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

Department of Electronics and Communication Engineering
"LEMON NEWSLETTER"

Message from Head of the Department

I expect the faculty members and students to be safe and follow the instructions to overcome the pandemic situations.

I expect the faculties of ECE department to involve and participate themselves in conducting sponsored Faculty development programme and workshops.

I wish the students to work hard for the exams and concentrate in their studies to score more marks.

Dr.S.SIVANESSKUMAR

HOD/ECE

Being optimistic

"Optimism is a happiness magnet. If you stay positive good things and good people will be drawn to you."

"The sun himself is weak when he first rises, and gathers strength and courage as the day gets on."

"Every day may not be good... but there's something good in every day."

Faculty Corner:

TCS- TATA CONSULTANCY SERVICES

-   Mrs.C.Jayasri, AP/ECE

Tata Consultancy Services (TCS) is an Indian multinational information technology (IT) services and consulting company headquartered in Mumbai. It is a part of the Tata Group and operates in 149 locations across 46 countries.

TCS is the second largest Indian company by market capitalisation and is among the most valuable IT services brands worldwide. In 2015, TCS was ranked 64th overall in the Forbes World's Most Innovative Companies ranking, making it both the highest-ranked IT services company and the top Indian company. As of 2018, it is ranked eleventh on the Fortune India 500 list. In April 2018, TCS became the first Indian IT company to reach $100 billion in market capitalisation and second Indian company ever (after Reliance Industries achieved it in 2007) after its market capitalisation stood at 6.793 trillion (equivalent to 7.7 trillion or US$100 billion in 2020) on the Bombay Stock Exchange.

Chandrasekaran has spent his career in TCS, joining the company in 1987 after completing a Masters in Computer Applications from Regional Engineering College, Trichy in Tamil Nadu.

Under his leadership TCS has generated consolidated revenues of US$16.5 billion in 2015-16. With over 556,000 consultants, TCS has become the largest private sector employer in India. TCS remains the most valuable company in India ended 2015-16 with a market capitalization of over US$70 billion. In 2015 TCS was rated as the world's most powerful brand in IT Services, and was recognized as a Global Top Employer by the Top Employers Institute across 24 countries.

On 25 October 2016, Chandrasekaran, then CEO and managing director of Tata Consultancy Services (TCS), was appointed as an additional director on the Tata Sons board.

What does TCS actually do?

Tata Consultancy Services (TCS) is **a software and services provider in India**. It is part of the Tata Group, which oversees operations for over 100 companies in seven business sectors: communications and information technology, engineering, materials, services, energy, consumer products and chemicals.

Minimum salary at TCS depends on the role you are applying for.

- **For Process Associate the minimum salary is 2.7 Lakhs per year,**
- **For Assistant System Engineer the minimum salary is 3.9 Lakhs per year** and so on.

To join TCS mandatory proofs required.

➢ Photo ID Proof.
➢ Passport Size Photo.
➢ TCS Online Application Form.
➢ Resume.
➢ Aadhar Card.
➢ Mark sheets of All semesters
➢ Appointment Letter, Relieving Letters and Experience Letters
➢ Current Organization's Appointment Letter, Latest Compensation Letter and last 3 Month's Salary Slip

- Mobile App Development.
- Web Programming/Web Design.
- Artificial Intelligence.
- Data Analytics.
- DevOps.
- UI/UX Development.
- Database Administration (DBA).
- Cyber Security.

Student Corner:

Laser telemetric system

- M.Yogesh , IV ECE

Laser telemetric system is a non-contact gauge that measures with a collimated laser beam .It measure at the rate of 150 scans per second. It basically consists of three components, a transmitter, a receiver and processor electronics. The transmitter module produces a collimated parallel scanning laser beam moving at a high, constant, linear speed. The scanning beam appears as a red line. The receiver module collects and photoelectrically senses the laser light transmitted past the object being measured. The processor electronics takes the received signals to convert them to a convenient form and displays the dimension being gauged. The transmitter contains a low-power helium-neon gas laser and its power supply, a specially designed collimating lens, a hysteresis synchronous motor, a mutli-faceted reflector prism, a synchronous pulse photodetector and a protective replaceable window.

