

A.V.C COLLEGE OF ENGINEERING, MANNAMPANDAL, MAYILADUTHURAI



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Department of Electronics and Communication Engineering "LEMON NEWSLETTER"

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Message from Head of the Department

I wish students to strive hard for their success in the forecoming examinations.

I appreciate the students who have participated in various webinars and guest lecture programs.

I expect from the faculties of our department for their active participation in webinars and Faculty development programmes.

I also expect the faculties to conduct department activities like webinars and online programs for the welfare of the students.

Dr.S.SIVANESSKUMAR
HOD/ECE

Quotes for life

"Curiosity about life in all of its aspects, I think, is still the secret of great creative people."

– Leo Burnett

"Life is not a problem to be solved, but a reality to be experienced."

– Soren Kierkegaard

"The unexamined life is not worth living."

— Socrates

"Turn your wounds into wisdom."

— Oprah Winfrey

Faculty Corner:

The interesting story of Subramaniam Ramadorai

- *Mrs.R.Ramya,AP/ECE*

Subramaniam Ramadorai, CBE (born 6 October 1945) was the adviser to the Prime Minister of India in the national council on skill development, Government of India. He held the rank equivalent to an Indian Cabinet Minister. He is also the chairperson of the governing board of the Tata Institute of Social Sciences and Bharathidasan Institute of Management, chairman of Indian Institute of Information Technology, Guwahati and Tata Elxsi. Earlier, he was CEO and MD of Tata Consultancy Services from 1996 to 2009 & Vice - Chairman of Tata Consultancy Services till 6 October 2014 transforming TCS from a company with \$400 million revenues and 6000 employees to one of the world's largest software and services company with more than 200,000 employees working in 42 countries and revenues over US\$20.0 billion.

Ramadorai was born in Nagpur, India on 6 October 1945 and his family is from Tamil Nadu. His father was a civil servant who served as the accountant general in Tamil Nadu state government while his mother was a housewife. Ramadorai was the fourth of five sons in the family and his ancestors hailed from Tiruvarur.

Ramadorai received his primary and secondary education at D.T.E.A Sr. Sec School, New Delhi. He holds a bachelor's degree in Physics from Hansraj college , Delhi University, a Bachelor of Engineering degree

in Electronics and Telecommunications and a Master of Science degree in Computer Science from the University of California, Los Angeles. In 1993, Ramadorai attended the senior executive development program at the MIT Sloan School of Management.



Beginning his career with TCS as a junior engineer in 1969, he rose through the ranks and eventually was charged with setting up TCS operations in the United States in 1979 in New York, which has since grown to over 40 offices throughout the country. Since taking on the role of CEO, Ramadorai focused his efforts on building relationships with large corporations and academic institutions, planning and directing technology development and acquisitions and overseeing the company's research and development activities. Ramadorai also spearheaded TCS' quality initiatives, taking sixteen of its Development Centers to SEI's CMM Level 5, the highest and most prestigious performance assessment issued by the Software Engineering Institute (SEI). TCS also attained the distinction of being the World's first company to have all Centres assessed as operating at Level 5 of PCMM (People-CMM).^[6] He resigned as Vice-Chairman of TCS on 6 October 2014. His term as Chairman, Tata Elxsi has expired following which he no longer serves on the Board of Directors of the company. He no longer serves on

the Board of Directors of TATA Communication and any of the subsidiary companies of TCS such as CMC Ltd., Computational Research Laboratories.

Ramadorai was the Chairman of Bombay Stock Exchange (BSE), TATA Technologies Limited and TATA Elxsi. He is also on the board of directors of Hindustan Unilever Ltd, Nicholas Piramal India Ltd. He is also the independent director at Hindustan Unilever Limited. On 17 June 2013, AirAsia India announced that he has been appointed as the chairman of the airline.

