/ continuously for not less than 10 years immediately prior to the date of making application for admission. Candidate who or whose parents are permanent residing in

West Bengal having permanent home addresses in the state of WB. SELECTION: Admission is made on the basis of merit as determined by the Joint Entrance Examination which is usually held in April/May of the year of admission provided there are sufficient numbers of eligible candidates. The examination comprises three papers namely Physics, Chemistry of 100marks each and Biological Sciences of 200marks.

Q.Which are the Top 10 Medical Colleges in India?

The top 10 Medical Colleges in India are-

(i) All India Institute of Medical Sciences, Delhi
(ii) Bangalore Medical College, Bangalore
(iii) Kasturba Medical College, Manipal
(iv) Madras Medical College, Chennai
(v) Christian Medical College, Vellore
(vi) Armed Forces Medical College, Pune
(vii) St. John's Medical College, Bangalore
(viii) Osmania Medical College, Hyderabad
(ix) JIPMER, Pondichery
(x) Maulana Azad Medical College, Delhi

(Source: India Today Survey)

Q. Who is a Dentist? What personal qualities required to become a Dentis?

Dentists are responsible for the dental and oral healthcare services to the general public and helping those in distress. However, a career in dentistry is not for the faint hearted. General dental practice is recognized as being close to the top of the list of the most stressful occupations around.

There is a wide choice in dentistry from being a salaried consultant oral surgeon working in a hospital environment to the independence and freedom of running a business that a principal experiences in running a private practice.

The personal qualities required by a Dentist:

There are four fundamental personal qualities that are pre-requisites for someone to enjoy a successful career in dentistry.

Firstly, a quality that we may term as being a “people person”. That is to say, an outward going personality in someone who genuinely enjoys working with people and is someone who cares.

Secondly and perhaps rather obviously, a high degree of manual dexterity is required in a person with a practical approach to life.

Thirdly, the ability to manage and play the role of team leader is required, along with the business skills needed to manage a successful enterprise.

Finally, a strong sense of commitment to the local community and to serving others.

Q. How can I become a Dentist? What is the Career prospect?

Full training and completion of a professional qualification is mandatory to become a dentist. The best course is the BDS (Bachelor of Dental Surgery) offered by Universities/ Dental Colleges. The course is of 4/5 years duration and equivalent to other bachelor degree like MBBS/BE etc.

Entry requirements

The entry requirement for BDS is (10+2) with Physics, Chemistry and Biology. The entrance is normally through competitive entrance test. Some Dental Schools offer an extra preliminary pre-dental year for those without the necessary science base for entry requirements. In most of the states the entrance test for BDS is combined with MBBS entrance test and hence preparation for MBBS and BDS entrance is same.

The dental curriculum includes a sound theoretical and practical training in all aspects of dentistry against a background of general medicine.

Career Prospects:

General Dental Practice

The vast majority of Dentists will be found in general practice. The newly qualified graduate is expected to complete one year as a Vocational Trainee, gaining experience in an accredited VT practice.

The opportunity then exists to become an Associate and eventually a practice Principal. All dental practices are privately owned and may be subcontracted by local Health Authorities to provide NHS dentistry under the terms of the General Dental Services .

Practices vary in size, ranging from the small independent practices run by a single-handed practitioner to larger practices staffed by a number of professionals catering for a range of special interests. General practice is very much a home of the self-employed.

Exciting new salaried opportunities for general practitioners are being created in the larger corporate groups such as Boots and Oasis whilst positions in the Community Dental Services provided by local Health Authorities, and roles within the Armed Forces or large commercial companies with in-house dental service also exist and offer salaried careers for those who prefer greater job security.

Community Dental Services (CDS)

The CDS provides dental care for those with special needs. In particular the CDS looks after young children who need special help as well as elderly and housebound people and patients with mental or physical disabilities.

The Armed Forces

Although the opportunities to travel abroad are diminishing, a comprehensive service is provided for Services men and women. Dentists are commissioned as officers and financial scholarships may be available to study as an undergraduate.

Industrial Dentistry

Some companies with large numbers of employees provide dental services. For example, oil companies and some airlines provide facilities for general dental services as an employee benefit.

Corporate Bodies

A recent development in dentistry in the UK is the emergence of a number of "Corporates" such as Boots. Boots have introduced dental facilities to a large number of their High Street shops that are staffed by well-qualified and experienced Dentists, Hygienists and Dental Nurses. Adult patients are treated on a private basis and their children under the terms and conditions of the NHS.

Hospital and University careers

Many graduates wish to increase their specialised knowledge with a view to taking up a consultant post later as an Oral and Maxillo Surgeon or perhaps carrying out research and teaching undergraduates. Specialist appointments in areas such as oral medicine, orthodontics, endodontics, paedodontics, are a few of the other career pathways available.

Q. What are the courses available for higher studies after completing BDS?

Master of Dental Surgery (MDS) course is available after BDS in the following subjects:

(i) Prosthetics
(ii) Periodontia
(iii) Oral and Maxilliofacial Surgery
(iv) Operative Conservative Dentistry
(v) Oral Pathology
(vi) Orthodontia
(vii) Oral Medicine and Radiology
(viii) Pedodontic and Preventive Dentistry
(ix) Preventive and Social dentistry

Q.Who is a Dental Technician? What is the Career Prospect?

The Dental Technician is an important and often little acknowledged member of the dental team. Working under the prescription of a Dental Surgeon the Technician is responsible for a wide variety of manufacturing operations including making dentures, crowns, bridges, orthodontic appliances and carrying out numerous other intricate tasks.

Some Technicians will decide to remain in a hospital environment working closely with a Consultant Oral/Maxillo facial Surgeon involved in facial reconstruction. In this area, the Technician will be involved in making lifelike prosthetic appliances to replace lost tissues or organs such as the eyes.

Dental Technicians make a wide range of dental appliances including crowns, bridges, orthodontic appliances and dentures, working to the prescription of the Dentist for each patient.

Without the help of a Dental Technician, Dentists would not be able to offer the full range of services to their patients. The Dentist relies on his or her Technician very heavily. The Dental Technician works to a written prescription, but rarely meets the patient for whom he or she is ultimately working.

The majority of dental technicians are employed in commercial dental laboratories, but can also be employed within general dental practices, in hospitals, the community dental service and the armed forces.

Commercial dental laboratories range from single handed businesses, to large multi-site laboratories offering a comprehensive service. Technicians usually carry out work for a number of local practitioners. Some commercial laboratories offer a postal service, dealing with dentists from a wide area.

If a technician works within a dental hospital, it is usually in conjunction with the maxillofacial department. This may involve making large prostheses including eyes, nose and ears. If employed in a hospital, a dental technician may become involved in research, or may teach undergraduates some of the technical aspects of dentistry.

Q. What is dental hygienist?

Dental hygienists remove soft and hard deposits from teeth, teach patients how to practice good oral hygiene, and provide other preventive dental care. Hygienists examine patients' teeth and gums, recording the presence of diseases or abnormalities. They remove calculus, stains, and plaque from teeth; perform root planing as a periodontal therapy; take and develop dental x rays; and apply cavity-preventive agents such as fluorides and pit and fissure sealants. In some States, hygienists administer anesthetics; place and carve filling materials, temporary fillings, and periodontal dressings; remove sutures; and smooth and polish metal restorations. Although hygienists may not diagnose diseases, they can prepare clinical and laboratory diagnostic tests for the dentist to interpret. Hygienists sometimes work chair side with the dentist during treatment.

Dental hygienists also help patients develop and maintain good oral health. For example, they may explain the relationship between diet and oral health or inform patients how to select toothbrushes and show them how to brush and floss their teeth.

Dental hygienists use hand and rotary instruments and ultrasonics to clean and polish teeth, x-ray machines to take dental pictures, syringes with needles to administer local anesthetics, and models of teeth to explain oral hygiene.

Q.What is dental assistant?

Dental assistants perform a variety of patient care, office, and laboratory duties. They work chair side as dentists examine and treat patients. They make patients as comfortable as possible in the dental chair, prepare them for treatment, and obtain their dental records. Assistants hand instruments and materials to dentists and keep patients' mouths dry and

clear by using suction or other devices. Assistants also sterilize and disinfect instruments and equipment, prepare trays of instruments for dental procedures, and instruct patients on postoperative and general oral health care.

Some dental assistants prepare materials for impressions and restorations, take dental x rays, and process x-ray film as directed by a dentist. They also may remove sutures, apply topical anesthetics to gums or cavity-preventive agents to teeth, remove excess cement used in the filling process, and place rubber dams on the teeth to isolate them for individual treatment.

Those with laboratory duties make casts of the teeth and mouth from impressions, clean and polish removable appliances, and make temporary crowns. Dental assistants with office duties schedule and confirm appointments, receive patients, keep treatment records, send bills, receive payments, and order dental supplies and materials.

Dental assistants should not be confused with dental hygienists, who are licensed to perform different clinical tasks.

Q.What is Nursing?

Nursing has many definitions, but the essence of nursing is that nurses combine the art of caring with the science of health care. Nursing places its focus not only on a particular health problem, but on the whole patient and his or her response to treatment. Care of the patient and a firm base of scientific knowledge are indispensable elements.

Nurses are on the front lines of the health care delivery team. They independently assess and monitor patients, and taking a holistic approach, determine what patients need to attain and preserve their health. Nurses then provide care and, if needed, alert other health care professionals to assist. For instance, emergency department nurses triage all incoming patients, deciding which are the sickest and in what order they require the attention of other health care professionals. Thus, nurses coordinate care delivery by physicians, nurse practitioners, social workers, physical therapists and others. Nurses assess whether care is successful. If not, they create a different plan of action. Nurses work in many different areas, but the common thread of nursing is the nursing process - the essential core of how a registered nurse delivers care.

This process involves 5 steps:

assessment: collecting and analyzing physical, psychological and sociocultural data about a patient;

diagnosis: making a judgment on the cause, condition and path of the illness;

planning: creating a care plan which sets specific treatment goals;

implementation: supervising or carrying out the actual treatment plan;

evaluation: continuous assessment of the plan.

Q. How to Prepare for a Career in Nursing?

Nursing is a rewarding but highly technical field. Nurses must know not only the health sciences, but also how to plan, organize, and educate patients and their families. Students who wish to prepare for a nursing career should give particular attention to math, biology, and chemistry; computer science; and the behavioral and social sciences.

Nursing offers opportunities from bedside practice to the president or top administrator of a healthcare organization. Clinical specialist, nurse practitioner, nurse administrator and nurse educator are just a few examples of the variety of opportunities awaiting you in a nursing career. Nursing involves the care of people throughout the continuum of life and provides an essential service to humankind. As career professionals, nurses improve the quality of health care delivery.

Nursing Education

Registered Nurses must graduate from an accredited school of nursing. Nursing education includes study in nursing theory and techniques, the science and treatment of disease, and several specialty areas. It also includes hands-on clinical practice in hospitals or other settings.

The Bachelor of Science in Nursing (BSN) is a four-year university-based degree. It is strongly recommended as the base for the full range of nursing practice and responsibilities, in the widest number of settings.

Not all people enter nursing studies directly from high school. Today's students often enter nursing later in life, have degrees in other fields or are changing careers. Many can only attend college part-time. For this reason, many nursing schools offer joint degree or ladder programs, or credit for relevant experience. Flexible scheduling is also more common.

The Indian Nursing Council is a statutory body constituted under the Indian Nursing Council Act, 1947. The Council is responsible for regulation and maintenance of a uniform standard of training for Nurses, Midwives, Auxiliary Nurse-Midwives and Health Visitors. The Council prescribes the syllabus and regulations for various nursing courses.

The inspection of Nursing Schools and Examination Centers is done to maintain uniformity and the requisite standard of Nursing Education in the country.

Nursing Specialties

There is a wide variety of nursing specialty areas; you will certainly be able to find one to fit any interest you have. Examples include: surgery, emergency, pediatric, psychiatric, school, public health, nurse-midwives, and others. Note that some specialty areas require additional experience, study or certification.

Career Opportunities

The rapid changes in our nation's health care system also mean changes in nursing. Some traditional areas of nursing are currently cutting back, while new opportunities arise in others.

Nurses are needed not only in hospitals, but in home health agencies, long-term care facilities such as nursing homes, managed care centers, and in community health. Educating patients & their families in preventive care is highly important. Demands for advanced practice nurses are growing in many areas; some APNs are opening their own practices.

Nurses have never been more important to health care than they are today. They must be well-educated, adaptable, and able to act as patient advocates. Nurses should be prepared for leadership roles in managing resources to promote better health care for their patients, whatever the location or setting.

