JNTU Hyderabad

English

(Common to all Branches)

B.Tech. I Year R18

SYLLABUS

UNIT NO.	TOPIC
I.	The Raman Effect
II.	Ancient Architecture in India
III.	Blue Jeans
IV.	What Should You Be Eating
V.	How a Chinese Billionaire Built Her Fortune

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UNIT – I

THE RAMAN EFFECT

C V Raman, the first Indian to win Nobel prize for physics for his discovery, 'The Raman Effect' was born on Nov 7 1888 in the city of Truchirapalli in Tamil Nadu. Raman inherited his interest in Physics from his father Chandrasekaran Ramanathan Iyer who was a Physics teacher. He completed his Master of sciences degree with the highest distinctions from the University of Madras. After clearing the Civil Service competitive Exam, he was appointed as the Deputy Accountant General in Calcutta. Such was his interest in Physics that he still found time to pursue research in 'Indian Asssociation for Cultivation of Sciences'. He gave up his administrative position to become a Professor at Calcutta University.

When he became the Professor at Calcutta University, his research was basically in the areas of optics and acoustics. He studied the mathematical relationships that produced the sounds in classical percussion instruments like the table and mridangam. In 1921 he was sent as the University's delegate to the international Universities Congress held in London. It was on this particular sea voyage from London that he was struck by the 'blue' colour of the Mediterranean Sea. It was generally accepted till then that the blue colour of the sea actually was a reflection of the sky which was confirmed even celebrated physicists like Lord Rayleigh. Raman was not convinced by this explanation.

Raman speculated that the blue colour of the sea could be caused by the scattering of sunlight by the water molecules, to verify his speculations, he used a polarised Nicol prism as a sample of sea water to show the phenomenon of molecular diffraction.

After returning to india, he initiated research in three areas:

1) Scattering of light by liquids.
2) Scattering of x-rays by liquids.
3) Viscosity of liquids.

In the years that followed, Raman remained preoccupied with conducting a series of simple but systematic experiments along with his distinguished associates K R Ramanathan and K S Krishnan. His hardwork paid off on 28 Feb 1928 when Raman and his associates had clear proof of the modified radiations observed in the scattering experiments due to molecular vibrations. The discovery was announced on 29 Feb through the associated press. Raman's findings were published in the popular scientific magazine 'Nature'. The findins led Raman to the inevitable Nobel Prize. He eventually won the Nobel Prize for Physics in the year 1930 for his work on the scattering of light and for the discovery of the Raman Effect. Raman discovered that when a light beam travels through a medium, it is deflected by the molecules in the medium. This is called the 'Raman Effect'.

This also initiated the study called 'Raman spectroscopy' which is now commonly used in chemical labs all over the world to identify substances and in medicine to investigate living cells and tissues and even detecting cancers without causing harm. He was also the receiver of the India's Highest Civilian Award 'Bharata Ratna'. He passed away in the year 1970 and buried in the institute founded by him, Raman Research Institute, Bangalore.

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UNIT – II

ANCIENT ARCHITECTURE IN INDIA

Architecture in India flourished during the Mouryan period due to two main reasons – material prosperity of Mouryans and a new religious consciousness during the time. The architectural achievement was applauded by the Megasthenes, the Greek ambassador of Selucus, who visited the Chandragupta Mourya's palace which was a beauty edifice carved out of wood.

During the reign of Ashoka (c268- 2323BC), many advancements in the field of architecture took place. Many monolithic stone pillars were erected during his reign on which teachings of 'Dhamma' were inscribed. These pillars were idiosyncratic with animal figures at the top which was called the capital. The lion capital of the sarnath pillar has been accepted as the emblem of the Indian Republic.

Another important symbol of achievement of Mouryan architecture is the Stupa of Sanchi which has beautiful sculptures depicting the scenes from Jataka stories.