Ramadorai is a Fellow of the Indian National Academy of Engineering, Fellow of the Institute of Electrical and Electronics Engineers (IEEE), Member of the National Council of the Confederation of Indian Industry (CII), President of the Indo-American Society, Member of the Corporate Advisory Board, Marshall School of Business (USC), and is also on the Advisory and Governing Boards of a number of reputed Indian academic institutions. In 2006, on India's Republic Day, he was awarded the Padma Bhushan, India's third highest civilian honour. In 2004, he won Business India's "Business Man of the Year" award. During 2003, Ramadorai received the Lifetime Achievement Award from the Indore Management Association, the Distinguished Achievement Award from the Indian Institute of Science, Bangalore, and a Fellowship of the Institute of Management Consultants of India. He has also been honoured with CNBC Asia Pacific's prestigious 'Asia Business Leader of the Year' Award in 2002, as well as the 'Management Man of the Year' award by

the Bombay Management Association. He was named in June 2002, by Consulting Magazine (USA) as being among the Top 25 Most Influential Consultants in the world, the only Indian CEO on the list. He has been honoured with the position of 'IT Advisor to Qingdao City', People's Republic of China. On 28 April 2009, Ramadorai was awarded the Commander of the Order of the British Empire (CBE). On 31 January 2011, TCS vice-chairman, Ramadorai was appointed by the Indian Government as the advisor to Prime Minister Dr. Manmohan Singh for the National Skill Development Council.

On 16 September 2011, his book The TCS Story... and Beyond was published, covering his time at Tata Consultancy Services

Student Corner:

Nanorobots -The Heart Surgeon

- Abishek Prithen. E , III ECE

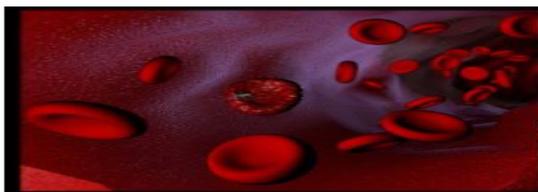
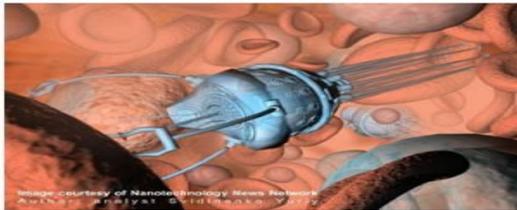
Nowadays medical science is more and more improving with the blessings of new scientific discoveries. Nanotechnology is such a field which is changing vision of Medical science. Nanorobot is an excellent tool for future medicine. Nanorobots could carry and deliver drugs into defected cells. These nanorobots will be able to repair tissues, clean blood vessels. Nanorobot is a wonderful vision of medicine in the future. The most advanced nanomedicine involves the use of nanorobots as miniature surgeons. Advancement in neural networks may allow us to build artificial red blood cells called respirocytes capable of carrying oxygen and carbon dioxide molecules (i.e., functions of natural

blood cells). Respirocytes are nanorobots, tiny mechanical devices designed to operate on the molecular level. Respirocytes can provide a temporary replacement for natural blood cells in the case of an emergency. Thus respirocytes will literally change the treatment of heart disease. This paper deals with the nanorobots and explains how nanorobots can act as a surgeon in heart bypass surgery.

NANOROBOTS:

Nanorobots are nano devices that may be about 3 to 5 microns in size. The individual parts used to make those nanorobots may be of 1 to 200nm in size. Mainly made of carbon and may be given a coating of diamond, which is the most and toughest material ever known. The nanorobots can be used for variety of purposes.

Diagram of Nanorobots when compared With RBC's



Nanorobots as a heart surgeon should carry out certain steps and finally solve the problem. The concepts involve three steps. They are

- Locate the block
- Serve the block
- provide molecular synthesis

Nanorobots with nanosensors help to locate the block. These robots will need four kinds of nanosensors

- pressure sensors
- acoustic sensors
- chemo sensors
- smart sensors

Nanorobots equipped with nanolasers which is used to serve the block after confirmation in order to prevent the recurrence of the block. Then molecular synthesis is carried out (i.e.) nanorobots fills the burnt gap with fresh flawless cells synthesized by the robots themselves. This process is known as molecular synthesis.

THE ACTUAL PROCESS:

A Sensor robot navigates other robots through the blood stream and following process is achieved:

- The nanorobots needed for the process are suspended in a liquid matrix and injected into blood vessels of the patient.