Q.What is pharmacy? How to opt pharmacy as a career?

The Pharmacy is defined as a profession, which is concerned with the art and science of preparing from natural and synthetic sources, suitable and convenient materials for distribution and use in the treatment and prevention of disease. It embraces a knowledge of the identification, preservation, combination, analysis and standardization of drugs and

medicines besides synthesis of new drug molecules, manufacturing of various dosage forms, (Liquid orals, powders, tablets, capsules, ointments, injections, ophthalmic products, etc.) quality control, clinical trials, bio-availability, research, side-effects, compatibility, in-compatibility, indications, contra-indications, pharmacokinetics, pharmacodynamics, toxicology etc.

Pharmacy is a specialized course and the various levels of education in Pharmacy after 10+2 are as under

Nature of level of education in Pharmacy	**Eligibility for admns. to course**	**Duration of the course**
Diploma in Pharmacy (D. Pharm)	10 + 2	2 Years Regular course
Bachelor in Pharmacy (B.Pharm)	10 + 2	4 Years regular course
Master in Pharmacy (M. Pharm)	B. Pharm	2 Years regular course (Minimum 3 semester course)
Doctorate in Pharmacy (Ph.D.)	M. Pharm	Regular course but the duration depends upon the completion of the research work.

The curriculum of pharmacy education has been designed to produce the following professional categories of pharmacists having specialised knowledge -

- **Community and hospital pharmacists** who will work as an important link between doctor and patient and will counsel the patient on various facets of drugs like usage, side effects, indication, contra-indication, compatibilities, in-compatibilities, storage, dosage etc. Such category of pharmacists will have more opportunity to interact closely with the prescriber i.e. doctor and hence can promote the rational prescribing and use of drugs. He can also control the hospital manufacture and procurement of drugs to ensure the supply of high quality products.

- **Specialist in research and development** i.e. research of new drug molecules, biotechnical research etc.

- **Occupational specialist** i.e. industrial pharmacist engaged in pharmaceutical technology i.e. manufacture of various dosage forms, analysis and quality control, clinical trials, post-marketing surveillance, patent application and drug registration, sales and marketing.

- **Academicians** i.e. Teachers of Pharmacy education.

- **Manager and Administrators of Pharmaceutical Services** working for various regulatory authorities and pharmaceutical systems.

- **Chemists and Druggists** engaged in selling of medicines.

- **Herbalists** dealing with herbal drugs.

Q. What is Occupational Therapy (OPT)? What an occupational therapist do?

"Occupational therapists assess occupational performance and modify human and environmental conditions to maintain, restore or enhance occupational performance and health. Occupational performance means the ability to choose, organize, and effectively and safely perform everyday activities necessary for self-care and participation in educational, leisure, home management and work activities." (Occupational Therapists Regulation, BC, December, 1998)

Occupational therapists help people to overcome physical, psychological or social problems arising from illness or disability, by concentrating on what they are able to achieve, rather than on their disabilities. Occupational therapists look at their client's difficulties in terms of their lifestyle and environment. For example, he or she might have problems with everyday tasks such as washing, dressing or cooking, or might need help with getting back to work after an accident. Together with the client, the occupational therapist would write a treatment plan, based on the client's own needs and expectations. They then provide whatever help is needed, whether practical advice about disability

equipment, teaching personal coping strategies or using activities to stimulate clients who are de-motivated or depressed.

Occupational therapists work with people of all ages and from all walks of life, and take all aspects of a person's life and environment into consideration. Occupational therapists consult with clients and their families throughout the course of therapy.

(1)They take stock of a persons' abilities from physical, mental, emotional, social and environmental points of view.

(2)They identify and prevent circumstances that would make further limit a person's abilities.

(3)They identify challenges and work with clients to set goals to meet those challenges.

(4)They recommend assistive devices and technologies to overcome or compensate for a person's limitations. (www.aota.org)

Q.What is Physiotherapy?

Physiotherapy is an allied health care profession dedicated to allowing clients to achieve the highest level of physical functioning by providing a personalized treatment plan based on individual needs. Physiotherapy in humans is common and well accepted, and more recently attention has been focused on its benefits for veterinary clients.

Physiotherapy as the name suggests is the treatment of differing conditions by physical means. This may be by stretching, strengthening, relearning movement patterns, manipulation, massage or by using some electrotherapeutic modalities such as ultrasound or interferential. Whatever is eventually used nothing is done until a comprehensive examination and assessment is carried out. This may take up to an hour. It is usual for people to be taught a little about the mechanism of their problem so that they can see the purpose of various exercises they will almost inevitably be asked to do. In some instances supportive or corrective taping may be used for a time and if this is a long term problem patients will be shown how to do this for themselves. Understanding some basic biomechanics can be extremely helpful in dealing with the endemic spinal problems we all encounter. Advice will be given about the use of various supports, braces etc needed

by some conditions as well as ergonomic advice for both work, home and sporting environment.

Physiotherapy may be appropriate in the following situations:

Sprains or strains of any joint

Neck or back pain

Following fractures

Following surgery, including joint replacement.

A physiotherapist has a specialized university education, which focuses intensively in Anatomy, Physiology, Biomechanics, Histology, Orthopedics, Neurology, and Pathology. Specialized training also includes in depth joint biomechanics of the spine and extremities, as well as muscle insertions origins and actions. They are able to assess and treat joint, spine, muscular, and neurological dysfunctions.

Q. What is genetics?

Genes are at the very heart of life. Together they constitute the blueprint of an organism. In computer terms they are the master program of life. They decide all the properties and all the capabilities of an organism.

Genetics is the study of what make up an animals or plants. DNA carries all the information needed for protein synthesis and replication of cells. In living organisms DNA is organized in chromosomes and is located in the nucleus of each cell.

DNA is the genetic material in all known forms of life. DNA contains genes (just as a recipe book contains recipes) that give us many of our physical characteristics. However, we are not simply gene-based machines - the environment we are in also determines our traits

Q.What is Genetic Engineering?

Genetic engineering is an umbrella term which can cover a wide range of ways of changing the genetic material, "the DNA code" in a living organism. This code contains all the information, stored in a long chain chemical molecule, which determines the nature of the organism, "whether it is an amoeba, a pine tree, a robin, an octopus, a cow or a human being" and which characterises the particular individual. Apart from identical twins, your detailed genetic make-up is unique to you. Individual genes are particular

sections of this chain, spaced out along it, which determine the characteristics and functions of our body. Defects of individual genes can cause a malfunction in the metabolism of the body, and are the roots of many "genetic" diseases.

Genetic Engineering is defined as making or changing of an organism DNA. There are many forms of genetic engineering, some occur natural and others are man made. Genetic engineering in the current state is a relatively new science and the effects of which are not yet known. This causes controversy as to whether or not genetic engineering is safe of ethical.

The types of genetic engineering that most people would not think of in this way have been going on for years. These included Natural Selection and Artificial Breeding. Natural Selection or Survival of the Fittest as it is sometimes known is when the environment in a way chooses the trait that are best suited to the current environment and allows animals with that trait to reproductively mature and reproduce. This is nature's way of ensuring survival and is a form of changing the genes within a species. Artificial breeding is humanities intervention into natural selection. This is where humans choose traits they think are beneficial and breed then into the off spring. An example of this is the domestic dogs all of which descended from the wolf family though artificial breeding. The more well-known and controversial genetic engineering is playing round with humans cell in hope of producing cures to diseases or clones, and the insertion of genes into human food to make the food better.

Cloning is a branch of genetic engineering, which is concerned with breeding individuals, which are identical to their parents. This is done by transferring a replication of the DNA of whom you wish to clone into the gamete of the cloned organism. The cloned organism then grows up to be identical to the parent.

The purposes of doing genetic engineering are many and various. These include :

(1) To repair a genetic "defect" (as with the current early trials of gene therapy in humans)

(2) To enhance an effect already natural to that organism and to increase its growth rate.

(3) To increase resistance to disease or external damage from anything in its natural environment.

(4) To enable animal or plant, to do something it would not normally do.

(5) Getting a micro-organism to produce human insulin for diabetics, or a sheep to produce a human blood-clotting protein in her milk.

(6) Getting a tomato to ripen without going squashy, this can be done simply by taking one of its own genes, turning its "pattern" upside down and putting it back again.

The list above simply gives some ideas of what is or might be technically possible. It says nothing of whether it is ethically or socially desirable. Hand in hand with the technology must go an ethical evaluation. Early trials with growth enhanced pigs revealed disastrous side-effects for the animal. Do we need non-squashy tomatoes? But would it be wrong **not** to develop a means of producing a vital human therapeutic protein in sheep's milk, if we knew how? Should we develop armies of super warriors, like the warrior in the movie the Fifth Element, who had addition genes to make her super human? Should we develop super genius's that may consider everyone else inferior to them, and make the rest of us their slaves? Maybe some one will clone an army of himself, and tried to take over the world. I leave you with these thoughts, is this future science, or science fiction?

Q. What is Genomics?

All the characteristics of a plant, insect or fungus are described in its genome. The relatively new scientific discipline of genomics provides detailed understanding of the genetic material of a target organism, allowing researchers to identify specific genes responsible for specific proteins with specific functions in an organism. In short we can say that Genomics is the study of genes and their function.

Recent advances in genomics are bringing about a revolution in our understanding of the molecular mechanisms of disease, including the complex interplay of genetic and environmental factors. Genomics is also stimulating the discovery of breakthrough healthcare products by revealing thousands of new biological targets for the development of drugs, and by giving scientists innovative ways to design new drugs, vaccines and DNA diagnostics. Genomics-based therapeutics include "traditional" small chemical drugs, protein drugs and potentially gene therapy.

Q. I want to take up a career in Biotechnology. Kindly let me know what is Biotechnology?

Biotechnology is one of the most revolutionary and beneficial scientific advances of the last quarter century. It is an interdisciplinary science including not only biology but also subjects like mathematics, physics, chemistry, engineering and many more. It is also a conglomeration of various combined technologies applied to living cells for production of a particular product or enhancing its quality according to our preferences

Biotechnology is a set of powerful tools that employ living organisms (or part of organisms) to make or modify products, improve plants or animals, or develop microorganisms for specific uses.

"Early biotechnology includes traditional animal and plant breeding techniques, and the use of yeast in making bread, beer, and wine."

"Modern biotechnology includes the industrial or pharmaceutical use of recombinant DNA, cell fusion, novel bioprocessing techniques, and bioremediation."

Q.What is bioinformatics?

Bioinformatics is an integration of mathematical, statistical and computer methods to analyze biological, biochemical and biophysical data. It is the science of developing computer databases and algorithms for the purpose of speeding up and enhancing biological research. Bioinformatics is being used most noticeably in the Human Genome Project, the effort to identify the 80,000 genes in human DNA . New academic programs are training students in Bioinformatics by providing them with backgrounds in molecular biology and in computer science, including database design and analytical approaches. *Bioinformatics is* a combination of Computer Science, Information Technology and Genetics to determine and analyze genetic information.

Bioinformatics is the application of computer technology to the management of biological information. Computers are used to gather, store, analyze and integrate biological and genetic information which can then be applied to gene-based drug discovery and development. The need for Bioinformatics capabilities has been precipitated by the explosion of publicly available genomic information resulting from the Human Genome Project. The science of Bioinformatics, which is the melding of

molecular biology with computer science, is essential to the use of genomic information in understanding human diseases and in the identification of new molecular targets for drug discovery.

Q. What does a bioinformatician do?

That varies! Some bioinformatics professionals are adept at using computer software packages that help design experiments, model complex biological systems/pathways/molecules and analyze copious amounts of data. Other bioinformaticians design and develop algorithms, software, and/or database systems to aid in managing biological information, data analysis or presentation of information in a form that can be used to communicate scientific findings. Some bioinformaticians serve as liaisons (or analysts) between scientists and software engineers. There are also positions that involve training users and supporting commercial biotech/bioinformatics software/hardware systems. The fields of genomics, proteomics and other high-throughput biological experimental systems are yielding vast quantities of data, and bioinformaticians play a key role in managing this data, and helping sift through the data to produce meaningful biological information.

Q. What is a Medical Transcriptionist?

A Medical Transcriptionist is often also called a "**Medical Language Specialist**." A **Medical Transcriptionist**, or "**MT**" is a person who assists physicians and specialty surgeons usually by transcribing, formatting, and proofreading their dictated medically-oriented reports. Most commonly, MTs transcribe physicians' dictation that outlines a patient's health.

In simple words Medical Transcriptionist type (transcribe) what the doctor or medical specialist dictates regarding patient examinations, workups, procedures, etc. It is not an efficient use of the doctor's time to hand write notes on each individual patient, thus dictating a summary is the normal procedure.

The transcript of the doctor's dictation becomes part of the patient's confidential medical records, and remains in the chart at the doctor's office. The doctor will refer to these notes at subsequent visits and thus relies heavily on their completeness and accuracy. Transcriptionists work in doctors offices, hospitals, within large transcription service

facilities, or as self-employed independent contractors. Working for self is perhaps the most challenging of all the above mentioned medical transcription opportunities. It requires the highest level of determination, discipline, and dependability to do well. The independent contractor must sharply hone his/her medical language skill, as under this situation he/she is working "without a net" when it comes to producing quality work without supervision.

It certainly is helpful to be a good typist, but this is not the primary requirement. Medical transcription is not a "keyboard" specialty, but rather is based on a knowledge of medical language. It is essential to possess good English grammar, punctuation, and spelling skills. Likewise, the successful transcriptionist must develop excellent listening abilities and what is "audio acuity". The ability to discern what the doctor has dictated, often times with significant background noise, is the foundation of being a good medical transcriptionist.

Q.What skills do I need to become a Medical Transcriptionist?

Some of the general skills you will need are: **B**eing able type, or more correctly "**keyboard**", which means being proficient at using all the keys on a computer keyboard; a good knowledge of general language skills such as your language's grammar, spelling, and punctuation rules, and writing styles; a good knowledge of medical terms, medical phrases, rules for combining medical words using **prefixes** and **suffixes**; a good knowledge of human **anatomy** and **physiology**; a knowledge of basic business principles if you are planning to work in your own business at home.

Q. Do I need to be formally trained to perform Medical Transcription?

The job of a medical transcriptionist may seem simple: to take notes on doctor's recordings and clearly type them for the use of someone else; but the career requires specific medical education in order to understand the language used by these highly trained personnel. It is for this reason that most employers require a postsecondary degree in medical transcription or an associate's degree, with classes varying from anatomy to punctuation and the English language.

If you are an intelligent person you may be able to learn on your own all the medical knowledge required to become an **MT**. However, in order to be sure that you are

educating yourself in an appropriate manner, it is probably best to at least take a short course in **Medical Transcription**.

Q. Do I need some kind of accreditation, certificate, diploma, or license?

In most countries, **Medical Transcriptionists** are not required to be certified to prove **proficiency**. If you are running a business of course, most cities and/or regional governments require that you have a business license. However completion of one of the professional courses will help prepare you for taking exams for accreditation from an association such as American Association of Medical Transcriptonist (**AAMT)**.

Q.What is Microbiology?

Microbiology is the study of microorganisms. These microorganisms include: bacteria (that's the Latin plural for bacterium); viruses (that's the non-Latin plural for virus - virii sounds weird, so I don't say it); and, fungi (that's the Latin plural for fungus - which by now you have guessed, or already knew, and may not be all that interested to know, anyway). Microbiology is actually made up of several sub-disciplines which individually may stand alone, because there is so much to learn in each. These disciplines include: Immunology (the study of the immune system and how it works to protect us from harmful organisms and harmful substances produced by them); Virology, the study of viruses, and how they function inside cells ; Pathogenic Microbiology, the study of disease-causing critters and the disease process; Microbial Genetics, the study of gene function, expression, and regulation ; Microbial Physiology, the study of biochemical mechanisms within bacteria.

Knowledge about *Microbiology* is used in medical science (microbes as agents of disease), agriculture (soil fertility, plant disease, animal health), biotechnology (microorganisms as catalysts), genetic engineering (cloning genes into bacteria to study them, or as a first step in introducing them into plants or animals) and food technology (food production and spoilage). Microbiologists are employed in a variety of occupations:

• Medical Microbiology

• Food or Dairy Microbiology

• Industrial Microbiology (Biotechnology)

• Molecular Microbiology

• Agricultural Microbiology

• Environmental Microbiology

Q. How do I study *microbiology?*

You can enroll in any one of a number of different degree programs at undergraduate level and then do further studies in Microbiology at Masters level. Some of the undergraduate courses through which you can prepare a career in Microbiology are:

• BSc(Microbilogy as a subject) and BSc (Major in Microbiology)

• BSc (Environmental Science)

• BSc (Molecular Biology and Genetics)

• MBBS

• BSc(Agri)

Q.What is applied Microbiology?

For at least the last 3 billion years, microorganisms have been the dominant habitants on earth. Though invisible to the human eye, microorganisms like bacteria, fungi and viruses inhabit almost every niche on the planet, from hypersaline lakes to subsurface freshwater aquifers, to deep oceanic thermal vents. These tiny, pervasive organisms have a huge effect on life on the planet and have formed the subject of microbiology for about the last three hundred years.

Applied microbiology studies the ways in which the microbial world interacts with our own. Specifically, it looks at how we can harness and utilize the powers of microbes in areas ranging from food production, to pest control, to industrial applications, to medicinal uses.

A major in applied microbiology provides a broad background in the study of microbes and how they relate to agriculture, industry, biotechnology and the environment.

Q.**What is Human Biology?**

Human Biology is concerned with understanding the human condition from a primarily biological point of view. It takes a holistic view - drawing together all the specialized disciplines that study humans and appreciating that for a full understanding we must do more than merely sum the parts. For convenience, it can be viewed as encompassing three broad areas:

(a) The structure, function & development of the human body

(b) The evolution, variation & ecology of humans

(c) The interrelationships between biology and culture

The distinguishing feature of the discipline is its multidisciplinary approach, with a focus on the interrelationships and interactions between the multitude of disciplines that study humans.

Sciences can, for convenience, be categorized into two types. Most biological sciences are primarily reductionist in their approach, developing understanding of how things work by examining the components of life in ever-increasing detail. Human Biology is characterized by a holistic approach, appreciating that life is more than the physical and chemical processes that underlay it. However, these views are relative - chemistry is a holistic science compared to sub-atomic physics - and a holistic approach cannot be effective without detailed knowledge. Human Biology must, like other sciences, have strong reductionist elements.

Human Biologists are specialists - in bringing together the disparate sub-components that contribute to the human condition so that we can more fully understand how humans function and behave, and how these processes arose.

Q. What is A Pathologist?

A pathologist is a medical doctor who examines tissues and is responsible for the accuracy of laboratory tests. Pathologists interpret the results of these examinations and tests-information that is important for the patient's diagnosis and recovery. The pathologist and the patient's other doctors consult on which tests to order, test results, and appropriate treatments. Pathologists play a vital role on the patient's primary health care team.

Pathologists are problem-solvers, fascinated by the process of disease and eager to unlock medical mysteries, like AIDS and diabetes, using the tools of laboratory medicine and its sophisticated instruments and methods. Pathologists make it possible to apply scientific advances to improve the accuracy and efficiency of medical diagnosis and treatment. In general, the earlier a disease is detected and treated, the greater the chance of a cure and the more cost-effective the treatment. Pathology plays a particularly important role in preventive medicine by ruling out diseases or detecting them early. For

example, by reporting a high cholesterol level found with a blood test, the pathologist can help the patient's physician control the condition and prevent a heart attack or stroke.

Thirty years ago, physicians had relatively few laboratory tests to use to detect disease. With advances in biomedical science, over 2,000 tests on blood and body fluids are now available. Medical technologists and other laboratory personnel work with pathologists to insure that these tests are available to your physician when and where they are needed, and that the results are accurate. Pathologists often help to determine which test is most effective for a complete diagnosis.

Some tests, such as a glucose test, produce results that are understood by all physicians. Others require specialized professional interpretation by an expert, usually a pathologist. All tissues removed at biopsy or surgery are examined under the microscope by a pathologist who makes a diagnosis. Pathologists assist surgeons during operations by providing immediate diagnoses on biopsies (sometimes called frozen sections) - specially treated tissues removed in surgery and rushed to the lab. The pathologist quickly provides information to help the surgeons complete the operation in a way that assures the best result possible for the patient.

Pathologists work in many areas of the medical laboratory, and a pathologist usually serves as Director of the Laboratory. In the blood bank, pathologists and medical technologists insure that the blood or blood products which you receive are safe for you. In microbiology, microorganisms-bacteria, viruses, fungi, and parasites-which can cause infections are identified and the most effective drugs to treat a particular infection can be determined.

In clinical chemistry, many hundreds of tests are available which measure the amounts of materials such as glucose and cholesterol in the blood, urine, spinal fluid, or other body fluids. In immunology, tests that measure the body's response to infection or disease are performed. Many infections, including hepatitis and AIDS, are diagnosed by detecting the antibodies that the patient's immune system makes to fight the infection. In diseases such as arthritis and multiple sclerosis, the body actually makes antibodies against itself.

A popular perception is that the pathologist's major responsibility is performing autopsies. Although an autopsy is an important part of the diagnosis and treatment of deadly diseases and provides valuable information to the patient's doctor and family, it is

only a small part of the typical pathologist's practice. Pathologists who specialize in performing autopsies to investigate unexpected or suspicious deaths and determine the causes are known as forensic pathologists or medical examiners.

Some pathologists devote their careers to research in pathology, developing new tests and new instruments to better diagnose diseases.

Pathologists often teach their specialty in medical school pathology programs to educate all physicians, future pathologists, and other students in the medical laboratory professions - medical technologists, cytotechnologists, histotechnologists/histologic technicians, and medical laboratory technicians. After completing four years of medical school, pathologists need four to five years of residency training to be eligible to take board certification examinations. Many pathologists also undertake additional training in a subspecialty of pathology.

Q. Who is a Psychologist? What is Clinical Psychology?

Psychologist studies the mind and human behavior. Provides counseling and therapy to those suffering from emotional, learning or behavioral problems. Gathers data from tests, observations and interviews with patients and develops a treatment plan.

Clinical psychology is a broad field of practice and research within the discipline of psychology, which applies psychological principles to the assessment, prevention, amelioration, and rehabilitation of psychological distress, disability, dysfunctional behaviour, and health-risk behaviour, and to the enhancement of psychological and physical well being.

Clinical psychology includes both scientific research, focusing on the search for general principles, and clinical service, focusing on the study and care of clients, and information gathered from each of these activities influences practice and research.

Clinical psychology is a broad approach to human problems (both individual and interpersonal) consisting of assessment, diagnosis, consultation, treatment, program development, administration, and research with regard to numerous populations, including children, adolescents, adults, the elderly, families, groups, and disadvantaged persons. There is overlap between some areas of clinical psychology and other professional fields of psychology such as counselling psychology and clinical

neuropsychology, as well as some professional fields outside of psychology, such as psychiatry and social work.

Clinical psychology is devoted to the principles of human welfare and professional conduct as outlined in the Code of Ethics for Psychologists. According to this code the activities of clinical psychologists are directed toward: respect for the dignity of persons; responsible caring; integrity in relationships; and responsibility to society.

The training of clinical psychologists requires course work, practical experience, and research, of biological, social, cognitive, and affective bases of behaviour, as well as individual differences, statistics, and research methodology. These areas of psychological knowledge are not unique to clinical psychology, but are generic, and overlap with other areas of professional psychology (such as clinical neuropsychology or counselling psychology), as well as other disciplines, such as sociology and biology.

The knowledge base of clinical psychology is obtained through undergraduate and graduate training, consisting of course work, supervised experience, and research. Knowledge of personality, human development, psychopathology, assessment/diagnosis, and intervention define the field of clinical psychology. Knowledge of ethical principles, their application and enforcement, as well as the ability to develop and manage a helping relationship with clients (individuals, couples, groups, organizations, and systems) is an integral part of the knowledge base of clinical psychology.

The knowledge base within clinical psychology is so broad that no individual clinical psychologist can become competent in all areas of clinical psychology. Therefore, clinical psychologists must function within the specific limits of their competence (i.e., knowledge and expertise), and are expected to clearly acknowledge the limitations of their scope of practice. Clinical psychologists are responsible for referring to others (either within or outside the area of clinical psychology) when they are faced with a task outside of the limits of their knowledge and skill.

Q. What is Nutrition & Dietetics?

This is the age of hourglass figures and slim physiques. Gone are the days of chubby and buxom women who were considered healthy. Nowadays, being thin is in. The young girls and women make out and out efforts to attain a figure of 8.

