



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## Internet of Things (IoT)

5-day course structure for "Introduction to IoT"

Day	Topic	Sessions	Hands-on Activities
Day 1	Introduction to IoT and Architecture	<ul style="list-style-type: none"> <li>- What is IoT?</li> <li>- IoT Use Cases and Applications (Smart Homes, Healthcare, Industry)</li> <li>- IoT Architecture (Perception, Network, Application Layers)</li> <li>- IoT Devices and Sensors Overview</li> </ul>	<ul style="list-style-type: none"> <li>- Setting up an IoT development environment using ESP8266</li> </ul>
Day 2	IoT Protocols and Communication	<ul style="list-style-type: none"> <li>- IoT Communication Protocols (MQTT, CoAP, HTTP/HTTPS)</li> <li>- Data Transmission and Cloud Integration</li> </ul>	<ul style="list-style-type: none"> <li>- Sending sensor data to a cloud platform (e.g., AWS IoT, Google Cloud IoT) using MQTT protocol</li> </ul>
Day 3	Edge Computing and IoT Data Processing	<ul style="list-style-type: none"> <li>- Introduction to Edge Computing</li> <li>- Data Processing at the Edge-</li> <li>- Cloud Platforms for IoT (AWS IoT, Azure IoT, Google IoT)</li> </ul>	<ul style="list-style-type: none"> <li>- Setting up an IoT dashboard to visualize data (using ThingSpeak, Node-RED, or similar)</li> </ul>
Day 4	IoT Security and Privacy	<ul style="list-style-type: none"> <li>- IoT Security Challenges</li> <li>- Common Threats (DDoS, Data Breaches, Device Hijacking)</li> </ul>	<ul style="list-style-type: none"> <li>- Implementing encryption and authentication for data transmission between an IoT device and cloud server</li> </ul>
Day 5	IoT Applications and Future Trends	<ul style="list-style-type: none"> <li>- IoT Applications in Smart Cities, Industry 4.0, Healthcare, and Wearables</li> </ul>	<ul style="list-style-type: none"> <li>- Final project: Complete an IoT system integrating sensors, data transmission, cloud processing, and secure protocols</li> </ul>

*R. May Shankar*

PRINCIPAL

CSI COLLEGE OF ENGINEERING

KETTI-643 215.



**CSI COLLEGE OF ENGINEERING  
DEPARTMENT OF ECE**

Certificate Course on "Internet Of Things"

**ATTENDANCE SHEET**

Date: 07-08-2023 to 11-08-2023

S.NO	REGISTER NUMBER	STUDENT NAME	07-08-2023	08-08-2023	09-08-2023	10-08-2023	11-08-2023
1	710620106001	AISHWARYA J	Aishwarya	Aishwarya	Aishwarya	Aishwarya	Aishwarya
2	710620106002	BIJU EASTINO RAYMOND B	Biju	Biju	Biju	Biju	Biju
3	710620106003	CHARAN ANTHONY JOSEPH R	Charan	Charan	Charan	Charan	Charan
4	710620106004	MAHALAKSHMI R	Mahalakshmi	Mahalakshmi	Mahalakshmi	Mahalakshmi	Mahalakshmi
5	710620106006	NEHASIN N	Nehasin	Nehasin	Nehasin	Nehasin	Nehasin
6	710620106007	SNEHA V	Sneha	Sneha	Sneha	Sneha	Sneha
7	710620106008	SOWMIYA R	Sowmya	Sowmya	Sowmya	Sowmya	Sowmya
8	710620106009	YAZHILINIYA M	M.Yazhliniya	M.Yazhliniya	M.Yazhliniya	M.Yazhliniya	M.Yazhliniya
9	710620106301	Edwin Charles J	Edwin	Edwin	Edwin	Edwin	Edwin
10	710620106302	John Jacked A	John Jacked	John Jacked	John Jacked	John Jacked	John Jacked
11	710620106303	Sanjay Kumar S	Sanjay	Sanjay	Sanjay	Sanjay	Sanjay
12	710620106305	Sriram	Sriram	Sriram	Sriram	Sriram	Sriram
13	710620106306	Vishnu B	Vishnu	Vishnu	Vishnu	Vishnu	Vishnu
14	710620106307	Vishnu K	Vishnu	Vishnu	Vishnu	Vishnu	Vishnu

*R. Mayanthi*

**PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.**





**CSI COLLEGE OF ENGINEERING**

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgiris. 643215.

Edwin Charles. J  
7106 20103601

MCQs on Internet of Things (IoT)

15  
15

Marks : 15

Choose the correct answer for the following questions.

1. What does IoT stand for?

- A) Internet of Technology
- B) Internet of Things
- C) International of Things
- D) Integrated of Technology

2. Which layer of the IoT architecture is responsible for data sensing and collection?

- A) Application Layer
- B) Network Layer
- C) Perception Layer
- D) Security Layer

3. Which protocol is commonly used for lightweight messaging in IoT applications?

- A) HTTP
- B) FTP
- C) MQTT
- D) SMTP

4. What type of device is an ESP8266?

- A) Microcontroller
- B) Sensor
- C) Actuator
- D) Gateway

5. In IoT, which of the following is considered a connectivity protocol?

- A) ZigBee
- B) SQL
- C) Java
- D) HTML

*R. Mayyamb*  
PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI-COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgiris. 643215.

6. Which of the following is NOT a common IoT application?

- A) Smart Homes
- B) Industrial Automation
- C) Email Communication
- D) Wearable Health Devices

7. What is a major advantage of using Edge-Computing in IoT?

- A) Increased latency
- B) Reduced data processing costs
- C) Faster data processing
- D) Limited device connectivity

8. Which cloud service is specifically designed for IoT applications?

- A) AWS EC2
- B) Google Cloud Storage
- C) AWS IoT
- D) Azure Virtual Machines

9. What is a common threat to IoT devices?

- A) Firmware updates
- B) DDoS attacks
- C) Data redundancy
- D) Local storage

10. Which of the following is a key security feature in IoT communications?

- A) Data Compression
- B) Encryption
- C) User Interface Design
- D) Power Saving Modes

11. What is the purpose of a gateway in an IoT architecture?

- A) To store data
- B) To connect IoT devices to the internet
- C) To power sensors
- D) To process data

*R. Mary Shreya*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgiris. 643215.

12. Which protocol is commonly used for secure communication in IoT?

- A) FTP
- B) SSH
- C) TLS
- D) DHCP

13. Which of the following statements is true regarding IPv6 in IoT?

- A) It reduces the number of available IP addresses.
- B) It is primarily used for web browsing.
- C) It allows for a significantly larger address space.
- D) It is outdated and no longer used.

14. What type of data processing is performed on the edge in an IoT architecture?

- A) Raw data storage
- B) Complex machine learning algorithms
- C) Real-time filtering and analysis
- D) Full-scale database management

15. Which emerging technology is likely to enhance IoT capabilities in the future?

- A) 4G Connectivity
- B) Blockchain
- C) Analog Computing
- D) CD-ROM Technology

*R. Mary Shanthi*  
PRINCIPAL

CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi, File No. 110-52-2011-E-ET, dated NOV. 1998  
Government of Tamil Nadu, vide GO Ms. No. 112, dated 20.11.1998  
Affiliated to Anna University, Chennai, Tamil Nadu, Act 26 of 2001, w.e.f. 12.2001

## CSI COLLEGE OF ENGINEERING

### DEPARTMENT OF ECE

## Certificate Course on "Internet Of Things"

Date: 07-08-2023 to 11-08-2023

S.NO	REGISTER NUMBER	STUDENT NAME	Marks (15)	Pass/Fail
1	710620106001	AISHWARYA J	12	Pass
2	710620106002	BIJU FASTINO RAYMOND B	13	Pass
3	710620106003	CHARAN ANTHONY JOSEPH R	15	Pass
4	710620106004	MAHALAKSHMI R	12	Pass
5	710620106006	NEHASIN N	15	Pass
6	710620106007	SNEHA V	15	Pass
7	710620106008	SOWMIYA R	15	Pass
8	710620106009	YAZHLINIYA M	14	Pass
9	710620106301	Edwin Charles J	15	Pass
10	710620106302	John Jacked A	12	Pass

*L. Mary Shanthi*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 216.





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F No 730-52/101 (E)ET/97 dated NOV. 17, 1997)  
Government of Tamil Nadu (vide GO Ms. No. 112 dated 23.3.1998)  
Allotted to Anna University, Chennai (Tamil Nadu Act 28 of 2001) w.e.f. 11.12.2001.

11	710620106303	Sanjay Kumar S	13	Pass
12	710620106305	Sriram	13	Pass
13	710620106306	Vishnu B	12	Pass
14	710620106307	Vishnu K	15	Pass

*P. May Shant*

PRINCIPAL

C.S.I. COLLEGE OF ENGINEERING  
KETTI-643 216.

*J. Jeyaraj*  
HOD-ECE





# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgiris. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

This is to certify that Mr/MS. AISHWARYA J has successfully completed the course under the topic " **Internet of Things (IoT)** " from 07/08/2023 to 11/08/2023.

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.



DR. J. SILAMBOLI

Course Coordinator

PROF. K. KOMATHY VANITHA

Head of the department





# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

This is to certify that Mr/MS. BIJU FASTINO RAYMOND B has successfully completed the course under the topic " **Internet of Things (IoT)** " from 07/08/2023 to 11/08/2023.

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.



DR. J. SILAMBOLI

←————→  
Course Coordinater

PROF. K. KOMATHY VANITHA

←————→  
Head of the department



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgiris. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

This is to certify that Mr/MS. CHARAN ANTHONY JOSEPH R has successfully completed the course under the topic " **Internet of Things (IoT)** " from 07/08/2023 to 11/08/2023.

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI-643 215,



DR. J. SILAMBOLI



Course Coordinator

PROF. K. KOMATHY VANITHA



Head of the department

# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## Embedded System Design

5-day course structure for "Embedded System Design"

Day	Topic	Sessions	Hands-on Activities
Day 1	Introduction to Embedded Systems	Morning: - What are Embedded Systems? - Components of Embedded Systems Afternoon: - Basic Electronics for Embedded Systems	- Setting up the development environment - Basic GPIO control using an ARM microcontroller
Day 2	Microcontroller Architecture and Programming	Morning: - Microcontroller Architecture - Programming Embedded Systems Afternoon: - Interrupts and Timers	- Writing a C program to control LEDs using timers
Day 3	Communication Protocols and Peripherals	Morning: - Serial Communication Protocols (UART, SPI, I2C) - Interfacing Peripherals Afternoon: - Serial Communication Hands-on	- Interfacing and reading data from a sensor (e.g., temperature sensor) via I2C or SPI
Day 4	Real-Time Operating Systems (RTOS)	Morning: - Introduction to RTOS - RTOS in Embedded Systems Afternoon: - RTOS Hands-on	- Implementing basic multitasking using FreeRTOS (or other RTOS)
Day 5	System Integration and Testing	Morning: - System Integration - Power Management Afternoon: - Final Project: Embedded System Design	- Designing and building a final project that integrates sensors, communication, and RTOS concepts

*R. May Shank*  
PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.



**CSI COLLEGE OF ENGINEERING**  
**DEPARTMENT OF ECE**  
**Certificate Course on "Embedded System Design "**  
**ATTENDANCE SHEET** **Date:05-02-2024 to 09-02-2024**

S.NO	REGISTER NUMBER	STUDENT NAME	05-02-2024	06-02-2024	07-02-2024	08-02-2024	09-02-2024
1	710622106001	GOPI LAKRISHNAN D	Gopal	Gopal	Gopal	Gopal	Gopal
2	710622106002	JUDITH PRABHA D	D.Jf	D.Jf	D.Jf	D.Jf	D.Jf
3	710622106004	KEERTHANA D	D.Keerthana	D.Keerthana	D.Keerthana	D.Keerthana	D.Keerthana
4	710622106005	LAKSHMANAN	Lakshman	Lakshman	Lakshman	Lakshman	Lakshman
5	710622106006	LAWRENCE	L	L	L	L	L
6	710622106007	PRADEEBAN R	PuR	PuR	PuR	PuR	PuR
7	710622106008	PRAKASH D	Prakash.D	Prakash.D	Prakash.D	Prakash.D	Prakash.D
8	710622106009	PRIYADHARSHINI R	P.Priyadharshini	P.Priyadharshini	P.Priyadharshini	P.Priyadharshini	P.Priyadharshini
9	710622106011	SHAESON CHELLSIGH	S.Chellsigh	S.Chellsigh	S.Chellsigh	S.Chellsigh	S.Chellsigh
10	710622106012	SREE PRAKASH M	S.P	S.P	S.P	S.P	S.P
11	710622106013	SRIVARUNA D	Srivaruna.D	Srivaruna.D	Srivaruna.D	Srivaruna.D	Srivaruna.D
12	710622106014	SURJITH R	Surjith	Surjith	Surjith	Surjith	Surjith
13	710622106015	SWETHA M	Swetha	Swetha	Swetha	Swetha	Swetha
14	710622106016	SWETHA S	S.Swetha	S.Swetha	S.Swetha	S.Swetha	S.Swetha
15	710622106301	CHRIS RAJESH W	Chris Rajesh W	Chris Rajesh W	Chris Rajesh W	Chris Rajesh W	Chris Rajesh W
16	710622106302	GOWTHAM P	Gowtham	Gowtham	Gowtham	Gowtham	Gowtham
17	710622106303	HARISH KUMAR M	H.K.M	H.K.M	H.K.M	H.K.M	H.K.M
18	710622106304	KARTHIKEYAN.P	Karthi	Karthi	Karthi	Karthi	Karthi
19	710622106305	KISHORE .R	Kishore	Kishore	Kishore	Kishore	Kishore