During the Mouryan Period there was a blending of Greek and Indian art which was called 'Gandhara Art'. The significance of the art was that, life like statues of the Buddha and Bodhisattvas were made which were similar to the way Greek gods were sculpted. These statues had rich ornaments and costumes to enhance the physical beauty. Gandhara art was the first representation of the Buddha in human form.

Apart from the Gandhara art, there were two other prominent schools of art that flourished during the Mouryan period:

1) **Mathura School of Art:** The figures were made of spotted red stone which had a different spiritual look. In this type of art we find the sculptures of Jain deities and of Buddha.
2) **Amaravati school of Art:** It developed snder the patronage of Satavahanas of the Andhra region and Kushanas. The stupas built

under this art had numerous scenes of music and dance. The walls of the stupas were adorned with bas relief which had a carved medallion and also some decorative panels.

Cave Architecture: An important phase in the history of architecture in India was the development of cave architecture. More than a thousand caves were excavated belonging to the second century BC and the 10 C AD. The Ajanta and Ellora caves of Maharastra, Udayagiri caves of Odhisha are famous and these caves have viharas, chaityas and mandapas.

Rock-Cut Temples: The temples which are sculpted out of huge rocks are called rock-cut temples. The Karle caves, the Kailash temple at Ellora built by the rashtrakutas, the ratha temples of Mahabalipuram are fine examples of rock-cut temples.

Free-Standing Temples: The Gupta period marks the beginning of construction of free standing Hindu temples which had a central shrine or the garbhagriha. This art flourished in later periods. In the Southern India, the Pallavas, the Cholas and the rulers of Vijayanagara were great builders of temples. The Cholas developed a temple style called the Dravida style. These temples had shikaras, high walls and a gateway topped by a gopuram.

In the northern and eastern parts of India, the temples were constructed in Nagara style which consists of spiral roofs, the garbhagriha and the mandap. The Sun temple in Konark, Lingaraja temple in Odhisha, Mukteshwara temple in Bhuvaneswar and Jagannath temple in Puri are examples of extraordinary art. Mount Abu in Rajasthan is known for the Dilwara temples dedicated to the thirthankaras built under the patronage of Solanki rulers.

The other important temples which were examples of ancient Indian architecture are the Somnath temle in Gujrat, shankaracharya temple in Kashmir, Kamkhya temple in Guwahati, Kashi vishwanth temple in Varanasi, Kali temple at Kalighat in Kolkata and Govinda Devji temple in Mathura.

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UNIT – III

BLUE JEANS

The term 'jeans' refers to a particular style of trousers called 'blue jeans' which were invented by Levis Strauss & co in partnership with Jacob Davis. Jeans are a type of trousers typically made from denim cloth. The term 'blue jeans' had been long in use for various garments (including trousers, overalls and coats) from blue-coloured denim. They are one of the most popular types of trousers, especially in western culture.

The word 'denim' comes from Serge de Nimes, a city in Southern France. Originally jeans were made from wool and by 1700s, it was made from wool and cotton but later it was made solely from cotton. This material was originally made for sails but sailors from Geneva, Italy thought that this strong material would make great pants.

Levis Strauss, an enterprising immigrant, in the 19th century designed blue jeans for the miners of California. He marketed them in 1850 under the brand name Levi's. these jeans didn't contain rivets. A tailor by the name Jacob Davis invented riveted pants whose idea was patented on 20 May 1937.

Manufacturing of Blue Jeans

The manufacturing of the fabric needed for the trousers is done in 3 stages:

1) Preparing the cotton yarn.
2) Dyeing the yarn.
3) Weaving the yarn.

1) Preparing the yarn: Cotton is picked from cotton fields and processed. The ginned cotton undergoes a process called 'carding' where the cotton is put through machines that contain brushes with bent wire teeth called 'cards'. These brushes clean and straighten the cotton which is gathered as cotton fiber called 'slivers'. Several slivers are joined together which are then pulled and twisted making the threads stronger. Later these strong threads are put on machines which twist and stretch the fibers to form yarn.