On the other side, the tale is far less romantic. The sedentary lifestyle coupled with stress, strain and tensions of all kinds have given rise to a wide range of ailments and maladies like hypertension, diabetes, cholesterol, spondilitis, angina, heart attacks and so forth. These problems have generated a global awareness about the need to stay healthy by selecting one's daily diet with abundant caution. This is exactly where the nutritionists and dieticians step in to teach people the art of healthy living at no extra cost. A nutritionist:

- Assesses nutritional needs and food patterns
- Plans and directs the food appropriate for physical and dietary needs.
- Provides nutrition counseling
- Helps to prevent and treat illnesses by promoting healthy eating habits and recommending dietary modifications
- Clinical nutritionists provide nutritional services to patients in institutions such as hospitals and nursing care facilities.

Q. What is Radiography? What does the radiographer do? What is the employment opportunity of a Radiographer and where can I complete a course in Radiography?

When a German physicist named Wilhem Konrad Roentgen discovered the mysterious *"X-light"* in November of 1895, a revolution in medical diagnosis was begun. Suddenly the inner realms of the body, hidden and inaccessible but by the knife, became visible and could be recorded on photographic film. Hence the term "radiograph", or the recording on film of the pattern of radiation after it has traversed the body. Today, radiographers are those responsible for the production of radiographs and other types of medical images.

The radiographer, who may also be referred to as a radiologic technologist, is an individual who is qualified in the use of ionizing radiation for the production of images for the diagnosis or treatment of disease. These images are then interpreted by a qualified radiologist, a physician who is specially trained in the interpretation of medical images and medical imaging procedures.

The radiographer is responsible for the quality of the images. This includes manipulating the x-ray equipment, including the x-ray tube and film cassette, and the x-ray generator and exposure factors. This also includes placing the patient in the most advantageous position for the demonstration of the anatomy of interest. And, very

importantly, the radiographer is responsible for doing this with as little radiation exposure to the patient as possible. The radiographer receives extensive training in human anatomy as well as radiation physics, radiographic exposure, and radiation protection and radiobiology to facilitate their proficiency in these skills.

Most radiographers work in hospital radiology (medical imaging) departments. In this type of setting, modalities such as CT, MRI, ultrasound, nuclear medicine and cardiovascular-interventional procedures are commonly found alongside routine diagnostic radiographic rooms. Diagnostic radiography includes film imaging of the chest, abdomen, skull, spine & extremities, the contrast GI & urological studies, and will also cover emergency and surgical needs. Radiographers may also work in private physician's offices, orthopedic clinics, and other private facilities.

The outlook for employment is excellent for radiography graduates today. A nationwide boom of corporate hospitals and shortage of qualified and skilled radiographer is driving wages higher and providing unprecedented options and opportunities for employment.

There is also employment scope in Industrial radiography. Industrial Radiography is the examination of things using radiation, usually either x-rays or gamma rays. Today the term Industrial Radiography normally refers to the radiography of components, welds or castings to check their integrity and assure their safety in use. X-rays have been used for this purpose almost from the time of their discovery in 1896. Equipment became more powerful and flexible and smaller as time went on and the techniques became of vital importance during the Second World War. Since then, in spite of other, newer methods of inspection now taking over from radiography, the medium is still the best and sometimes the only technique for many applications.

You can study a 3-years B.Sc. course in radiology at University College of Medical Sciences (University of Delhi) & GTB Hospital, Delhi-110095. The eligibility for admission is (10+2) with Physics, Chemistry, Biology and English securing at least 50% marks in aggregate. Admission is through a competitive entrance examination.

Q.What is Medical Laboratory Technician. Tell in detail about MLT.

A medical laboratory technician performs general tests in all laboratory areas. The medical laboratory technician performs general tests in all laboratory areas — Blood banking, Chemistry, Hematology, Immunology and Microbiology. Working with the supervision of a medical technologist, a medical laboratory technician hunts for clues to the absence, presence, extent, and causes of diseases.

Medical laboratory technicians must be accurate, dedicated and skilled. They must also be self-motivated, and take the initiative to do what must be done everyday — to pitch in to help the healthcare team.

All medical laboratory technicians have certain common characteristics. They are problem solvers. They like challenge and responsibility. They are accurate, reliable, emotionally stable, work well under pressure, and are able to finish a task once started. They communicate well, both in writing and speaking. They set high standards for themselves and expect quality in the work they do. Above all, they are deeply committed to their profession, and are truly fascinated by all that science has to offer.

The challenges and rewards of medicine and science-the medical laboratory technician have the best of both worlds. For someone who chooses a career as a medical laboratory technician, the exploration never ends.

The future long-term employment for medical laboratory technicians looks bright. Employment opportunities are expected to increase through the year 2005 and beyond. Medical laboratory technicians work in a variety of practice settings. Hospitals, for-profit laboratories, clinics, nursing homes, public health facilities, business and industry currently have positions open for qualified medical laboratory technicians. Today, there are more jobs for laboratory personnel than there are educated people to fill the positions. The future long term employment looks bright well into the next decade. The need is great every where throughout the country.

Career-preparation

To prepare for a career as a medical laboratory technician, you should have a solid foundation in high school sciences — biology, chemistry, math and computer science. You'll need a combination of formal education plus clinical education in a medical laboratory technician (MLT) program. With a career as a medical laboratory technician, you'll have unlimited choices. Unlike many other careers, your education in medical

laboratory technology will prepare you directly for a job. While doing a MLT course, you can work part-time in a laboratory to earn extra money. And you could start working full-time the day after you graduate.

Opportunities for Advancement

The medical technologist performs a full range of laboratory tests, from the most routine to the most complex, with little or no supervision. Medical technologists can be teachers, supervisors, or researchers working in new areas of scientific exploration.

Different types of courses are available in our country to become a Medical Laboratory Technician. They are:

(1) 3-years B.Sc. (MLT) after 10+2 with Physics, Chemistry & Biology

(2) 2-years Diploma after 10+2 with PCB

(3) 1-year certificate course after (10+2)/Matriculation

Q.What is optometry?

Optometrists examine people's eyes to diagnose vision problems and eye diseases. They use instruments and observation to examine eye health and to test patients' visual acuity, depth and color perception, and their ability to focus and coordinate the eyes. They analyze test results and develop a treatment plan. Optometrists prescribe eyeglasses and contact lenses, and provide vision therapy and low-vision rehabilitation. They use drugs for diagnosis of eye vision problems and prescribe drugs to treat some eye diseases. Optometrists often provide pre- and post-operative care to cataract and other eye surgery patients. They also diagnose conditions due to systemic diseases such as diabetes and high blood pressure, and refer patients to other health practitioners as needed.

Optometrists should not be confused with ophthalmologists or dispensing opticians. Ophthalmologists are physicians who perform eye surgery and diagnose and treat eye diseases and injuries. Like optometrists, they also examine eyes and prescribe eyeglasses and contact lenses. Dispensing opticians fit and adjust eyeglasses and in some states may fit contact lenses according to prescriptions written by ophthalmologists or optometrists.

Most optometrists are in general practice. Some specialize in work with the elderly, children, or partially sighted persons who need specialized visual devices to improve their vision. Others develop and implement ways to protect workers' eyes from on-the-job

strain or injury. Some specialize in contact lenses, sports vision, or vision therapy. A few teach optometry, do research, or consult.

Most optometrists are private practitioners who also handle the business aspects of running an office, such as developing a patient base, hiring employees, keeping records, and ordering equipment and supplies. Optometrists who operate franchise optical stores may also have some of these duties.

Requirements for admission to schools of optometry include courses in English, mathematics, physics, chemistry, and biology. A few schools require or recommend courses in psychology, history, sociology, speech, or business. Applicants must take the Optometry Admissions Test, which measures academic ability and scientific comprehension. Most applicants take the test after their sophomore or junior year. Competition for admission is keen.

Employment of optometrists is expected to grow about as fast as the average for all occupations through the year 2008 in response to the vision care needs of a growing and aging population. As baby boomers age, they will be more likely to visit optometrists and ophthalmologists because of the onset of vision problems in middle age, including computer-related vision problems. The demand for optometric services will also increase because of growth in the oldest age group, with their increased likelihood of cataracts, glaucoma, diabetes, and hypertension. Employment of optometrists will also grow due to greater recognition of the importance of vision care, rising personal incomes, and growth in employee vision care plans.

Employment of optometrists would grow more rapidly were it not for anticipated productivity gains which will allow each optometrist to see more patients. These gains will result from greater use of optometric assistants and other support personnel, and the introduction of new equipment and procedures. New surgical procedures using lasers are available that can correct some vision problems, but they remain expensive.

In addition to growth, the need to replace optometrists who leave the occupation will create employment opportunities. Relatively few opportunities from this source are expected, however, because most optometrists continue to practice until they retire; few transfer to other occupations.

Q.What is nuclear medicine?

Nuclear Medicine involves the use of radioactive isotopes (radioisotopes) to prevent, diagnose, and treat disease. Radioisotopes are utilized in diagnosis as a standard practice worldwide, and have been for over 60 years. Therapeutic uses (for treating disease) are growing as more treatments are discovered and developed.

Diagnostic Nuclear Medicine

In nuclear medicine diagnosing techniques, very small amounts of radioactive materials are introduced into the body. Because they are attracted to specific organs, bones or tissues, the emissions they produce can provide crucial information about a particular type of cancer or disease. Information gathered during a nuclear medicine technique is more comprehensive than other imaging procedures because it describes organ function, not just structure. The result is that many diseases and cancers can be diagnosed much earlier.

Because nuclear medicine procedures utilize very small doses of short-lived isotopes (ones that only stay radioactive for a few hours or days), the amount of radiation received is generally less than or equal to that of an x-ray. Whole body and healthy tissue doses can be minimized while the radioisotope is targeted toward the affected tissue or organ.

Therapeutic Nuclear Medicine

During the last decade, major progress has been made in the treatment of disease with radioisotopes. Treatments involving the use of medical isotopes are gaining momentum in the race against many types of cancer. Currently the most common therapeutic uses of medical isotopes are for treatment of thyroid and prostate cancer, hyperthyroidism, cancer bone pain, and polycythaemia (abnormal red cell and blood increase). The major use in Europe is for treatment of arthritis.

Some of the most exciting cancer treatments utilizing medical isotopes are emerging from current research being conducted on cutting-edge medical applications.

Certain experimental treatments have had such remarkable success that current cancer sufferers should be made aware of their potential. Lives have been saved in numerous cases of patients with fatal brain tumors, lymphomas and leukemias. In several clinical trials testing experimental treatments, very positive results were achieved on patients who had exhausted all other treatment options with no success.

Cancer therapies involving radioisotopes may well lead the way into a new future for millions around the world who would have otherwise been given little or no hope. The Nuclear Medicine Research Council is proud to facilitate greater awareness of these promising developments.

In nuclear medicine, radionuclides--unstable atoms that emit radiation spontaneously--are used to diagnose and treat disease. Radionuclides are purified and compounded like other drugs to form radiopharmaceuticals. Nuclear medicine technologists administer these radiopharmaceuticals to patients, then monitor the characteristics and functions of tissues or organs in which they localize. Abnormal areas show higher or lower concentrations of radioactivity than normal.

Nuclear medicine technologists operate cameras that detect and map the radioactive drug in the patient's body to create an image on photographic film. Radiologic technologists also operate diagnostic imaging equipment, but their equipment creates an image by projecting an x-ray through the patient.

Nuclear medicine technologists explain test procedures to patients. They prepare a dosage of the radiopharmaceutical and administer it by mouth, injection, or other means. When preparing radiopharmaceuticals, technologists adhere to safety standards that keep the radiation dose to workers and patients as low as possible.

Technologists position patients and start a gamma scintillation camera, or scanner, which creates images of the distribution of a radiopharmaceutical as it localizes in and emits signals from the patient's body. Technologists produce the images on a computer screen or on film for a physician to interpret. Some nuclear medicine studies, such as cardiac function studies, are processed with the aid of a computer.

Nuclear medicine technologists also perform radioimmunoassay studies which assess the behavior of a radioactive substance inside the body. For example, technologists may add radioactive substances to blood or serum to determine levels of hormones or therapeutic drug content.

Technologists keep patient records and record the amount and type of radionuclides received, used, and disposed of.

Nuclear medicine technology programs range in length from 1 to 4 years and lead to a certificate, associate's degree, or bachelor's degree. Generally, certificate programs are

offered in hospitals; associate programs in community colleges; and bachelor's programs in 4-year colleges and in universities. Courses cover physical sciences, the biological effects of radiation exposure, radiation protection and procedures, the use of radiopharmaceuticals, imaging techniques, and computer applications.

One-year certificate programs are for health professionals, especially radiological technologists and ultrasound technologists wishing to specialize in nuclear medicine. They also attract medical technologists, registered nurses, and others who wish to change fields or specialize. Others interested in the nuclear medicine technology field have three options: A 2-year certificate program, a 2-year associate program, or a 4-year bachelor's program.

Technologists may advance to supervisor, then to chief technologist, and to department administrator or director. Some technologists specialize in a clinical area such as nuclear cardiology or computer analysis or leave patient care to take positions in research laboratories. Some become instructors or directors in nuclear medicine technology programs, a step that usually requires a bachelor's degree or a master's in nuclear medicine technology. Others leave the occupation to work as sales or training representatives for medical equipment and radiopharmaceutical manufacturing firms, or as radiation safety officers in regulatory agencies or hospitals.

Employment of nuclear medicine technologists is expected to grow about as fast as the average for all occupations through the year 2008. The number of openings each year will be very low because the occupation is small. Growth will arise from an increase in the number of middle-aged and older persons who are the primary users of diagnostic procedures, including nuclear medicine tests. Nonetheless, job seekers will face more competition for jobs than in the recent past. In an attempt to employ fewer technologists and lower labor costs, hospitals have begun to merge nuclear medicine and radiologic technology departments. Consequently, opportunities will be best for technologists who can perform both nuclear medicine and radiologic procedures.

Technological innovations may increase the diagnostic uses of nuclear medicine. One example is the use of radiopharmaceuticals in combination with monoclonal antibodies to detect cancer at far earlier stages than is customary today, and without resorting to surgery. Another is the use of radionuclides to examine the heart's ability to pump blood.

Wider use of nuclear medical imaging to observe metabolic and biochemical changes for neurology, cardiology, and oncology procedures, will also spur some demand for nuclear medicine technologists.

On the other hand, cost considerations will affect the speed with which new applications of nuclear medicine grow. Some promising nuclear medicine procedures, such as positron emission tomography, are extremely costly, and hospitals contemplating them will have to consider equipment costs, reimbursement policies, and the number of potential users.

Q.What is Prosthetic & orthotic Engineering?

Prosthetics is a term derived from the Greek pros (in addition to), tithenai (to put) and tics (a systematic pursuit). Literally, prosthetics is the systematic pursuit of putting one thing (an artificial device) in addition to something else (a part of the body). **Prosthetist** is a specialist in designing, fitting and fabricating artificial limbs.

Orthotics is a term derived from the Greek ortho (straight, normal) and tics (a systematic pursuit). Literally, orthotics is the systematic pursuit of straightening or correcting limbs or the spine. Orthotics then is the systematic pursuit of straightening or correcting by applying to the body exoskeletal devices that limit or assist motion of any given segment of the human body. Limitation may mean anything from zero degrees (immobilization) to anything less than the normal range of motion, whereas assistance of motion may be throughout the normal range or through any specified range of motion. Such exoskeletal devices are usually recommended for patients with neuromuscular or skeletal disorders. Orthotist is a specialist in designing, fitting and fabricating orthopedic braces and support systems. **Prosthetic & orthotic Engineering is** combination of medicine, engineering and related sciences that uses technological systems to solve the rehabilitation problems of handicapped people.

Q.What is 'The Science and Technology of Speech and Hearing'?

This broad field of study includes the production of speech sounds by humans and by machines, the perception of speech and other sounds by humans, and the analysis of speech sounds by machines. We are interested in how speech sounds are made, how these sounds are used to communicate in language, how the significant properties of those

sounds can be analysed, how sounds are analysed by the human hearing mechanism, how humans and machines can recover the linguistic content of speech sounds.

There is a large body of *scientific knowledge* about how we use speech to communicate, and an increasing body of knowledge about how this scientific understanding can lead to *technological applications*, in for example: the generation of speech by machine, the recognition of speech by machine, the efficient communication of speech signals, the identification of an individual by their voice, the rehabilitation of hearing impairment, etc.

Q. What is Linguistics?

In its broadest sense, Linguistics is the study of human language: how it is structured, how it is used to represent meaning, how it is used to communicate ideas, how it is formed, how it is decoded. Linguistics tries to look for commonality across all human languages, and shouldn't be confused with 'Language Teaching' which aims to teach a single language. It is confusing that an expert in languages is called a 'linguist', since it leaves no name for an expert in Linguistics - maybe he should be called a 'linguistician'!

Contemporary Linguistics is divided into sub fields of study; some of these are:

Syntax

The study of the grammatical form of sentences: what makes the sentence "he gave the book to Mary" have the form of a typical English sentence, while the sentence "gave he book the Mary to" does not?

Semantics

The study of the meaning of sentences: in the sentence "he gave the book to Mary" what was happening? who was doing the giving? who was doing the receiving?

Pragmatics

The study of how sentences are used to communicate: what are the rules of discourse that mean we can follow each other's conversations; why when someone asks you "Can you tell me the time?" you don't answer "yes" or "no".

Morphology

The study of the form of words: how groups of words share related meanings through regular patterning: what links "like", "likes", "liked", "likeness", "likely", "likelihood"?

Phonology

The study of the pronunciation of words and sentences: what basic sounds are used by a language, what regular patterning occurs in words; why does the sound used at the end of the word "sing" not occur at the beginning of a word?

Phonetics

The study of the production of speech by the human vocal mechanisms: how are sounds made, how do speakers of different accents differ.

Psycholinguistics

The study of the mental processes by which sentences are constructed and decoded by human beings.

Sociolinguistics

The study of how language variation is related to its use in society to form groups of geographical region, economic class or ethnicity.

Computational linguistics

The study of how computers can be used to analyse and generate sentences.

Other areas include the history of linguistics and the application of linguistic theory in language teaching.

Q.What is Phonetics?

Phonetics is the study of speech. It is concerned with how speech sounds can be categorised, how they are generated in the human vocal tract, why they each sound different to a listener, and how a listener is able to recognise them. The study of the organisation of speech sounds in a language is called *phonology*, while the study of how humans use their vocal apparatus to speak is called *articulatory phonetics*. The study of the quality of the sounds used to signal different pronunciations is called *acoustic phonetics*, while the study of how we perceive and decode speech sounds is sometimes called *auditory phonetics*. Finally, the general field of study in which instruments are used to study speech production and perception is called *experimental phonetics*

Q.What is Audiology?

Audiology is a clinical field concerned with hearing impairment. Audiologists are involved in the screening, assessment and diagnosis of hearing disorder, and in the provision of hearing aids and other aspects of rehabilitation.

Q.What is Speech Therapy?

Speech Therapy (more commonly known as Speech and Language Therapy) is a clinical field concerned with disorders of human communication. Speech and Language therapists are involved in the assessment of people with a communication problem, and the provision of therapy. Since communication problems have many causes, a speech and language therapist has to have a wide knowledge of how human linguistic communication works and can fail. Common disorders include: *Aphasia* - problems in language construction or decoding; *Dyspraxia* - problems in control of the vocal apparatus, *Dysfluency* - problems with the fluency of pronunciation (i.e. stuttering); *Dysphonia* - problems with the generation of voice in the larynx; and *Dyslexia* - problems with reading. Common causes of communication disorders include head injury, hearing loss and stroke; although a number seem to have a genetic component.

Q.**What is medical assistant and what jobs medical assistant performs?**

Medical assistants perform routine administrative and clinical tasks to keep the offices of physicians, podiatrists, chiropractors, and other health practitioners running smoothly. They should not be confused with physician assistants, who examine, diagnose, and treat patients under the direct supervision of a physician. The duties of medical assistants vary from office to office, depending on the location and size of the practice and the practitioner's specialty. In small practices, medical assistants usually are "generalists," handling both administrative and clinical duties and reporting directly to an office manager, physician, or other health practitioner. Those in large practices tend to specialize in a particular area, under the supervision of department administrators.

Medical assistants perform many administrative duties, including answering telephones, greeting patients, updating and filing patients' medical records, filling out insurance forms, handling correspondence, scheduling appointments, arranging for hospital admission and laboratory services, and handling billing and bookkeeping.

Clinical duties vary according to State law and include taking medical histories and recording vital signs, explaining treatment procedures to patients, preparing patients for examination, and assisting the physician during the examination. Medical assistants collect and prepare laboratory specimens or perform basic laboratory tests on the

premises, dispose of contaminated supplies, and sterilize medical instruments. They instruct patients about medications and special diets, prepare and administer medications as directed by a physician, authorize drug refills as directed, telephone prescriptions to a pharmacy, draw blood, prepare patients for x rays, take electrocardiograms, remove sutures, and change dressings.

Medical assistants also may arrange examining-room instruments and equipment, purchase and maintain supplies and equipment, and keep waiting and examining rooms neat and clean.

Assistants who specialize have additional duties. *Podiatric medical assistants* make castings of feet, expose and develop x rays, and assist podiatrists in surgery. *Ophthalmic medical assistants* help ophthalmologists provide eye care. They conduct diagnostic tests, measure and record vision, and test eye muscle function. They also show patients how to insert, remove, and care for contact lenses, and they apply eye dressings. Under the direction of the physician, ophthalmic medical assistants may administer eye medications. They also maintain optical and surgical instruments and may assist the ophthalmologist in surgery.

Q.What is Forensic Science?

Forensic science is any science used for the purposes of the law, and therefore provides impartial scientific evidence for use in the courts of law, eg in a criminal investigation and trial. Forensic science is a multidisciplinary subject, drawing principally from chemistry and biology, but also from physics, geology, psychology, social science, etc.

In a typical criminal investigation **crime-scene investigators,** sometimes known as **scene-of-crime officers**, will gather material evidence from the crime scene, victim and/or suspect. **Forensic scientists** will examine these materials to provide scientific evidence to assist in the investigation and court proceedings, and thus work closely with the police. Senior forensic scientists, who usually specialise in one or more of the key forensic disciplines, may be required to attend crime scenes or give evidence in court as impartial expert witnesses.

Examples of forensic science include the use of gas chromatography to identify seized drugs, DNA profiling to help identify a murder suspect from a bloodstain found at the crime scene, and laser Raman spectroscopy to identify microscopic paint fragments.

The traditional disciplines of forensic science include:

- Toxicology (study of alcohol and drugs)
- Serology (study of blood and other biological fluids)
- Questioned document examination (examination of documents, handwriting comparison, study of inks, typewriter imprints, counterfeiting etc.)
- Forensic chemistry
- Firearms identification and ballistics (study of marks and striations on bullets)
- Hair and fibre analysis
- Pathology
- Odontology (study of bite marks, teeth structure)

Other specialties include

- Disaster identification (e.g., identifying bodies, and cause of death)
- Analysis of lip prints (cheiloscopy)
- Forensic engineering
- Meteorology (impact of weather on a case)
- Blood spatter identification
- Voice print analysis
- Retinal scanning (e.g., for identification purposes)
- Forensic entomology
- Forensic anthropology

Q. Why Study Forensic Science?

Forensic science is a subject that fascinates most of us. What makes forensic science so exciting to study is the nature of the problems to be solved, and this provides its own intrinsic rewards. Great emphasis is placed not only on developing the skills of forensic examination, but also on their application and on the communication of findings to the lay-person. Forensic science is a rigorous scientific discipline, and as such its graduates are highly employable individuals possessing the knowledge and skills for both subject-related employment, such as in a forensic laboratory, or non-subject-related employment

in a wider range of careers.

Q.What isToxicology?

Toxicology is the study of the toxic or harmful effects of chemicals. It is concerned with how toxins act, when their harmful effects occur, and what the symptoms and treatments are for poisoning. It also involves the identification of the substances involved.

Q.What is Forensic Toxicology?

The first comprehensive work on forensic toxicology was published in 1813 by Mathieu Orifila. He was a respected Spanish chemist and the physician who is often given the distinction of "father of toxicology." His work emphasized the need for adequate proof of identification and the need for quality assurance. It also recognized the application of forensic toxicology in pharmaceutical, clinical, industrial and environmental fields.

Forensic toxicology is a discipline of forensic science concerned with the study of toxic substances or poisons, of which there are many thousands. Toxicology encompasses theoretical considerations, methods and procedures from many disciplines including analytical chemistry, biochemistry, epidemiology, pharmacodynamics, pathology, and physiology.

Currently, forensic toxicology is the study of alcohol, drugs (licit and illicit) and poisons, including their chemical composition, preparations and identification. It includes knowledge about the absorption, distribution and elimination characteristics of such substances in the body, as well as the manner in which the body reponds to their presence and the factors which determine drug safety and effectiveness. To understand drug action one must know where and how the effects occur in the body.

Q.Who is an Ophthalmologist?

Ophthalmologists are physicians who perform eye surgery, and diagnose and treat eye diseases and injuries. They also examine eyes and prescribe eyeglasses and contact lenses. Ophthalmologists are medical doctors, and should not be confused with optometrists or opticians.

Q.Who is an Ophthalmic Laboratory Technician?

Prescription lenses are curved in such a way that light is correctly focused onto the retina of the patient's eye, improving vision. Some ophthalmic laboratory technicians manufacture lenses for other optical instruments, such as telescopes and binoculars.

Ophthalmic laboratory technicians cut, grind, edge, and finish lenses according to specifications provided by dispensing opticians, optometrists or ophthalmologists, and may insert lenses into frames to produce finished glasses.

Ophthalmic laboratory technicians should not be confused with workers in other vision care occupations. Ophthalmologists and optometrists are "eye doctors" who examine eyes, diagnose and treat vision problems, and prescribe corrective lenses. Ophthalmologists also perform eye surgery. Dispensing opticians, who may also do work described here, help patients select frames and lenses, and adjust finished eyeglasses.

Ophthalmic laboratory technicians read prescription specifications, then select standard glass or plastic lens blanks and mark them to indicate where the curves specified on the prescription should be ground. They place the lens into the lens grinder, set the dials for the prescribed curvature and start the machine. After a minute or so, the lens is ready to be "finished" by a machine which rotates it against a fine abrasive to grind it and smooth out rough edges. The lens is then placed in a polishing machine with an even finer abrasive, to polish it to a smooth, bright finish.

Next, the technician examines the lens through a lensometer, an instrument similar in shape to a microscope, to make sure the degree and placement of the curve is correct. The technician then cuts the lenses and bevels the edges to fit the frame, dips each lens into dye if the prescription calls for tinted or coated lenses, polishes the edges, and assembles the lenses and frame parts into a finished pair of glasses.

In small laboratories, technicians usually handle every phase of the operation. In large ones, technicians may specialize in one or more steps, assembly-line style.

Q.Who is a Dispensing Optician?

Dispensing opticians fit eyeglasses and contact lenses, following prescriptions written by ophthalmologists or optometrists. Dispensing opticians help customers select appropriate frames, order the necessary ophthalmic laboratory work and adjust the finished eyeglasses. In some States, they fit contact lenses under the supervision of an optometrist or ophthalmologist.

Dispensing opticians examine written prescriptions to determine lens specifications. They recommend eyeglass frames, lenses and lens coatings after considering the prescription and the customer's occupation, habits, and facial features. Dispensing opticians measure

clients' eyes, including the distance between the centers of the pupils and the distance between the eye surface and the lens. For customers without prescriptions, dispensing opticians may use a lensometer to record the present eyeglass prescription. They also may obtain a customer's previous record, or verify a prescription with the examining optometrist or ophthalmologist.

Dispensing opticians prepare work orders that give ophthalmic laboratory technicians information needed to grind and insert lenses into a frame. The work order includes lens prescriptions and information on lens size, material, color and style. Some dispensing opticians grind and insert lenses themselves. After the glasses are made, dispensing opticians verify that the lenses have been ground to specifications. Then they may reshape or bend the frame, by hand or using pliers, so that the eyeglasses fit the customer properly and comfortably. Some also fix, adjust and refit broken frames. They instruct clients about adapting to, wearing or caring for eyeglasses.

Some dispensing opticians specialize in fitting contacts, artificial eyes or cosmetic shells to cover blemished eyes. To fit contact lenses, dispensing opticians measure eye shape and size, select the type of contact lens material, and prepare work orders specifying the prescription and lens size. Fitting contact lenses requires considerable skill, care and patience. Dispensing opticians observe customers' eyes, corneas, lids and contact lenses with special instruments and microscopes. During several visits, opticians show customers how to insert, remove and care for their contacts, and ensure the fit is correct.

Dispensing opticians keep records on customer prescriptions, work orders, and payments; track inventory and sales; and perform other administrative duties.

Q. Who is an Athletic Trainer?

Athletic Trainer helps the physically active avoid injuries associated with sports. They work under the direction of the team physician.

Q.What is sports medicine?

Sports medicine deals with the prevention and treatment of sports injuries, techniques to improve the performance of sports persons and their diet. It takes care of physiological, bio-mechanical, psychological and pathological aspects of exercise and sport.

Q. Who is a Gerontologist?

Gerontologist **s**tudies the aging process from middle age through later life including: physical, mental and social changes in older people as they age. Examines changes in society resulting from the aging population and applies this knowledge to policies and programs.

Q. Who is a Biomedical Engineer?

Biomedical Engineer designs and tests instruments and equipment for patient monitoring, diagnosis and therapy. Designs equipment such as artificial kidneys, pacemakers, computerized scanning equipment, microscopes and laser surgery devices.

Q. Who is a biomedical equipment technician?

Biomedical Equipment Technician **o**perates, adapts and repairs high-tech medical devices and instrument systems and provides instruction on the use of this equipment.

Q. Who is a Clinical Coding Specialist?

Clinical Coding Specialist **e**valuates medical records, codes symptoms, diseases and operations according to various classification systems and reports health data for insurance reimbursement.

Q.Who is a ECG Technician?

Electrocardiographic (ECG) Technician prepares patient for electrocardiogram by attaching electrodes to the body and monitors the equipment as the test is run. Records test results, identifies abnormalities and operates ultrasound equipment.

Q. Who is an Environmental Health Specialist?

Environmental Health Specialist **f**ocuses on the relationship of physical, chemical and biological factors that affect human health including: air and water quality, hazardous materials management, food sanitation and control of disease vectors.

Q. Who is a Health Sciences Librarian?

Health Sciences Librarian helps practitioners find the information they need for patient care, education, research and administration. Selects books, journals and other reference material and organizes this information into collections.

Q. Who is a Radiation Therapist?

Radiation Therapist administers ionization radiation as prescribed for patients with malignant and non-malignant disease. Develops treatment plans, observes and evaluates the patient's clinical progression.

Q. Who is a Speech-Language Pathologist?

Speech-Language Pathologist provides evaluation and therapy to people with speech, language and voice disorders. Assists with stuttering problems, those with eating and swallowing problems, and the inability to make proper speech sounds.

Q.Who is a Chiropractor?

Chiropractor has a holistic view of health, believing the nervous system is essential to the general health of the individual. Treats disorders by spinal and joint adjustment in order to promote normal functioning of the nervous system.

Q.Who is a Recreational Therapist?

Recreational Therapist evaluates, establishes, and coordinates therapeutic recreation programs for hospital patients and outpatients to meet their physical, social and emotional needs using music, sports, games, art and crafts, and dance.

Q. Who is a Respiratory Therapist?

Respiratory Therapist specializes in the treatment and care of patients with breathing disorders. Administers various types of gases and aerosol drugs, cardiopulmonary resuscitation, artificial ventilation and other therapeutic procedures under the supervision of a physician.

Q. Who is a Surgical Technologist?

Surgical Technologist prepares for surgery in operating room, provides assistance to physician before and during surgery, maintains/inventories instruments and equipment, cleans the operating room, and returns patients to recovery room.

Q. Who is a Sonographer?

Sonographer operates ultrasound equipment to produce images revealing the shape and position of internal organs, masses, as well as fetuses. Images show gallstones, cysts, tumors, and fetal growth.

Q. I want to become a Hospital Administrator. Tell in detail about Hospital Management or Health Management.

Health Management is among the top ten millennium professions according to a recent US survey. As healthcare management is increasingly privatised there is a greater need for not only skillful doctors but also efficient hospital administrators.

If Hospitals have always fascinated you rather than scaring you, you can think of a career in Hospital Management. A large number of private hospitals and clinics have come up all over the country. With increasing emphasis on quality of health care and patient satisfaction there is tremendous need for persons with a professional qualification in Hospital Management.

Professional courses in Hospital Management / Administration are available for both medical and non-medical persons. You should be in excellent health yourself and have the energy, stamina , patience and tolerance to work for long strenuous hours. Most leading health centers and hospitals have a presence on the net. The others are on the verge of having one very soon. Most of the websites are interactive in terms of content and services. There are computer generated response systems to attend to routine queries. Details of services provided by the organisation are given online with other related information of interest also available. It is essential for you to be IT savvy and fully aware of the technological developments taking place in the field which will be linked to the tools you use.

As a Hospital Administrator you will be responsible for the overall organisation and management of the hospital to ensure its smooth functioning with the objective of ensuring the complete satisfaction of the patient. You will have to co-ordinate between the various departments of the hospital, ensure that all the equipment is functional, that there is a smooth flow of medical supplies and above all the required standards of cleanliness are maintained. You will also deal with the employees and financial matters.

The emphasis is on quality, efficiency and cost containment. The challenge is to deliver the highest quality care at the lowest cost. It entails giving 100% of your time to quality in-patient care, lowering the length of stay, decreasing resource utilisation, and working with the medical and administrative staff to co-ordinate all aspects of in-house care.

You will definitely be working for healthcare centres and hospitals. Your work area may be air-conditioned and comfortable and you will be looking after the smooth flow of functions in the system.

After completing a professional course in Hospital Management you can avail of challenging job opportunities in medical institutes, hospitals, nursing homes and NGOs

operating in the health care sector.

As a fresher, you would be in the Rs. 8000 to Rs. 20,000 slot after which your hard work, efforts and experience will take you up the ladder.

To take admission in undergraduate course (BHM) of Hospital Management, you need to be a Higher Secondary (XII) pass or equivalent with Biology securing minimum 50% marks. For master degree/PG diploma (MHA/MHM) you need to be a graduate in science/arts/commerce with 50% marks. For some institutes an MBBS degree is the criteria for admission.

Q.What is Naturopathy?

A revolution is taking place in health care. At the front of this revolution is naturopathic medicine, a system that focuses on promoting and maintaining health and wellness by the use of natural means and without the use of toxic therapies. Naturopathic doctors are trained specialists in a healing art, which uses non-invasive natural medicine. They are not medical doctors (M.D.s). Naturopathic doctors (N.D.s) are trained in subjects such as anatomy, physiology, counseling, dietary evaluations, nutrition, herbology, acupressure, homeopathy, iridology, exercise therapy, hydrotherapy, oxygen therapy and thermal therapy.

Naturopathic doctors personalize the healing modality to the needs of the individual with methods which are effective for both chronic and acute problems. Naturopathic doctors cooperate with all branches of medical science, referring individuals to other practitioners for diagnosis or treatment when appropriate.

In practice, naturopathic doctors perform lifestyle analysis, nutritional and dietary assessments, metabolic analysis and other evaluative procedures. They are trained to use a wide variety of natural methods, which involve the individual in the healing process. Naturopathy is based on a belief in the body's natural ability to heal itself when given an appropriate internal and external healing environment. Naturopaths are not involved in the practice of medicine and do not use drugs or pharmaceuticals, nor do they perform abortions or surgery. They have traditionally been referred to as "drugless doctors." In reality, naturopathy deals with wellness and relief from conditions, which are the result of stress whether from mental, nutritional, environmental or physical factors.

In summation, naturopathic medicine acknowledges the complex interrelationship of body, mind and spirit, and is based on the following principles:

Each of us is physiologically unique

Nature can provide everything we need to enjoy good health at every stage of life

Illness is a warning sign

Healing must address an illness' underlying cause, rather than just its symptoms

The philosophy of naturopathic medicine is based on seven basic principles:

1. Do no harm

Primum non nocere (do no harm) is taken from the Hippocratic Oath. Certainly anybody who is sick does not need any therapy or treatment would harm him or her. As prescription medication has such a potential to make a well man sick, many wonder how it can be expected to make a sick man well. Traditional naturopathy embraces only therapies or procedures which are designed to enhance healing and produce wellness.

2. Recognize the healing power of nature

Vis medicatrix naturae means nature has healing powers. The human body is created with the capacity to heal itself and to maintain homeostasis (balance). There is a healing power in nature and this principal is the basis for all of naturopathy. Naturopathy is a system designed to work in harmony with nature, in the restoration and support for the inherent natural healing systems of the body.

3. Identify the cause

Tolle causam means identify and treat the cause. In allopathic medicine, the name of the disease is actually the name of the symptom in Greek. The term "arthritis," for example, is made up of two Greek roots "arthro" which means having to do with the joint and "itis" meaning pain or inflammation. Allopathic doctors seek to treat the joint pain by reducing the joint pain. This can be done with the use of painkillers, nerve blockers or any number of procedures which suppress the symptoms. Naturopaths are committed to removing the joint pain by finding and removing the cause. Perhaps this may prove to be calcium and/or other mineral deficiency caused by either a primary or secondary nutritional deficiency. Or perhaps the cause could be from an injury or possibly from an over acid condition in the body. For naturopaths, the correction of the cause is the most plausible way of eliminating the symptoms and restoring long-term health to the person.

4. Treat the whole person

Naturopathic doctors are aware that a person can have a physical or emotional illness. The chosen therapy is determined by what kind of problem the person is experiencing. You cannot be well or healthy if you have a psychological problem even if you appear perfectly fit. Naturopaths use various counseling, stress management and biofeedback techniques for those experiencing emotional or behavioral problems.

5. The physician is a teacher

Naturopaths are integrative healers, partnering with the client for a team approach in healing. The naturopathic philosophy places the responsibility for wellness with the individual. Man is the steward of his body and the doctor is the teacher or advisor to the individual on how to maintain health. One recognizes, for example, that a headache is not an aspirin deficiency, but rather the result of some imbalance within the body. Some principle of health has been violated and the body is responding with pain. Naturopaths should evaluate the connotation and advise or teach their clients what lifestyle; nutritional, emotional, physical or dietary changes should be made to alleviate the condition. The condition is alleviated by the clients desire to make those changes and not by some outside agency.

6. Prevent disease

Naturopathic physicians are preventive medicine specialists. Prevention of disease is accomplished through education and encouraging good life habits that support health and prevent disease.

7. Establish health and wellness

The primary goals of the naturopathic physician are to establish and maintain optimum health and to promote wellness. Health is the state of optimal well-being. The naturopathic physician strives to elevate the client's state of health and wellness by analyzing each aspect of the controllable factors which determine the state of health, those being diet, exercise, thinking, sleep and posture.

Q. Is Naturopathy a complete system of medicine?

No system of medicine or healing is complete but Naturopathy provides us simple means of healing. It offers the society more economical frame work for the medicine of future

generations. Naturopathy believes that the patient is treated and not the diseases. It is a drugless therapy and does not use medicine. It is a way of life and hence it can be said to be more preventive than curative.

Q.What are the diseases that can be treated by Naturopathy?

There are wide ranges of ailments that can be treated by Naturopathy. Hyperacidity, Dyspepsia, Obesity, Menstrual disturbance, respiratory problems like Rhinitis, Sinusitis, Bronchitis, Asthma, Gout, Spondylisis, Sciatica, Arthritis, Eczema etc.

Q. Is Naturopathy a recognized system of medicine in India?

Yes, it is a recognized system of treatment in India. Government of India has already setup Central Council for Research in Yoga and Naturopathy & National institute of Naturopathy in Pune. However, there is no law to regulate the qualifications and registration of practitioner etc. Therefore, person having knowledge and experience can practice in this field.

Q. Where can I learn Naturopathy in India?

There are various universities, colleges and Private Institutions in India imparting certificate, Diploma and Degree courses. Bhavnagar University and Gujarat Ayurvedic University also conduct diploma courses. All India Nature Care Federation, New Delhi also conducts three years diploma course. The All India Nature Care Federation organizes nature cure conferences from time to time and engaged in propagation of Naturopathy in India.

In 1970, the first and only college in India imparting a recognized course in Naturopathy, was started - the Gandhi Nature Cure College - in Hyderabad of Andhra Pradesh. It started with a four years Diploma in Naturopathy (ND) which was later on affiliated to Osmania University of Hyderabad. Later on in 1987, the college was taken over by the Government to make it as an autonomous body called Andhra Pradesh Yogadhyana Parishad for the starting of a five and half years Degree Course (Bachelor of Naturopathy and Yogic Sciences BNYS) by the addition of one year and a few more

subjects to the existing ND course. The first Degree College in India - Sree Dharmasthala Manjunatheswara (SDM) College of Naturopathy and Yogic Sciences - was started in Ujire, Karnataka in the year 1988, affiliated to Rajiv Gandhi Medical University. Since then, various colleges in India have come up totaling to six, which include two Government Colleges and four Private Management Colleges.

Q. What is Medical Council of India?

The Medical Council of India was established in 1934 under the Indian Medical Council Act, 1933, now repealed, with the main function of establishing uniform standards of higher qualifications in medicine and recognition of medical qualifications in India and abroad. The number of medical colleges had increased steadily during the years after Independence. It was felt that the provisions of Indian Medical Council Act were not adequate to meet with the challenges posed by the very fast development and the progress of medical education in the country. As a result, in 1956, the old Act was repealed and a new one was enacted. This was further modified in 1964, 1993 and 2001. ***The objectives and functions of the Council are as follows.***

Maintenance of uniform standards of medical education, both undergraduate and postgraduate.

Recommendation for recognition/de-recognition of medical qualifications of medical institutions of India or foreign countries.

Permanent registration/provisional registration of doctors with recognised medical qualifications,

Reciprocity with foreign countries in the matter of mutual recognition of medical qualifications.

Inspection/visitation with a view to maintain proper standard of medical education in India.

Permission to start new medical colleges, new Courses including P.G. or Higher Courses, increase of seats etc.

Recognition/de-recognition of Indian Qualifications/ Foreign qualifications

Indian Medical Register: Maintenance of All India Medical Register of persons who hold any of the recognised medical qualification or for the time being registered with any of the State Medical Councils or Medical Council of India.

Registration :Permanent registration/Provisional registration/ Registration of Additional Qualification.

Issue of Good Standing Certificates for doctors going abroad.

Q. Activities, which are not under the purview of MCI?

The following activities are not within the purview of MCI:

1. Questions pertaining to drugs, reactions, nonscheduled drugs etc.
2. Paramedical personnel- Registration , duties ,responsibilities of nurses, Pharmacists , Laboratory Technicians etc.
3. Dental Surgeons – Registration / Practice etc.
4. Matters relating to Registration and practice of Indian systems of Medicine like Ayurveda , Siddha , Unani and Homeopathy.
5. Queries pertaining to Diplomats of National Board of Examinations and other related matters.
6. Screening test – Scheme of Examination including syllabus, dates of examinations , No of Attempts etc.
7. Matters relating to Nursing Homes and Hospitals .
8. All India Entrance Examinations for Admission to MBBS courses.
9. All India Entrance Examinations for Admission to PG courses.

Q.What is Dental Council of India?

Dental Council of India is a Statutory Body incorporated under an Act of Parliament viz. The Dentists Act, 1948 (XVI of 1948) to regulate the Dental Education and the profession of Dentistry throughout India and it is financed by the Govt. of India in the Ministry of Health & Family Welfare (Department of Health) through Grant-in-aid. The General Body of the Dental Council of India representing various State Governments, Universities, Dental Colleges, Central Government, etc.

Q. What is pharmacy council of India ?

The Pharmacy education and profession in India upto graduate level is controlled by the Pharmacy Council of India (PCI) a statutory body governed by the provisions of the Pharmacy Act, 1948 passed by the Parliament.

Q. What is Central Council for Research in Homeopathy?

The Government of India after having recognised the need of systematic research for the development of Indian System of Medicine and Homoeopathy in the country, established the Central Council for Research in Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy in 1969. This composite Council undertook systematic research in Ayurveda, Siddha , Unani Medicine, Yoga, Nature cure and Homoeopathy and continued to do so till 1978,when it was dissolved to pave way for the formation of four independent Research Councils, one each for Ayurveda and Siddha, Unani Medicine, Yoga and Nature Cure, and Homoeopathy.

The Central Council for Research in Homoeopathy was formally constituted on 30th March, 1978, as an autonomous organisation and was registered under the Societies Registration Act XXI of 1860. It was, however, only in January, 1979 that the Council started functioning as an independent organisation. The policy, directions and overall guidance for the activities of the Council are provided by the Governing Body. The Union Minister of Health and Family Welfare is the President of the Governing Body and has general control on the affairs of the Council and has authority to exercise all the powers.

It is assisted by a Standing Finance Committee for considering the budget proposals and a Scientific Advisory Committee.

The Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy in the Ministry of Health & Family Welfare which is headed by a Secretary, administers various schemes for strengthening of research institutions and renders advice on implementation and monitoring of various research programmes.

Objective:

To formulate aims and patterns of research on scientific lines in Homoeopathy.

To undertake research or other programmes, the prosecution and assistance in research , the propagation of knowledge and experimental measures relating to the cause and prevention of the disease.

To initiate, develop and co-ordinate scientific research in fundamental and applied aspects of Homoeopathy.

To exchange information with other institutions, associations and societies interested in the objects similar to those of the Central Council and especially in observation and study of diseases.

To promote and assist institution of research for the study of diseases, their prevention and cure, especially with emphasis for covering the rural population of the country.

To prepare, print publish and exhibit papers, posters, pamphlets, periodicals and books for furtherance of the object of the Central Council and to contribute to such literature.

To offer prizes and grant scholarships in furtherance of the objectives of the Council.

Q. What is the system of Medical Education (Higher Education) in Russia?

The system of higher education in Russia is well formulated and advanced and on par with the western countries. Many of the courses are now offered with the medium of instruction in English. Evaluation of the performance of the student is designed in such a way that the progress of the student, in mastering the subjects included in the curriculum is monitored objectively and in detail. The number of weekly tests and examinations to be taken during every academic year is strictly formulated by the head of the institution. Performance of the students in the tests is evaluated as "PASSED" or "FAILED" and in examinations as "EXCELLENT", "GOOD", "SATISFACTORY" or "FAIL". Students who accumulate a number of arrears in their academic year are expelled from their higher educational institutes. The final state examination is also a very important part of the higher educational assessment process in Russia. These methods constitute comprehensive evaluation systems by which the knowledge and the skills of the specialist are brought to light and the qualifications thus obtained then become very authentic and valuable.

1st, September of every year is the first day of the beginning of the academic year in Russia. There are 2 semesters in Russia; September to January and February to June. The first semester examination is usually held in January followed by the second semester examination in June. Students enjoy two periods of vacations in their curriculum. Winter vacations are from 15th, January to 30th, January and the summer vacations are from July

to August every year. Knowledge and the practical skills received by the students along with the international exposure in these higher educational institutes permit them to seek various opportunities in India and abroad. ***Russia, however may not be attractive for many students due to higher cost, less learning and requirement to clear examination at India conducted by MCI for registration.***

Q. What is the Admission procedure for admission in Russian Medical Colleges?

Admission Procedure is as follows:

Step one:

All students desirous of studying in any higher educational institute in Russia are requested to visit our offices for a free counseling where all the required information is given to the students regarding the various options that are available and also about the country. ***IFSC (International Foundation for Studies and Culture)*** on their part makes all attempts to solve any query that the student / parent may have about studying in Russia. However, the student must take all necessary steps as required to satisfy themselves about their eligibility and the decision of enrolling and studying in Russia.

Step two:

Once the student has satisfied himself / herself about all the merits and demerits of studying in Russia, the student is expected to make an application in the prescribed format with IFSC. You would appreciate that the seats in the Russian higher education system are limited and are offered strictly on a first come first served basis, subject to the final decision of the University and the marks obtained in the 12th standard incase of the MBBS students and the passing of the degree course along with the completion of the internship for the post graduate students. The student along with the application would submit all the documents as per the check list and the required processing fee as detailed.

Step three:

Once the documents are submitted to IFSC, the student needs to apply for their passport incase the same is not ready. The issuance of the passport normally takes around 2 months and any delay would result in a subsequent delay in the joining of the University. All graduate medical students are required to apply for an eligibility certificate with the Medical Council of India, New Delhi. You could take guidance from IFSC in this regard.

Step Four:

Once the University accepts the application of the student, the University issues a letter of admission confirming the reservation of a seat for the student at the University and in certain cases the invoice to remit the fees. The original letter and the invoice are sent by courier to IFSC central office in Mumbai. This original letter of admission is handed over to the student to enable him to apply for his bank loan / expedite his passport process. The student at this stage is expected to make the balance payment of IFSC, and complete his medical examinations.

Step Five:

Upon receiving the passport and the visa invitation, IFSC makes arrangements to have the visa stamped on the passport by the Visa Office at the Russian Consulate / Embassy. Once the passport has been received by us after the stamping of the visa, a copy of the same is handed over to the student to enable him to remit the educational fees to Russia. The original passport and all other original documents are handed over by IFSC to the student once the confirmation of the remittance of the fees is received by IFSC.

Step Six:

The student should now start his packing and also obtain the "Letter of Direction" from IFSC. He should make all arrangements to travel as per the date intimated by IFSC. He / she should also ensure that all documentation as has been detailed in the brochures is complete.