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi  
Ketti, The Nilgiris. 643215.

KEERTHANA. D

#10622106004

### MCQs on Embedded System Design

Marks : 15

Choose the correct answer for the following questions.

1. What is an embedded system?
  - A) A system that performs multiple tasks simultaneously
  - ✓ B) A system designed to perform a specific function
  - C) A system with no real-time constraints
  - D) A system that requires user input for every action
2. Which of the following is a characteristic of an embedded system?
  - A) High power consumption
  - B) General-purpose computation
  - ✓ C) Real-time operation
  - D) Complex user interfaces
3. What is the function of a microcontroller in an embedded system?
  - A) Provide input/output control
  - ✓ B) Control and process data from sensors
  - C) Manage network connections
  - D) Store data long-term
4. Which of the following is typically used as the main processing unit in an embedded system?
  - A) FPGA
  - B) Microprocessor
  - C) DSP (Digital Signal Processor)
  - ✓ D) Microcontroller
5. Which of the following programming languages is most commonly used for embedded systems?
  - A) Java
  - B) Python
  - ✓ C) C
  - D) Ruby

*R. Mey Shankar*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgirs. 643215.

6. What is the primary purpose of a real-time operating system (RTOS) in embedded systems?
- A) Managing hardware resources
  - ✓ B) Ensuring real-time task execution
  - C) Managing file systems
  - D) Compiling software
7. Which of the following memory types is non-volatile and used in embedded systems?
- A) RAM
  - ✓ B) ROM
  - C) Cache
  - D) DRAM
8. Which bus is commonly used for communication between peripherals and processors in embedded systems?
- ✓ A) I2C
  - B) USB
  - C) Ethernet
  - D) PCIe
9. What does 'firmware' refer to in an embedded system?
- A) Operating system for the system
  - ✓ B) Software embedded into hardware
  - C) Hardware instructions for the processor
  - D) Diagnostic software for testing
10. Which power management technique is commonly used in embedded systems?
- A) Overclocking
  - ✓ B) Power gating
  - C) Cache flushing
  - D) Dynamic memory allocation
11. In an embedded system, what is the function of an ADC (Analog-to-Digital Converter)?
- ✓ A) Convert analog signals to digital signals
  - B) Convert digital signals to analog signals
  - C) Boost signal strength
  - D) Control power usage

*R. May Grant*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgirs. 643215.

12. Which of the following is considered a real-time constraint in embedded systems?

- A) High data storage requirements
- ✓ B) Deterministic response times
- C) Unlimited power supply
- D) Internet connectivity

13. Which architecture is commonly used in embedded system design?

- A) Von Neumann architecture
- ✓ B) Harvard architecture
- C) RISC-V architecture
- D) CISC architecture

14. In embedded systems, watchdog timers are primarily used for:

- A) Monitoring system health
- B) Data storage
- C) Measuring time intervals
- ✓ D) Resetting the system if it fails

15. Which of the following is a widely used debugging tool in embedded systems?

- A) Multimeter
- ✓ B) JTAG
- C) Logic analyzer
- D) Spectrum analyzer

*R. May Shankar*  
PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (E.No.730-32/2001/EiET) dt. dated NOV. 17, 1997)  
Government of Tamil Nadu (vide G.O.Ms. No. 112, dated 23.3.1998)  
Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.01.12.2001)

## CSI COLLEGE OF ENGINEERING

### DEPARTMENT OF ECE

## Certificate Course on "Embedded System Design "

Date:05-02-2024 to 09-02-2024

S.NO	REGISTER NUMBER	STUDENT NAME	Mark(15)	Pass/Fail
1	710622106001	GOGULAKRISHNAN D	10	Pass
2	710622106002	JUDITH PRABHA D	12	Pass
3	710622106004	KEERTHANA D	15	Pass
4	710622106005	LAKSHMANAN	11	Pass
5	710622106006	LAWRENCE	10	Pass
6	710622106007	PRADEEBAN R	12	Pass
7	710622106008	PRAKASH D	12	Pass
8	710622106009	PRIYADHARSHINI R	12	Pass
9	710622106011	SHAESON CHELLSIGH	12	Pass

*R. Mary Shanti*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING,  
KETTI - 643 216.







## CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No.710-52-307) (EET) 97 dtd (NOV. 17, 1997).  
Government of Tamil Nadu (vide GO.Ms. No. 112 dated 21.1.1998).  
Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2007 with effect from 12.2.2007).

10	710622106012	SREE PRAKASH M	15	Pass
11	710622106013	SRIVARUNA D	15	Pass
12	710622106014	SURJITH R	15	Pass
13	710622106015	SWETHA M	15	Pass
14	710622106016	SWETHA S	12	Pass
15	710622106301	CHRIS RAJESH.W	15	Pass
16	710622106302	GOWTHAM.L	04	Fail
17	710622106303	HARISH.K	10	Pass
18	710622106304	KARTHIKEYAN.P	03	Fail
19	710622106305	KISHORE .R	12	Pass

*R. Meey Shanthi*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.



*A. J. Janner*  
HOD-ECE



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT MR./MS.

### GOGULAKRISHNAN D

HAS SUCCESSFULLY COMPLETED THE COURSE UNDER THE TOPIC  
**'EMBEDDED SYSTEM DESIGN'**  
FROM 05/02/2024 TO 09/02/2024.

Dr. R. Chandrasekaran  
**COURSE COORDINATOR**

Prof. K. Komathy Vanitha  
**HEAD OF THE DEPARTMENT**



PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT MR./MS.

### JUDITH PRABHA D

HAS SUCCESSFULLY COMPLETED THE COURSE UNDER THE TOPIC  
**'EMBEDDED SYSTEM DESIGN'**  
FROM 05/02/2024 TO 09/02/2024.

Dr. R. Chandrasekaran  
COURSE COORDINATER

Prof. K. Komathy Vanitha  
HEAD OF THE DEPARTMENT



PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI-643 215.



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT MR./MS.

**KEERTHANA D**

HAS SUCCESSFULLY COMPLETED THE COURSE UNDER THE TOPIC  
**'EMBEDDED SYSTEM DESIGN'**  
FROM 05/02/2024 TO 09/02/2024.



Dr. R. Chandrasekaran  
COURSE COORDINATOR

Prof. K. Komathy Vanitha  
HEAD OF THE DEPARTMENT

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.



# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## VLSI Design

5-day course structure for "VLSI Design"

Day	Topic	Sessions	Hands-on Activities
Day 1	Introduction to VLSI Design	<ul style="list-style-type: none"> <li>-Overview of VLSI Design</li> <li>- Moore's Law and Scaling</li> <li>- VLSI Design Flow</li> <li>- CMOS Technology</li> <li>- CMOS Transistor Theory</li> <li>-Fabrication of Integrated Circuit</li> </ul>	<ul style="list-style-type: none"> <li>-Setting up a VLSI design tool Cadence and basic overview of its interface and functionality</li> <li>-Simulation of basic CMOS inverter design</li> </ul>
Day 2	MOSFET and CMOS Circuit Design	<ul style="list-style-type: none"> <li>-MOSFET Operation and Characteristics</li> <li>-Static and Dynamic Power Dissipation in CMOS</li> <li>-Logic Gates Design Using CMOS (NAND, NOR, XOR)</li> <li>-Pass Transistor Logic</li> </ul>	<ul style="list-style-type: none"> <li>-Designing a basic combinational logic circuit using CMOS transistors</li> <li>-Simulation of NAND, NOR, and XOR gates in VLSI design tool</li> </ul>
Day 3	Combinational and Sequential Circuit Design	<ul style="list-style-type: none"> <li>-Designing Combinational Circuits (Multiplexers, Decoders)</li> <li>-Sequential Circuits (Flip-Flops, Latches)</li> <li>-Designing Arithmetic Circuits (Adders, Subtractors, Multipliers)</li> </ul>	<ul style="list-style-type: none"> <li>-Implementing a multiplexer and flip-flop design in simulation tool.</li> <li>-Simulating a full adder and sequential flip-flop circuit</li> </ul>
Day 4	Layout Design and Verification	<ul style="list-style-type: none"> <li>-Introduction to VLSI Physical Design</li> <li>-Layout Design Rules (DRC, LVS)</li> <li>-Parasitic Extraction</li> </ul>	<ul style="list-style-type: none"> <li>-Creating the layout for basic gates (e.g., NAND, NOR) in the VLSI tool.</li> <li>-Performing DRC and LVS checks on the designed layout</li> </ul>
Day 5	Timing Analysis, Power Optimization, and Testing	<ul style="list-style-type: none"> <li>-Timing Analysis (Setup, Hold Time)</li> <li>-Clock Distribution Networks</li> <li>-Power Optimization Techniques.</li> <li>-Testing and Verification of VLSI Circuits (DFT)</li> </ul>	<ul style="list-style-type: none"> <li>-Performing timing analysis on a combinational circuit design.</li> <li>-Final project: Simulate a VLSI circuit and verify its timing, power and correctness.</li> </ul>

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.

*L. May Shankar*



**CSI COLLEGE OF ENGINEERING**  
**DEPARTMENT OF ECE**  
**Certificate Course on "VLSI Design"**

**ATTENDANCE SHEET**

Date: 16-10-2023 to 20-10-2023

S.NO.	REGISTER NUMBER	STUDENT NAME	16-10-2023	17-10-2023	18-10-2023	19-10-2023	20-10-2023
1	710621106002	ADESH B	Adesh	Adesh	Adesh	Adesh	Adesh
2	710621106004	DIHANU CHEYAN C	Dhanu	Dhanu	Dhanu	Dhanu	Dhanu
3	710621106005	HARIHARAN K	Rathik	Rathik	Rathik	Rathik	Rathik
4	710621106006	MOHANAS	Mohana S	Mohana S	Mohana S	Mohana S	Mohana S
5	710621106007	MUTHUGANESH M	Muthu	Muthu	Muthu	Muthu	Muthu
6	710621106008	NITHISH G G	Nithish	Nithish	Nithish	Nithish	Nithish
7	710621106009	PREDHIKSHA D	Predhi	Predhi	Predhi	Predhi	Predhi
8	710621106010	PREETHI R	Preethi R	Preethi R	Preethi R	Preethi R	Preethi R
9	710621106011	RICHARD STEVENS S	Richard	Richard	Richard	Richard	Richard
10	710621106012	ROSHAN J	Roshan	Roshan	Roshan	Roshan	Roshan
11	710621106013	SHARUMITHA A	Shasumitha	Shasumitha	Shasumitha	Shasumitha	Shasumitha
12	710621106014	SIVANESH P	Siva	Siva	Siva	Siva	Siva
13	710621106015	SOWMYA P K	Sowmya	Sowmya	Sowmya	Sowmya	Sowmya
14	710621106016	SUGAVANESHS	Sugava	Sugava	Sugava	Sugava	Sugava
15	710621106017	SUHASH G	Suhash	Suhash	Suhash	Suhash	Suhash
16	710621106018	VINCENTRAJA A	Vincent	Vincent	Vincent	Vincent	Vincent
17	710621106304	VIKRAM	B.Vikram	B.Vikram	B.Vikram	B.Vikram	B.Vikram
18	710621106302	PRASANTH	Prasanth	Prasanth	Prasanth	Prasanth	Prasanth
19	710621106303	SUJITH	R.Su	R.Su	R.Su	R.Su	R.Su
20	710621106301	JEYAKUMAR	D.Jeff	D.Jeff	D.Jeff	D.Jeff	D.Jeff

*R. Mary Grant*

**PRINCIPAL**  
**C.S.I. COLLEGE OF ENGINEERING**  
**KETTI - 643 216.**





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi  
Ketti, The Nilgiris. 643215.

### MCQs on VLSI Design

PREDHIKSHA . D

710621106009

Marks : 15

Choose the correct answer for the following questions.

14/15

1. What does VLSI stand for?

- A) Very Large Scale Integration
- B) Variable Large Scale Integration
- C) Very Low Scale Integration
- D) Variable Low Scale Integration

2. Which of the following is a common semiconductor material used in VLSI?

- A) Gold
- B) Silicon
- C) Copper
- D) Aluminum

3. What is the primary function of a CMOS inverter?

- A) Signal amplification
- B) Signal buffering
- C) Logic level inversion
- D) Voltage regulation

4. What layer in VLSI design represents the actual physical implementation?

- A) Schematic Layer
- B) Layout Layer
- C) Simulation Layer
- D) Test Layer

5. Which technology is primarily used for fabricating VLSI circuits?

- A) Thermoplastic Technology



*L. Mayasanth*

PRINCIPAL

CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgirs. 643215.

- B) Photolithography
- C) Electroless Plating
- D) 3D Printing

6. What is the purpose of Design Rule Checking (DRC)?

- A) Verify circuit functionality
- B) Check layout against manufacturing rules
- C) Test circuit speed
- D) Analyze power consumption

7. Which of the following is a common VLSI design tool?

- A) Microsoft Excel
- B) Cadence
- C) MATLAB
- D) Visual Studio

8. What type of circuit can be designed using VLSI technology?

- A) Analog Circuits
- B) Digital Circuits
- C) Mixed-Signal Circuits
- D) All of the above

9. Which type of logic gate is a basic building block in VLSI design?

- A) OR Gate
- B) AND Gate
- C) NOT Gate
- D) All of the above

10. What is a major benefit of VLSI technology?

- A) Increased power consumption
- B) Reduced size of electronic circuits
- C) Increased cost
- D) More complex design processes

*R. Mayank*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.







## CSI COLLEGE OF ENGINEERING

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

Ketti, The Nilgirs. 643215.

- 11. What does parasitic capacitance refer to in VLSI design?
  - A) Intended capacitance in a circuit
  - B) Unwanted capacitance effects
  - C) Capacitance in digital circuits only
  - D) None of the above
  
- 12. Which process involves the removal of unwanted materials in VLSI fabrication?
  - A) Etching
  - B) Deposition
  - C) Diffusion
  - D) Doping
  
- 13. What does the term 'yield' refer to in VLSI manufacturing?
  - A) The total number of circuits produced
  - B) The percentage of functional devices
  - C) The cost of manufacturing
  - D) The speed of devices
  
- 14. In VLSI design, what does 'fan-out' refer to?
  - A) Number of inputs to a gate
  - B) Number of outputs a gate can drive
  - C) Total power consumption
  - D) Signal delay
  
- 15. Which of the following is a benefit of using HDL (Hardware Description Language) in VLSI design?
  - A) Reduces the cost of manufacturing chips
  - B) Allows for simulation and verification of designs before fabrication
  - C) Reduces the power consumption of the chip
  - D) Increases the size of the transistor

*R. Mayank*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215.





## CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No.730-52-301 (E)ET-97 dated NOV. 17, 1997)  
Government of Tamil Nadu (vide GO Ms. No. 112, dated 23.3.1998)  
Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31.12.2001)

### CSI COLLEGE OF ENGINEERING

#### DEPARTMENT OF ECE

### Certificate Course on "VLSI Design"

Date:16-10-2023 to 20-10-2023

S.NO	REGISTER NUMBER	STUDENT NAME	Marks (15)	Pass/Fail
1	710621106002	ADESH.B	15	Pass
2	710621106004	DHANUNCHJEYAN.C	12	Pass
3	710621106005	HARIHARAN.K	15	Pass
4	710621106006	MOHANA.S	15	Pass
5	710621106007	MUTHUGANESH.M	15	Pass
6	710621106008	NITHISH.G.G	15	Pass
7	710621106009	PREDHIKSHA.D	14	Pass
8	710621106010	PREETHI.R	15	Pass
9	710621106011	RICHARD STEVENS.S	14	Pass

*R. Meyy Shankar*

PRINCIPAL

C.S.I. COLLEGE OF ENGINEERING

KETTI - 643 216.





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No.730-52-301 (E)ET/97 dated NOV. 17, 1997).  
Government of Tamil Nadu (vide GO Ms. No. 112 dated 23.3.1998).  
Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.01.12.2001)

10	710621106012	ROSHAN.J	15	Pass
11	710621106013	SHARUMITHA.V	12	Pass
12	710621106014	SIVANESH.P	15	Pass
13	710621106015	SOWMIYA.P.K	15	Pass
14	710621106016	SUGAVANESH.S	14	Pass
15	710621106017	SUHASH.G	14	Pass
16	710621106018	VINCENTRAJA	12	Pass
17	710621106304	VIKRAM	13	Pass
18	710621106302	PRASANTH	12	Pass
19	710621106303	SUJITH	12	Pass
20	710621106301	JEYAKUMAR	12	Pass

*P. Meyyashankar*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 218.

*P. J. Jeyaraman*  
HoD-ECE





# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

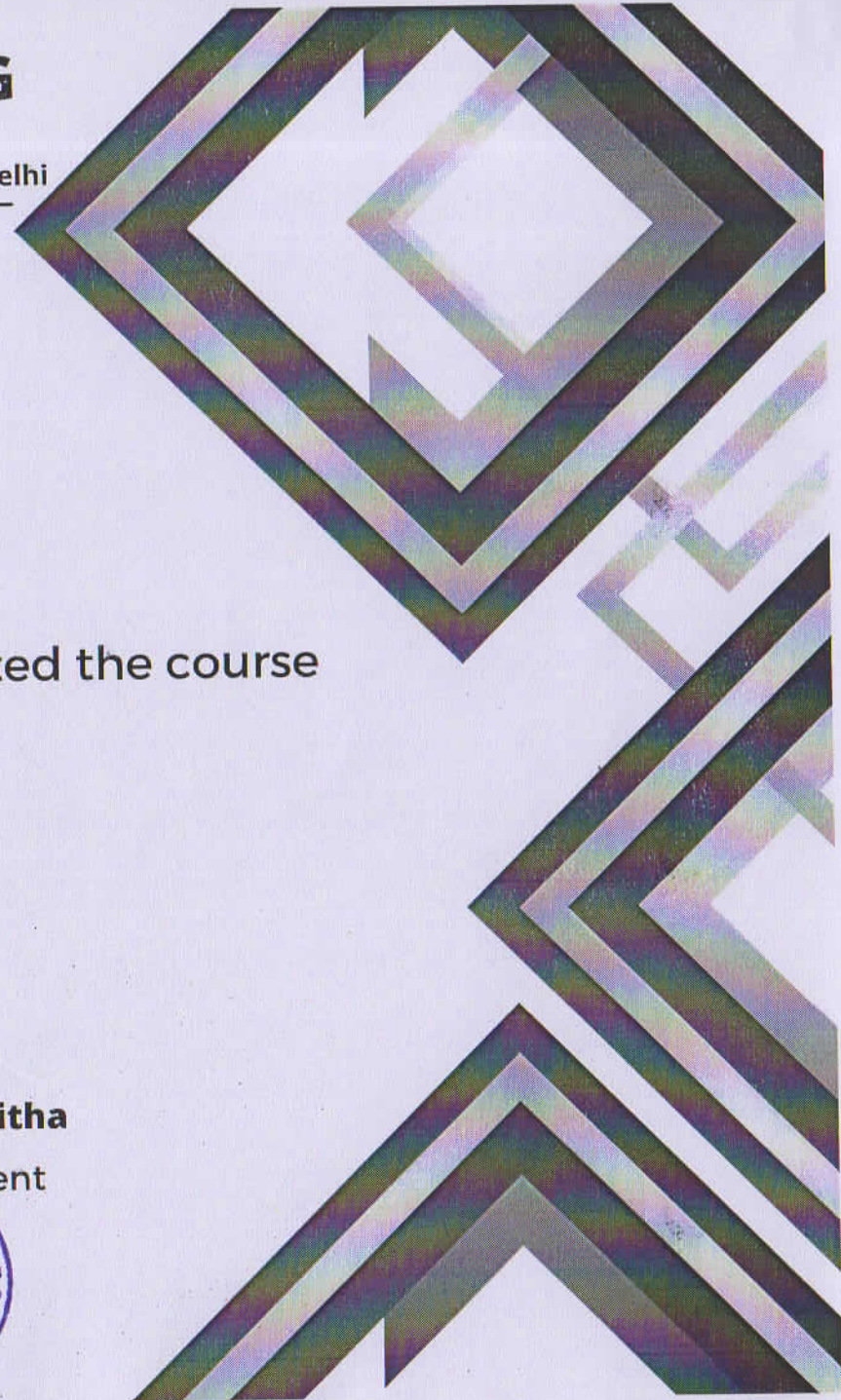
## CERTIFICATE OF COMPLETION

- This certificate is presented to  
Mr/MS. **ADESH** has successfully completed the course  
under the topic " **VLSI Design** "  
from 16-10-2023 to 20-10-2023.

**Prof. S. Sivalingam**  
Course Coordinator

**Prof. K. Komathy Vanitha**  
Head of the department

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI-643 215.





# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgirs. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

## CERTIFICATE OF COMPLETION

- This certificate is presented to  
**Mr/MS. DHANUNCHJEYAN C** has successfully  
completed the course under the topic " **VLSI Design** "  
from 16-10-2023 to 20-10-2023.

**Prof. S. Sivalingam**  
Course Coordinator

**Prof. K. Komathy Vanitha**  
Head of the department

**PRINCIPAL**  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





# CSI COLLEGE OF ENGINEERING

Ketti, The Nilgiris. 643215.

Affiliated to Anna University - Chennai, Approved by AICTE - New Delhi

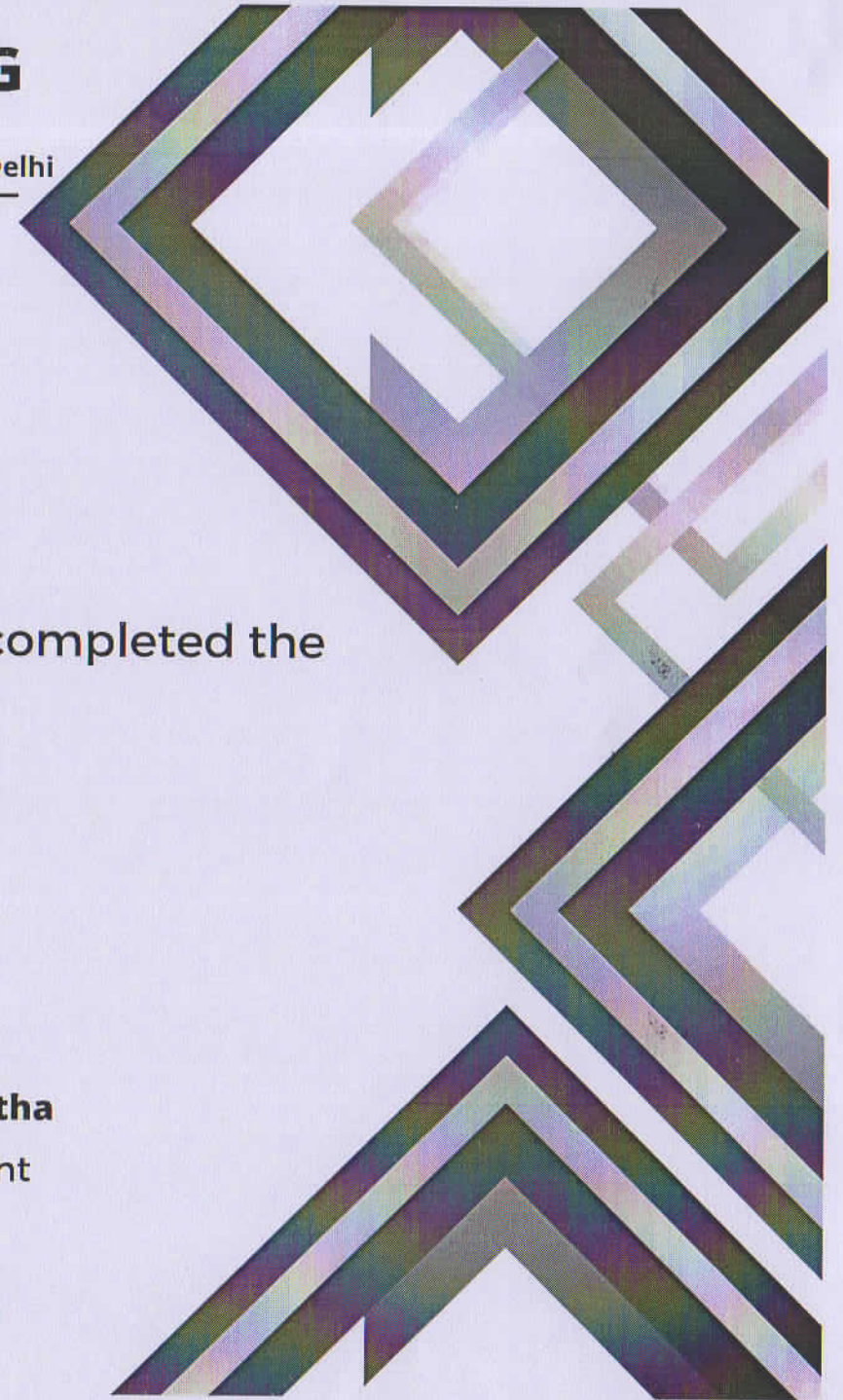
## CERTIFICATE OF COMPLETION

This certificate is presented to  
Mr/MS. HARIHARAN.K has successfully completed the  
course under the topic " **VLSI Design** "  
from 16-10-2023 to 20-10-2023.

**Prof. S. Sivalingam**  
Course Coordinator

**Prof. K. Komathy Vanitha**  
Head of the department

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 215.





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No.730-52-301 (E)ET/97 dated NOV. 17, 1997),  
Government of Tamil Nadu (vide GO Ms. No, 112, dated 23.3.1998),  
Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31.12.2001).



## DEPARTMENT OF SCIENCE & HUMANITIES

### ARTIFICIAL INTELLIGENCE COURSE

22/11/2023 – 26/11/2023

### COURSE CONTENT

S.NO	DAY	CONTENT
1	22.11.2023	INTRODUCTION TO ARTIFICIAL INTELLIGENCE
2	23.11.2023	FUTURE TRENDS IN ARTIFICIAL INTELLIGENCE
3	24.11.2023	DEEPING LEARNING & NEURAL NETWORKS
4	25.11.2023	ETHICS & SOCIAL IMPLICATIONS OF AI
5	26.11.2023	NATURAL LANGUAGE PROCESSING (NLP)

*Stany*

Head of the Department



*R. My Senthil*

PRINCIPAL  
CSI COLLEGE OF ENGINEERING  
KETTI - 643 216.



## B.E., ECE

S.NO	REG NO	STUDENT NAME	22/11/2024	23/11/2024	24/11/2024	25/11/2024	26/11/2024
1	710623106001	AMREEN LATHIFA	Amreen Lathifa	Amreen Lathifa	Amreen Lathifa	Amreen Lathifa	Amreen Lathifa
2	710623106002	DEEPAK G	Deepak	Deepak	Deepak	Deepak	Deepak
3	710623106003	DHILIP DANIEL	Dhili Daniel	Dhili Daniel	Dhili Daniel	Dhili Daniel	Dhili Daniel
4	710623106004	JEEVITHA	Jeevitha	Jeevitha	Jeevitha	Jeevitha	Jeevitha
5	710623106005	JENIFER	Jenifer	Jenifer	Jenifer	Jenifer	Jenifer
6	710623106006	KAVIARASAN	Kaviasaran	Kaviasaran	Kaviasaran	Kaviasaran	Kaviasaran
7	710623106007	KAVITHA	Kavitha	Kavitha	Kavitha	Kavitha	Kavitha
8	710623106008	LOGESHWARAN	Logeshwaran	Logeshwaran	Logeshwaran	Logeshwaran	Logeshwaran
9	710623106009	MANIGANDAN.N.M	Manikandan	Manikandan	Manikandan	Manikandan	Manikandan
10	710623106010	MARLEEYA RUKSHANA	Marleeya Rukshana	Marleeya Rukshana	Marleeya Rukshana	Marleeya Rukshana	Marleeya Rukshana
11	710623106011	NARESH S	Nares	Nares	Nares	Nares	Nares
12	710623106012	PAUL DAVID	Paul David	Paul David	Paul David	Paul David	Paul David
13	710623106013	PRADEEP.P	Pradeep	Pradeep	Pradeep	Pradeep	Pradeep
14	710623106014	RAJESH KUMAR	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh
15	710623106015	THARUN	M. Tharun	M. Tharun	M. Tharun	M. Tharun	M. Tharun
16	710623106016	SACKSHITH	Sackshith	Sackshith	Sackshith	Sackshith	Sackshith
17	710623106017	SRIJA.K	Srija	Srija	Srija	Srija	Srija
18	710623106018	SUJITHRA.S	Sujithra	Sujithra	Sujithra	Sujithra	Sujithra

*R. Mayank*  
PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI-643 215.



*Jony*  
Head of the Department





# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No. 730-52-301 (E)ET (97 Dated NOV 17, 1997)

Government of Tamil Nadu (vide GO Ms. No. 112, Dated 23 3 1998)

Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31 12 2001)



REGISTER NUMBER: 710623106001

NAME OF THE STUDENT: AMREEN LATHIFA

PROGRAMME: B.E., ECE

COURSE NAME: ARTIFICIAL INTELLIGENCE COURSE

MAXIMUM MARKS: 20

DATE: 27-11-2023

TIME: 9.30 to 10.00 AM

86  
100

1. What is the primary purpose of using AI in cybersecurity?

- A) To reduce human error
- B) To enhance data storage
- C) To automate social media management
- D) To improve graphic design

2. Which AI technique is commonly used for anomaly detection in network traffic?

- A) Linear Regression
- B) Decision Trees
- C) Neural Networks
- D) K-means Clustering

3. What does a Security Information and Event Management (SIEM) system do?

- A) Store data
- B) Analyze security alerts
- C) Control access
- D) Encrypt files



*R. Mary Shantha*

PRINCIPAL  
CSI College of Engineering  
Ketti - 643 215



# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No. 730-52-301 (E)ET (97 Dated NOV 17, 1997)

Government of Tamil Nadu (vide GO Ms. No. 112, Dated 23 3 1998)

Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31 12 2001)



4. Which of the following is a benefit of using machine learning in cybersecurity?

- A) Reduced operational costs
- B) Elimination of all cyber threats
- C) Increased manual review processes
- D) Slower incident response times

5. What type of attacks can AI help predict and mitigate?

- A) Phishing attacks
- B) Social engineering attacks
- C) Ransomware attacks
- D) All of the above

6. Which AI approach is used for classifying emails as spam or legitimate?

- A) Clustering
- B) Reinforcement Learning
- C) Supervised Learning
- D) Genetic Algorithms

7. In the context of AI in cybersecurity, what is "threat hunting"?

- A) Scanning for viruses
- B) Proactively searching for threats
- C) Responding to incidents
- D) Managing user accounts

8. What is a potential downside of using AI in cybersecurity?

- A) Improved accuracy
- B) High computational costs
- C) Increased data security
- D) Enhanced threat detection



*R. Mercy Shanthi*

PRINCIPAL  
CSI College of Engineering  
Ketti - 643 215



# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No. 730-52-301 (E)ET (97 Dated NOV 17, 1997)

Government of Tamil Nadu (vide GO Ms. No. 112, Dated 23 3 1998)

Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31 12 2001)



9. Which algorithm is often used for identifying malware signatures?
- A) Random Forest
  - B) Support Vector Machines
  - C) K-Nearest Neighbors
  - D) Naive Bayes
10. What role does natural language processing (NLP) play in cybersecurity?
- A) Analyzing log files
  - B) Detecting insider threats
  - C) Understanding user behavior
  - D) All of the above
11. Which of the following is an application of AI in incident response?
- A) Automated threat detection
  - B) Manual log analysis
  - C) User training programs
  - D) Network hardware upgrades
12. What is "automated phishing detection"?
- A) Manually reviewing emails
  - B) Using AI to identify phishing attempts
  - C) Implementing stronger passwords
  - D) Sending alerts to users



*R. Meey Shantra*

PRINCIPAL  
CSI College of Engineering  
Ketti - 643 215



# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No. 730-52-301 (E)ET (97 Dated NOV 17, 1997)

Government of Tamil Nadu (vide GO Ms. No. 112, Dated 23 3 1998)

Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31 12 2001)



13. Which of these is NOT a use of AI in cybersecurity?

- A) Password generation
- B) Predicting weather patterns
- C) Fraud detection
- D) User behavior analytics

14. How can AI assist in vulnerability management?

- A) By fixing vulnerabilities automatically
- B) By prioritizing vulnerabilities based on risk
- C) By creating software updates
- D) By manually testing all software

15. What does "behavioral analysis" in cybersecurity involve?

- A) Tracking network traffic
- B) Monitoring user actions
- C) Scanning for malware
- D) Updating software

16. Which type of machine learning is typically used for real-time threat detection?

- A) Unsupervised Learning
- B) Semi-supervised Learning
- C) Supervised Learning
- D) Reinforcement Learning

17. What is a "false positive" in the context of AI-based security systems?

- A) A legitimate threat identified as safe
- B) An actual threat that goes undetected
- C) A benign event flagged as a threat
- D) A system failure



*R. Meey Shantra*

PRINCIPAL  
CSI College of Engineering  
Ketti - 643 215



# CSI COLLEGE OF ENGINEERING, KETTI

Approved by AICTE, New Delhi (F.No. 730-52-301 (E)ET (97 Dated NOV 17, 1997)

Government of Tamil Nadu (vide GO Ms. No. 112, Dated 23 3 1998)

Affiliated to Anna University, Chennai (Tamil Nadu Act 26 of 2001 w.e.f.31 12 2001



18. Which AI application can help organizations comply with data privacy regulations?

- A) ~~Data encryption~~
- B) Automated reporting tools
- C) Network firewalls
- D) User training sessions

19. How can AI improve the effectiveness of penetration testing?

- A) By automating attack simulations
- B) By reducing the need for human testers
- C) ~~By eliminating all vulnerabilities~~
- D) By only testing on weekends

20. What is "deep learning" in the context of cybersecurity?

- A) A method for deeper encryption
- B) A subset of machine learning using neural networks
- C) A technique for manual data analysis
- D) ~~A method for creating stronger passwords~~



*R. Meey Shantra*

PRINCIPAL  
CSI College of Engineering  
Ketti - 643 215



## B.E., ECE

S.NO	REG NO	STUDENT NAME	MARK (100)	PASS/FAIL
1	710623106001	AMREEN LATHIFA	86	PASS
2	710623106002	DEEPAK G	74	PASS
3	710623106003	DHILIP DANIEL	85	PASS
4	710623106004	JEEVITHA	95	PASS
5	710623106005	JENIFER	75	PASS
6	710623106006	KAVIARASAN	74	PASS
7	710623106007	KAVITHA	84	PASS
8	710623106008	LOGESHWARAN	78	PASS
9	710623106009	MANIGANDAN.N.M	82	PASS
10	710623106010	MARLEEYA RUKSHANA	75	PASS
11	710623106011	NARESH S	74	PASS
12	710623106012	PAUL DAVID	79	PASS
13	710623106013	PRADEEP.P	81	PASS
14	710623106014	RAJESH KUMAR	83	PASS
15	710623106015	THARUN	76	PASS
16	710623106016	SACKSHITH	76	PASS
17	710623106017	SRIJA.K	86	PASS
18	710623106018	SUJITHRA.S	87	PASS

*R. May Shank*

**PRINCIPAL**  
**CSI COLLEGE OF ENGINEERING**  
KETTI - 644 213



*[Signature]*

**Head of the Department**



*Shilpi Jain*

Mrs. Shilpi Jain  
Director.  
Intellipaate Software Solutions Pvt Ltd

## CERTIFICATE OF COMPLETION

This Certificate Is Presented To

**AMREEN LATHIFA**

Who has successfully completed all the requirements stipulated by Intellipaate for

**Free Online Artificial Intelligence(AI) Course**

to achieve professional excellence

Issue Date: November 26, 2023

VERIFIED  
CERTIFICATE

*R. Mey Swathi*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
KETTI - 643 215





*Shilpi Jain*

Mrs. Shilpi Jain  
Director,  
IntelliPaat Software Solutions Pvt Ltd

## CERTIFICATE OF COMPLETION

VERIFIED  
CERTIFICATE

This Certificate Is Presented To

**DEEPAK G**

Who has successfully completed all the requirements stipulated by IntelliPaat for

### Free Online Artificial Intelligence(AI) Course

to achieve professional excellence

Issue Date: November 26, 2023

*S. Mary Shanto*

PRINCIPAL  
C.S.I. COLLEGE OF ENGINEERING  
MILGIRI, K.P. ROAD, KETTI.







*Shilpi Jain*

Mrs. Shilpi Jain  
Director,  
Intellipaat Software Solutions Pvt Ltd.

## CERTIFICATE OF COMPLETION

VERIFIED  
CERTIFICATE

This Certificate Is Presented To

**DHILIP DANIEL**

Who has **successfully completed** all the requirements  
stipulated by IntelliPaat for

**Free Online Artificial  
Intelligence(AI) Course**

to achieve professional excellence

Issue Date: November 26, 2023

*R. Mary Shanthi*

PRINCIPAL,  
C.S.I. COLLEGE OF ENGINEERING  
KETTI-643 216.