The high speed of scanning permits on-line gauging and thus it is possible to detect changes in dimensions when components are moving or a continuous product such as in rolling process moving   at very high speed. There is no need of waiting or product to cool for taking measurements. This system can also be applied on production machines and control them with closed feedback loops. Since the output of this system is available in digital form, it can run a process controller, limit alarms can be provided and output can be taken on digital printer. It is possible to write programs for the microprocessor to take care of smoke, dust and other airborne interference around the workpiece being measured.
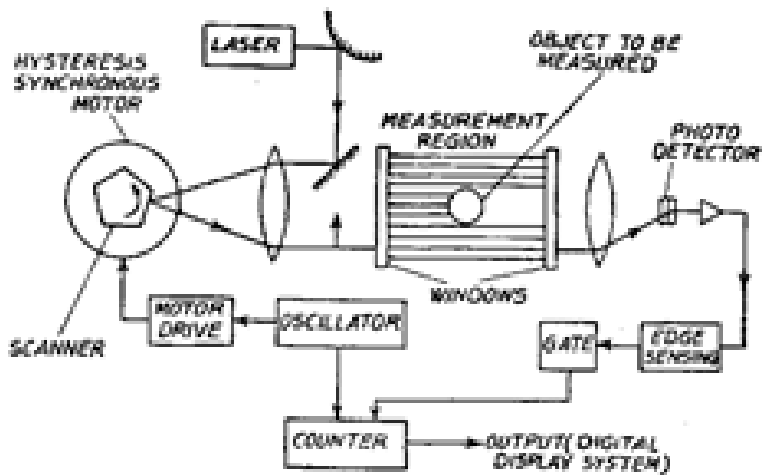
Schematic diagram of laser telematic system.

Laser and led based distance measuring instruments

These can measure distances from 1 to 2 m with an accuracy of the order of 0.1 to 1% of the measuring range. When the light emitted by laser or led hits an object, it scatters and some of this scattered light is seen by a position sensitive detector or diode array. If the distance between the measuring head and the object changes, the angle at which the light enters the detector will also change. The angle of deviation is calibrated in terms of distance and output is provided as 0—20 ma. Such instruments are very reliable because there are no

moving parts. Their response time is in milliseconds. The measuring system uses two distance
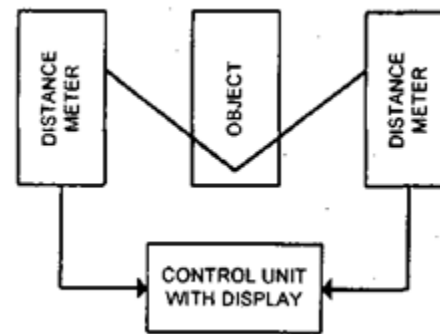
Distance meter.

Meters placed at equal distance on either side of the object and a control unit to measure the thickness of an object. The distance meter is focused at the centre of the object.

Optical methods for fast, non-contact, on-line measurements

Optical techniques are used to measure linear dimensions—like length, diameter, gap and displacement. These systems are also used for automatic inspection. Optical techniques for this purpose employ linear diode arrays, lasers, and diffraction phenomena. An optical measurement system consists of a light source, optical components, photodetectors, and an electronics unit which converts the light into an electrical signal for control and/or display. System accuracy

depends on the way in which the dimensional information carried by the light beam is coded and decoded.

A linear diode array consists of photodetector diodes regularly spaced at constant intervals along a straight line. It is thus optical gauging's analogy to the ruler. The object whose dimension is to be measured, is illuminated and its image formed on the linear diode array. The electronic devices are used to count the number of adjacent, illuminated diodes, the length being directly proportional to the number of diodes counted—of course, taking magnification of image into account. In such a system, the accuracy is dependent on the fidelity of the image and on the spacing of the diodes and the uniformity of their response.

Scanning laser beam. It employs a low-mass rotating mirror to sweep a single beam of laser light across a planar area. The laser beam is reflected from the rotating mirror at its axis of rotation which coincides with the focal point of a lens. The rays originating at the focal point of an ideal lens are parallel after emerging from the lens, thus the laser beam is continuously translated parallel to itself, generating a continuous plane of light.
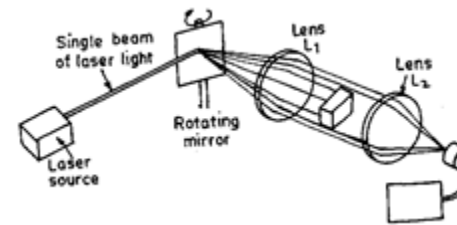
Scanning laser beam.

A second lens focusses the parallel rays of laser light onto a photodetector located at the focal point of the second lens. In the absence of any object in the planar light beam, the photodetector provides a continuous output signal. If any object is placed between the two lenses, it partially blocks the plane of light and the length of the object is measured by timing the intervals over which no laser light reaches the photodetector

Questions on Digital Circuits

- P.Nanthini , IV ECE

1. What will be the output from a D flip – flop if the clock is low and D = 0?
   a) 0
   b) 1
   c) No change
   d) Toggle between 0 and 1
2. What are the basic gates in MOS logic family?
   a) NAND and NOR

b) AND and OR

c) NAND and OR

d) AND and NOR

3. How must the output of a gate in a TTL digital circuit act when it is HIGH?

a) Acts as a voltage source

b) Acts as a current sink

c) Acts as a current source

d) Acts as a voltage sink

4. What is the minimum distance required for single error detection according to Hamming's analysis in Digital Electronics?

a) 1

b) 2

c) 3

d) 4

5. Which of these error-detecting codes enables to find double errors in Digital Electronic devices?

a) Parity method

b) Check sum method

c) Bit generation method

d) Odd-Even method

6. What will be the output from a D flip-flop if D = 1 and the clock is low?

a) No change

b) Toggle between 0 and 1

c) 0

d) 1

7. What characteristic will a TTL digital circuit possess due to its multi-emitter transistor?

a) Low capacitance

b) High capacitance

c) Low inductance

d) High inductance

8. What input should be given to "S" when SR flip – flop is converted to JK flip – flop?

a) K.Q

b) K.Q

c) J.Q

d) J.Q

9. What value is to be considered for a "don't care condition"?

a) 0

b) 1

c) Either 0 or 1

d) Any number except 0 and 1

10. What is the group of 1s in 4 cells of a K – map called?

a) Pair

b) Quad

c) Octet

d) Octave

Answers:

1. c) No change
2. a) NAND and NOR
3. c) Acts as a current source
4. b) 2
5. b) Check sum method
6. a) No change
7. a) Low capacitance
8. d) J.Q
9. c) Either 0 or 1

10. b) Quad

PUZZLES

- Sivasangari. M, III ECE

11. 1.How many times can you subtract the number 5 from 35?

12. Answer: Once. After the first calculation, you will be subtracting 5 from 30, then 5 from 25, and so on.

13. 2. Before the days of motor cars, a man rode into town on his horse. He arrived on Sunday, spent three days in town and left on Sunday. How is that possible?

14. Answer: The name of the horse was Sunday.

15. 3. Imagine that you have 26 constants, labeled A through Z. Each constant is assigned a value in the following way: A = 26^1, B = 25^2, C = 24^3, D = 23^2 and so on till Z = 1^{26}. Find the exact numerical value to the following equation: (Y - A) * (Y - B) * (Y - C) * ... * (Y - Z).

16. Answer: (Y - A) * (Y - B) * (Y - C) * ... * (Y - Y) * (Y - Z) equals 0 since (Y - Y) is zero.

17. 4. A woman had two girls who were born on the same hour of the same day of the same year. But they were not twins. How could this be so?

18. Answer: They were two of a set of triplets.

19. 5. A girl found that she had a 56 cms strip of ribbon. She could cut a cm off every second. How long would it take for her to cut 56 pieces? She can not fold the strip and also, can not stack two or more strips and cut them together.

20. Answer: To get 56 pieces, the girl will have to put only 55 cuts. i.e. she can cut 56 pieces in 55 seconds. After getting 54 pieces, she will have a 2 cms long piece. She can cut it into two with just a one cut in 1 second. Hence, total of 55 seconds.

Editors Desk

Health benefits of walking everyday

- Maintain a healthy weight and lose body fat.
- Prevent or manage various conditions, including heart disease, stroke, high blood pressure, cancer and type 2 diabetes.
- Improve cardiovascular fitness.
- Strengthen your bones and muscles.
- Improve muscle endurance.
- Increase energy levels.

Send your suggestions to:

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2. *Nandhakumar.U ,IV ECE*
3. *Ayisha Begam .A,III ECE*
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.