2) Dyeing the yarn: Denim is dyed chemically with chemically synthesised Indigo before being woven. Large balls of yarn (ball warps) are dipped in indigo mixture several times. Then the dyed yarn is slashed or coated with strarchy substance which makes the threads stronger and stiffer.

3) Weaving the yarn: Large mechanical looms are used for weaving the yarn. Denim cloth has white threads even but as the blue threads are packed closer together than the white threads, the blue colour dominates. Then the cloth is bushed to remove lint. The denim is then 'sanforised' or pre-shrunk.

Making of the Blue Jeans

After selecting the design, patterns from the design are first cut on cardboard. these patterns are later put on the denim cloth and then cut with high –speed cutting machines from stacks which are 100 layers thick. Blue jeans contain about ten different pieces like the pockets, the leg panels, the waist band and the belt loops. All these pieces are sewn by workers who are assigned a specific function. Then buttons, zippers, rivets and labels are attached.

Some jeans are pre-washed and some are stone-washed to change the texture of the jeans. Pre-wasing is done with industrial detergent and stone-washing by adding pumice to the load which gives a faded appearance. Then jeans are steam-pressed in large pressing machines. Then size tags are punched after which they are folded, stacked and placed in boxes to be sent to warehouses.

There is also quality control check done where the buttons, zippers and other things are inspected.

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UNIT – IV

WHAT SHOULD YOU BE EATING

The modern lifestyle's by-product is weight gain and lifestyle diseases. Many of the modern day diseases are related to weight gain, as such these days there are many weight loss industries. The weight loss industries and the constant insistence on losing weight creates a lot of confusion. The simple rule is that along with exercise and active lifestyle its necessary to actively monitor, the calorie intake. The simple guide to the calorie intake is the Healthy eating pyramid or the food pyramid which demonstrates how a balanced diet can be achieved.

The Food Pyramid is designed to make healthy eating easier. Healthy eating is about getting the correct amount of nutrients – protein, fat, carbohydrates, vitamins and minerals you need to maintain good health.

Foods that contain the same type of nutrients are grouped together on each of the shelves of the Food Pyramid. This gives you a choice of different foods from which to choose a healthy diet. Following the Food Pyramid as a guide will help you get the right balance of nutritious foods within your calorie range. Studies show that we take in too many calories from foods and drinks high in fat, sugar and salt, on the top shelf of the Food Pyramid. They provide very little of the essential vitamins and minerals your body needs. Limiting these is essential for healthy eating.

So in a nutshell, healthy eating involves:

- ✓ Plenty of vegetables, salad and fruit.
- ✓ A serving of wholemeal cereals and breads, potatoes, pasta and rice at every meal - go for wholegrain varieties wherever possible.
- ✓ Some milk, yoghurt and cheese.
- ✓ Some meat, poultry, fish, eggs, beans and nuts.
- ✓ A very small amount of fats, spreads and oil and a very small amount or no foods and drinks high in fat, sugar and salts

The foundation layers include the three plant-based food groups:

1) Vegetables and Legumes.
2) Fruits.
3) Grains.

These layers make up the largest portion of the Pyramid because plant foods should make up the largest portion of our diet – around 70% of what we eat, from the grains food group, choose mostly whole grains (such as brown rice, oats and quinoa), and wholemeal/wholegrain/high cereal fibre varieties of bread, pasta, crisp breads and cereal foods (over highly processed, refined varieties).

The middle layer includes the milk, yoghurt, cheese & alternatives and the lean meat, poultry, fish, eggs, nuts, seeds, legumes food groups.