- Acoustic sensors get activated soon and begin navigating the army of robots through the blood stream to the pericardium.
- Simultaneously, the smart sensors present in the sensor robots, get activated and form a closed ad-hoc network connecting all the robots.
- This is very essential in order to guide all the nanorobots to the desired location.

SOPHISTICATED METHOD:

The most sophisticated type of diagnosis is done here by the sensor robots i.e. diagnosis inside the human body. These sensors on reaching the periphery of the heart scan the pericardial vessels for blocks and locate the spot exactly.

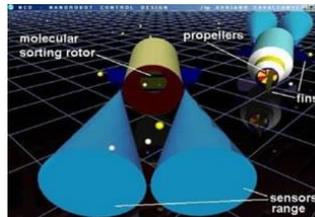


Figure: Sensor robots that navigate the other robots through the blood stream.

OPERATIONS: OPERATION STARTS:

- The pressure sensors mounted on the sensor robots, scan the blood vessels for variation in the blood pressure.
- This will act as the first confirmation.
- This scanning for pressure variations is necessary in the region of the block, there will be a constriction of blood vessel and hence a rise in the blood pressure compared to that existing in the nearby areas.

- These sensors will generate a report of the potential areas of heart block, based on the pressure mapping of the blood vessels.

OPERATION PROCEEDS:

- The second confirmation comes from chemo sensors.
- These sensors scan the region and they traverse for the chemical composition of the cholesterols. The sensors differentiate the cholesterol compounds accumulated on the walls of the blood vessels from the actual composition of the tissues of the blood vessels.
- In this way the block can be identified accurately.
- All these information are transmitted through the ad-hoc network formed by all the smart sensors and can be constantly viewed by the doctors monitoring the entire process.
- After successful location of the block the second type of nanorobots those equipped with nanolasers comes into picture.
- These laser robots on activation based on the information flow through the network, effectively burn down the block.

OPERATION SUCCEEDS:

- The final leg of the operation is the responsibility of the molecular synthesizers.
- These nanorobots, take the required biochemical substances from the blood or surrounding tissues, and they synthesize the cells of the blood vessels in order to seal the area of the block.
- These cells are placed in the affected region.

- And as a result, we have a whole new region of blood vessel that is completely free from the threat of another block.

ADVANTAGES:

- Fast process
- Results are accurate, as the scale of operation is small.
- Involves less psychological strain compared to angioplasty.
- Harmful ray attack is reduced.
- Advanced and reliable technology.

DISADVANTAGES:

- Expensive technology
- Practical implementation is somewhat difficult.
- Technological problems such as, artificial reconstruction and artificial intelligence can take place which results in robots going out of control of humans.

Questions on Network Theory.

- Sabapathi .C, III ECE

- Kirchhoff's Current law is based on the law of conservation of _____
 - energy
 - momentum
 - mass
 - charge
- The current law represents a mathematical statement of fact that _____
 - voltage cannot accumulate at node
 - charge cannot accumulate at node
 - charge at the node is infinite
 - none of the mentioned
- Kirchhoff's current law is applied at _____
 - loops
 - nodes
 - both loop and node
 - none of the mentioned
- Determine the current if a 20 coulomb charge passes a point in 0.25 seconds.
 - 10 A
 - 20 A
 - 2 A
 - 80 A
- The attenuation in dB in terms of input power (P_1) and output power (P_2) is?
 - $\log_{10} (P_1/P_2)$
 - $10 \log_{10} (P_1/P_2)$
 - $\log_{10} (P_2/P_1)$
 - $10 \log_{10} (P_2/P_1)$
- If V_1 is the voltage at port 1 and V_2 is the voltage at port 2, then the attenuation in dB is?
 - $20 \log_{10} (V_1/V_2)$
 - $10 \log_{10} (V_1/V_2)$
 - $20 \log_{10} (V_2/V_1)$
 - $10 \log_{10} (V_2/V_1)$
- What is the attenuation in dB assuming I_1 is the input current and I_2 is the output current leaving the port?
 - $10 \log_{10} (I_1/I_2)$