Addresses of IFSC:

(i)Russian Cultural Center,
Opposite Sterling Apartments,
Pedder Road,
Bombay 400 026,
Phone: 022-23513212 / 23521345 / 23522734

(ii) International Foundation for Studies and Culture (IFSC)
31, Merlin Links,
16/B S.P. Mukerjee Road,
Kolkata - 700 026

Phone: (033) - 24657229 / 24657871

(iii) International Foundation for Studies and Culture (IFSC)

13, Ganesh Chambers, Karve Road,

Opposite Jayshree Executive,

Pune 411 004

Phone: (020)-25442380 / 25454178

Q. Are the medical degrees from Russian Universities recognized?

As per the amendment to the Indian Medical Act, 1956, **any** Indian student intending to study medicine in **any** medical college **anywhere** in the world for a graduate medical course has to obtain an eligibility certificate from the Medical Council of India, New Delhi before joining the medical college abroad. After the successful completion of the course, the student is expected to appear or a screening test conducted by the National Board of Examination (http://www.natboard.org) as required by the Medical Council of India (http://www.mciindia.org) prior to the registration with the Medical Council of India. The academic requirement for the eligibility certificate as defined by the Medical Council of India for the general is an aggregate 50% marks in the Physics / Chemistry and Biology and 40% incase of the reserved category. More details could be obtained from the Medical Council of India either from their office in New Delhi or from their official website. The responsibility of obtaining the eligibility certificate as required by the Medical Council of India rests with the student.

Post Graduate courses from no where in the world are registered with the Medical Council of India or the Dental Council of India. This would mean that you would be unable to neither work as a specialist in a government hospital nor teach the specialization learnt. You would however, have your own private practice or work in a private hospital. Since you would be doing your specialization from a University, which is listed by the WHO in its "Directory of world medical schools", you would be eligible to appear for screening examinations to many screening examinations like PLAB etc. Many of our students who have completed their post graduation have given their PLAB and are now successfully working in hospitals in the United Kingdom.

Q. Would the student have to give any entrance examination prior to joining the university in Russia?

Unlike the other countries, there are no pre-qualifying examinations like CET, TOEFL, etc for admission to the Universities in Russia. The admissions are based on the 12th standard marks for the Graduate courses and as per the equivalency of the Indian graduate degree with the Russian degrees for the post graduate courses. All admissions are strictly on a first come first served basis.

Q. Are their any scholarships or grants given to foreign students?

The education in Russia is highly subsidized by the Government of the Russian Federation. Therefore there are no separate scholarships or grants available from individual universities. However, bank loans are now available from all nationalized, co-operative and the private sector banks. These loans are available at very low interest and are generally repaid in easy installments, one year after the completion of the educational period.

Q. How much money would a student require to stay in Russia?

Generally a student could stay quite comfortably requiring around US$ 80 - US$ 100 per month. This figure is approximate and would differ from city to city; person to person based on his / her spending habits.

Q.Which are the books one may study along with textbooks for preparing PMT/AIIMS/CMC/State Level Medical Entrance Tests?

Ans: students can use the following books as reference book for preparing PMT/AIIMS/CMC/ State Level Medical Entrance:

(i) Physics by H.C.Verma
(ii) Physics by Tata Mc Graw Hill Publisher
(iii) Chemistry by O.P.Aggarwal
(iv) Physical Chemistry by R.C. Mukherjee
(v) Chemistry by Tata Mc Graw Hill Publisher
(vi) Biology by M.P.Kaushik & Ramesh Gupta
(vii) Physics Today, Chemistry Today & Biology Today by ***mtg Learning Media***

Q.What are the different paramedical courses available in India and what is eligibility for admissions?

Paramedical Courses and Eligibility for Admission

Sl.No.	Name of Paramedical Course	Duration	Eligibility
01.	Bachelor of Occupational Therapy (BOT)	3.5 years	(10+2) PCB
02.	Bachelor of Physio/Physical Therapy(BPT)	3.5 years	(10+2) PCB
03.	Prosthetic and Orthotic Engineering	3 years	(10+2) PCB
04.	BSc (Audiology & Speech Therapy)	3 years	(10+2) PCB
05.	BSc(Ophthalmic Technology)	3 years	(10+2) PCB
06.	Bachelor of Mental Rehabilitation (BMR)	3 years	(10+2) PCB
07.	BSc(Human Biology)	3 years	(10+2) PCB
08.	BSc(Radiography)	3 years	(10+2) PCB
09.	BSc(Radio Therapy)	3 years	(10+2) PCB
10.	BSc(Nuclear Medicine)	3 years	(10+2) PCB
11.	BSc(Respiratory Therapy Tech)	3 years	(10+2) PCB
12.	BSc(Medical Technology—X ray)	3 years	(10+2) PCB
13.	BSc(Medical Secretarial Service)	3 years	(10+2) PCB
14.	BSc(Operation Theatres)	3 years	(10+2) PCB
15.	BSc(Medical Laboratory Technology)	3 years	(10+2) PCB
16.	BSc(Allied Health Services)	4 years	(10+2) PCB
17.	BSc(Bio Medical Technique)	1.5 years	BSc(BZC)
18.	Bachelor of Speech, Language & Hearing(BSLH)	3 years	(10+2) PCB
19.	Bachelor of Naturopathy & Yogic Sciences	5 years	(10+2) PCB
20.	Dental Hygienist	2 years	(10+2) PCB
21.	Dental Mechanics	2 years	(10+2) PCB
22.	Diploma in Community Health (DCH)	3 years	(10+2) PCB
23.	Diploma in Hospital Aids	2 years	(10+2) PCB
24.	Certified Radiological Assistant(CRA)	2 years	(10+2) PCB
25.	Radiation Therapy Technician	2 years	BSc(PCM)
26.	PG Diploma in Cardiac Pulmonary Perfusion	2 years	BSc(BZC)
27.	PG Diploma in Cardio Vascular Technique	2 years	BSc(BZC)
28.	PG Diploma in Medical Laboratory Tech	2 years	BSc(BZC)
29.	PG Diploma in Neuro Tech	2 years	BSc(BZC)

30.	PG Diploma in Radiography & Imaging Tech	2 years	BSc(BZC)
31.	Diploma in Anaesthesia Tech	1 year	BSc(BZC)
32.	Diploma in Transfusion Medical Tech	1 year	BSc(BZC)
33.	Diploma in Vascular Surgery Tech	1 year	BSc(BZC)
34.	Diploma in Dialysis Tech	1 year	BSc(PCB/Z/M)
35.	Diploma in ECG Tech	1 year	BSc(PCB/Z/M)
36.	Medical Records Technician	1 year	BA/BSc/B.Com
37.	Medical Transcript Writing (Certificate)	1 year	BA/BSc/B.Com
38.	Adv. Diploma in Technical & Analytical Chemistry	1.5 years	BSc(Chem)
39.	Laboratory Technique(Certificate)	1 year	HSLC/Matric
40.	Sanitary Inspector Training (Certificate)	1 year	HSLC/Matric
41.	Certificate Course in Radiography	1 year	HSLC/Matric
42.	Certificate Course in X-ray Technician	1 year	HSLC/Matric
43.	Certificate Course in Dark Room Assistant	1 year	HSLC/Matric
44.	Certificate Course in Optician & Refractionist	2 years	(!0+2)PCB
45.	Certificate Course in Ortho-optists	2 years	(10+2)PCB
46.	Diploma in Ophthalmic Assistant	2 years	(10+2)PCB
47.	Certificate Course in Health Works(Female)	1.5 years	(10+2)
48.	Diploma in Clinical Neuro Technology (DCNT)	1 year	BSc(PCM)
49.	MSc/PG Diploma in Bio-Medical Instrumentation	2 years	BSc(PCM)
50.	PG Diploma in Hospital Management (Eqvt. to MBA)	1.5/2 years	BA/BSc/B.Com
51.	Diploma in Dietetics	1 year	(10+2)PCB

Q. How can I test my interest in Medical profession?

This is a self-administered test taken from Dr. K.D. Broota's psychometric test on medical professin to test your interest in the area of medical sciences. Thirty statements are given below, each followed by four alternative answers (A, B, C & D). Read each statement carefully and marked the appropriate answer (A, B, C or D) before proceeding to the next statement.

01.Genetic information is carried through

- A: t-RNA
- B: DNA

- C: m-RNA
- D: Nucleoproteins

02.The activities of all living cells are controlled by

- A: Chloroplast
- B: Nucleus
- C: Tonoplast
- D: Auxins

03.Cancer cells are more easily damaged by radiation than normal cells because they are

- A: non-dividing
- B: starved by nutrition
- C: different in structure
- D: undergoing rapid division

04.Genes are located in chromosomes in

- A: linear fashion
- B: helical fashion
- C: spiral fashion
- D: circular fashion

05.RNA is important for

- A: synthesis of proteins
- B: cell division
- C: synthesis of carbohydrates
- D: digestion of proteins

06.Activities of all living cells are controlled by

- A: chloroplast
- B: nucleus
- C: tonoplast
- D: chromosomes

07.Qunine, important for the treatment of malaria, is extracted from

- A: cinnamon
- B: chinchona
- C: blister flies
- D: red ants

08.Viral Dengue fever is caused by

- A: house fly
- B: mosquito
- C: sand fly
- Dragon fly

09.A frog lives in water or near water because

- A: it gets its food from water
- B: its hind limbs are webbed and help in swimming
- C: it respires through the skin
- D: it can see through its transparent eye lids while swimming

10.Snakes perceives sound through

- A: ear
- B: tongue
- C: skin
- D: air

11.The venom of cobra affects
- A: respiratory system
- B: circulatory system
- C: digestive system
- D: nervous system

12.In birds which one is absent
- A: urinary bladder
- B: gall bladder
- C: both A & B
- D: only A

13.The most intelligent ape is
- A: chimpanzee
- B: gorilla
- C: gibbon
- D: monkey

14.Formation of fat begins in the body when
- A: blood sugar level is constant
- B: glucose is converted into glycogen
- C: when liver and muscles cannot store any more glycogen
- D: when glucose combines with glycerol

15.Enzymes are essential in our body because the
- A: supply energy
- B: catalyze biochemical reactions
- C: coordinate nervous activities
- D: are structural component of body

16.Glycogen in our body is stored in
- A: liver
- B: liver and muscles
- C: liver and spleen
- D: spleen and muscles

17.Metabolic rate is highest in
- A: man
- B: elephant
- C: rat
- D: monkey

18.Maximum energy is produced by
- A: minerals
- B: vitamins
- C: proteins
- D: fats

19.The most important food stuff for the body is

- A: proteind
- B: carbohydrates
- C: vitamins
- D: minerals

20.Mineral responsible for controlling heart beat is
- A: sulphur
- B: sodium
- C: potassium
- D: iron

21.Vitamin k helps in
- A: clotting of blood
- B: maturation of ova
- C: digestion
- D: neurititis

22.Bile helps in
- A: digesting fats
- B: emulsifying fats for digestion
- C: eliminating waste products
- D: digestion of proteins

23.Ascorbic acid is
- A: an enzyme
- B: protein
- C: vitamin
- D: carbohydrates

24.The process of respiration is concerned with
- A: intake of oxygen
- B: liberation of oxygen
- C: liberation of carbon dioxide
- D: liberation of energy

25.Ciliary muscles are found in the
- A: eye
- B: heart
- C: stomach
- D: diaphragm

26.During muscle contraction
- A: chemical energy is changed into electrical energy
- B: chemical energy is changed into mechanical energy
- C: chemical energy is changed into physical energy
- D: mechanical energy is changed into chemical energy

27.The blood bank of the body is
- A: heart
- B: bone marrow
- C: spleen
- D: liver

28.The person with blood group is universal donor

- A: A
- B: B
- C: AB
- D: O

29.Which one is sex-linked disorder?

- A: critinism
- B: beriberi
- C: color blindness
- D: tylosis

30.The male human is represented by sex chromosomes

- A: XX
- B: XO
- C: XY
- D: YY

KEY: Give a score of 1 if you have marked the following answers and finally add all the correct answers.

1:B	2:B	3:D	4:A	5:A	6:B	7:B	8:B	9:C	10: C
11:D	12:C	13:A	14:C	15:B	16:B	17:C	18:D	19:A	20:B
21:A	22:B	23:C	24:D	25:A	26:B	27:C	28:D	29:C	30:C

COMMENT:

Scores between 21-30 : High interest in medicine
Scores between 10-20 : Average interest in medicine
Score below 10 : Poor interest in medicine

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