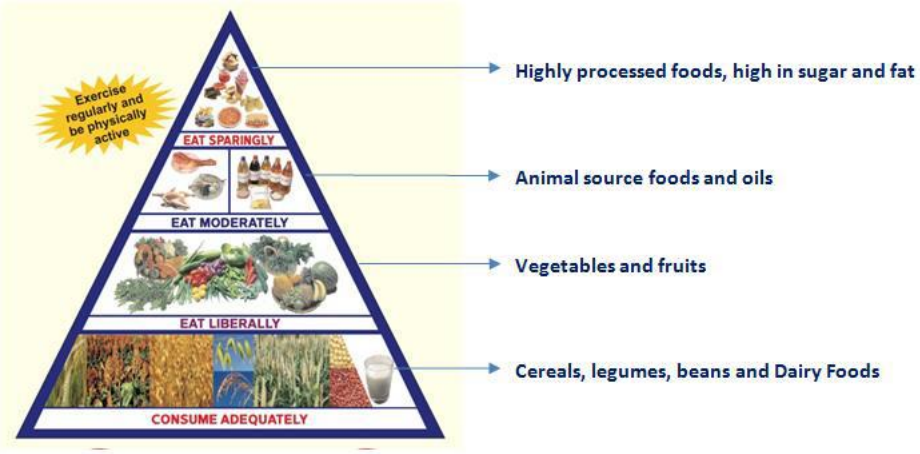
Foods in the milk, yoghurt, cheese & alternatives group primarily provide us with calcium and protein, plus other vitamins and minerals. This food group also refers to non-dairy options such as soy, rice or cereal milks which have at least 100mg per 100ml of added calcium. Choose reduced fat options of these foods to limit excess kilojoules from saturated fat.

Foods in the lean meat, poultry, fish, eggs, nuts, seeds, legumes section are our main sources of protein. But each food also provides a unique mix of nutrients, including iodine, iron, zinc, B12 vitamins and healthy fats. We should aim to have a variety of meat and non-meat options from this food group.

The top layer refers to healthy fats because we need small amounts every day to support heart health and brain function. We should choose foods that contain healthy fats instead of foods that contain saturated fats and trans fats.

Choose unrefined polyunsaturated and monounsaturated fats from plant sources, such as extra virgin olive oil, nut and seed oils. Limit the amount of saturated fat you consume and avoid trans fats.

We also get healthy fats from foods in the other food groups, such as avocados, nuts, seeds and fish, so we only need a little bit extra from oils and spreads each day.



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UNIT – V

HOW A CHINESE BILLIONAIRE BUILT HER FORTUNE

The present lesson narrates how a Chinese billionaire built her fortune. Zhou Qunfei is the world's richest self-made woman. She is the founder of Lens-Technology.

Born in a tiny village in China she was the youngest of the three children. Her father was a skilled craftsman, but he lost his eyesight and a finger in an accident. She lost her mother. when she was five, Young Qunfri helped her family by raising pigs and ducks for their livelihood. She was a bright student but she dropped out of school to support her family. She joined a job of polishing glass .She had to work from 8AM to 12 PM. Unable to bear the stress and the boredom. She resigned in three months. Impressed by her good qualities her boss promoted her.

When Qunfri had enough money she set up her own workshop for making watch lenses. She worked hard to improve the quality of the lenses she sold. Soon she was known for making. The finest watch lenses in the market. By this time she married and had a child but then she divorced, married again and had another child.

The advent of mobile phones in 2003 changed Qunfei's fortune. Mobile giant Motorola ordered her to make screens for their phones. Later HTC Nokia and Samsung placed orders with her. In 2007 Apple with its iphone picked Zhou's technology as its suppliers. Billions poured in. Ms Zhou than invested heavily in providing new facilities, improving technology and recruiting skilled technicians. Within Five years she set up manufacturing plants in three cities.

In spite of the competitors in this area, Zhou's Lens technology still remains a tier-one player. She monitors everything personally. Her focus is always on maintaining the quality and not name.

The charming humble women with a neat appearance, cherubic face and round glasses seen running machines on the floor of her factory is the world's richest woman.

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