- b) $10 \log_{10} (I_2/I_1)$
 c) $20 \log_{10} (I_2/I_1)$
 d) $20 \log_{10} (I_1/I_2)$
8. The value of one decibel is equal to?
 a) $\log_{10} (N)$
 b) $10 \log_{10} (N)$
 c) $20 \log_{10} (N)$
 d) $40 \log_{10} (N)$
9. The value of N in dB is?
 a) $N = \text{anti log}(dB)$
 b) $N = \text{anti log}(dB/10)$
 c) $N = \text{anti log}(dB/20)$
 d) $N = \text{anti log}(dB/40)$
10. The dependent sources are of _____ kinds.
 a) 5
 b) 2
 c) 3
 d) 4

Answers:

1. d) charge
2. b) charge cannot accumulate at node
3. b) nodes
4. d) 80 A
5. b) $10 \log_{10} (P_1/P_2)$
6. a) $20 \log_{10} (V_1/V_2)$
7. d) $20 \log_{10} (I_1/I_2)$
8. c) $20 \log_{10} (N)$
9. c) $N = \text{anti log}(dB/20)$

10. d) 4

PUZZLES

- A.Sangeetha, IV ECE

1.If a giraffe has two eyes, a monkey has two eyes, and an elephant has two eyes, how many eyes do we have?

Answer: 4 eyes.

Here in the question, it is asked how many Eyes We have so that means here the person who has asked the question is also including the person who is suppose to give the answer. In a clear understanding, the Conversation is happening between 2 people 1st who asked the question and 2nd to whom it has been asked, which means there are 4 eyes.

2. They come out at night without being called and are lost in the day without being stolen. What are they?

Stars are what that come out at night without being called and are lost in the day without being stolen.

3. A man was murdered in his office. The suspects are **Ericson, Maggi, Joel, Benny, Sona, Patick. A**

calendar found near the man has blood written **6, 4, 9, 10,**

11.Who is the killer?

Answer: Joel. If we consider the given numbers 6, 4, 9, 10, 11 to be the month number then we can easily find the killer.

4. And this one is a good logic puzzle for adults. You've been invited to a party at Charlie's house, but you've never been there. He has seven friends who live nearby. They've given you a map showing all of their houses and Charlie's house, along with the following information:

- Daniel: I can't see Benita's house, because Greta's house is in the way.
- Adam: I live directly (not diagonally) across the street from Daniel.
- Benita: Elena lives due west of me.
- Elena: I have to cross three streets to walk to Franco's house.
- Hal: I live east of Benita.

Can you figure out which house is Charlie's?

Answer: House E.

Editors Desk

Surprising Benefits of Yoga and Meditation for Active Adults

1. Treats Back Pain
2. Helps with Rheumatoid Arthritis
3. Cures Hangovers
4. Improves Heart Health

5. Helps With Asthma
6. Improves Digestion
7. Helps You Sleep Better
8. Boosts Your Mood
9. Combats Migraines
10. Provides Mental Clarity

Send your suggestions to:

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4. *Azeem Ahamed .B,III ECE*

Vision of the Institute

To blossom into a cynosure of technological innovations

Mission of the Institute

To participate in the noble cause of nation building by offering professional education, research and training in engineering and technology especially to the rural based poor Students

Department Vision

To create globally competent engineers in Electronics and Communication Engineering to meet the industrial progress for betterment of the society

Department Mission

1. To create an academic ambience for quality education in the field of Electronics and Communication Engineering
2. To make the best use of modern tools and software for teaching and research activities
3. To promote industry-institution interaction for skill-based learning of students from rural society
4. To inculcate moral and ethical values with a sense of professionalism.

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO1: To enable graduates to pursue research, or have a successful career in academia or industries associated with Electronics and Communication Engineering, or as entrepreneurs.

PEO2: To provide students with strong foundational concepts and also advanced techniques and tools in order to enable them to build solutions or systems of varying complexity.

PEO3: To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

1. To analyze, design and develop solutions by

applying foundational concepts of electronics and communication engineering.

2. To apply design principles and best practices for developing quality products for scientific and business applications.
3. To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems.