



A REPORT
ON
TWO DAY WORKSHOP TITLED
“INTERNET OF THINGS WITH ARTIFICIAL INTELLIGENCE”

Held on

27th & 28th May 2024



Organized by

Department of Electronics and Communication Engineering
KINGS COLLEGE OF ENGINEERING, PUNALKULAM

A NAAC Accredited Institution

Recognized under 2(f) & 12(B) of UGC

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

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A Glimpse on the Background of Workshop:

In KCE, Department of Electronics and Communication Engineering, has organized two day workshop exclusively for II year ECE students in the title of “**Internet of Things with Artificial Intelligence**” on 27th & 28th May 2024. Totally 83 students have enthusiastically participated in this workshop.

The main objective of this Workshop is to educate some knowledge about the Internet of things and Artificial intelligence to the students. To identify problems where artificial intelligence techniques are applicable. To apply selected basic AI techniques and to judge applicability of more advanced techniques. To obtain and analyze data from things (devices) that were previously disconnected from most data processing tools.

About the workshop:

The Workshop started with Tamizhthai Vazhththu. Ms. G.Harini, from second year ECE welcomes the gathering. Dr.T.Shanthi, HOD/ECE delivered the Inaugural address. Mrs.N.Mangaiyarkarasi, Head of Student Affairs & Dr.R.Ponni, Deputy of COE, delivered the special address.

Mr. R. Sathyaraj, Academic Coordinator of ECE, introduced the Resource persons.

Day-1 Resource Persons - Anitha P, Backia Regil P, Athithyan G, Kiruthika D – Students of II ECE-A

Day-2 Resource Persons – Suthersan A , Suriyanarayanan R, Naveen G, Mohamed Kasim J - Students of II ECE-B.

Mrs.U.Jeyamalar, AP/ECE & Mr.R.Balakrishnan, AP/ECE were the coordinators of this workshop.

Mr. B.Gunaseelan & Mr.M.Arunan from II ECE were the student coordinators of this workshop.



Dignitaries on the Dias



Inaugural address by Dr.T.Shanthi ,HOD/ECE



Special Address by Dr.R.Ponni, AP/ECE



Dignitaries were honored by the student coordinators



Dignitaries were honored with a shawl by the students



Resource persons were honored with a shawl



Resource person and student coordinators were honored

DAY-1 WORKSHOP:

SESSION:1

The first session was handled by **Ms.D.Kiruthika, from II ECE-A**. She gave an excellent lecture to the students and interacted with the students about the Internet of Things, Evolution of Internet of Things & Artificial intelligence. She also explained about the IoT with AI concepts with real time examples.



Resource Person Ms.D.Kiruthika, II ECE-A delivering the lecture to the Participants

She discussed in detail about the Home automation system using AI and also about the key applications of a smart home is to assist the elderly and disabled peoples.

- These home systems use assistive technology to accommodate an owner's specific disabilities.
- Voice control can assist users with sight and mobility limitations while alert systems can be connected directly to cochlear implants worn by hearing-impaired users.
- They can also be equipped with additional safety features, including sensors that monitor for medical emergencies such as falls or seizures.
- Smart home technology applied in this way can provide users with more freedom and a higher quality of life.

SESSION: 2

The second session was handled by **Ms.P.Anitha from II ECE-A**. She gave the lecture in the title of IoT with AI in agriculture. She explained about IoT with AI.

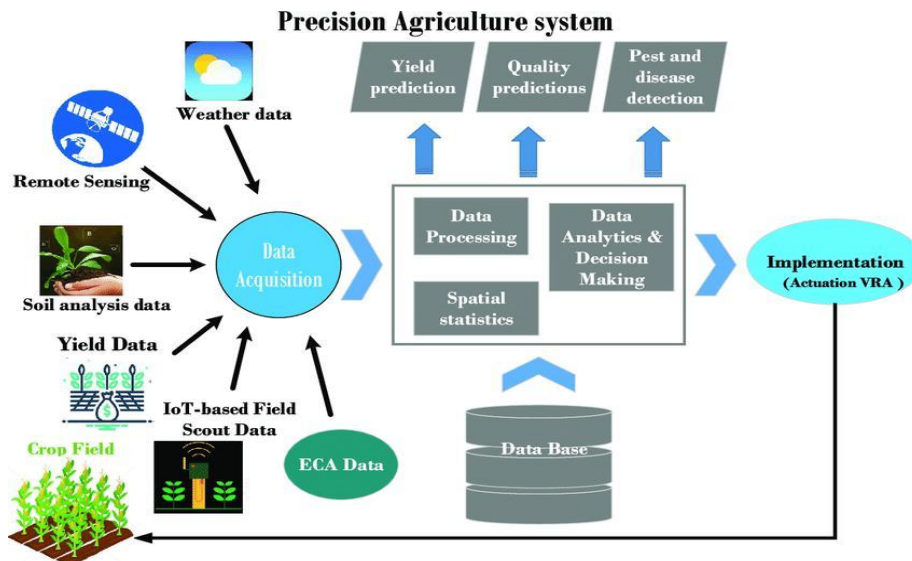


Resource Person Ms.P.Anitha, II ECE-A delivering the lecture to the Participants

AIOT in Agriculture:

- A smart agriculture system based on IoT is used to monitor a host of farming tasks.
 - For example, you can schedule the system to automatically irrigate land otherwise you can spray pesticides or fertilizers on the crops wirelessly through your smart phone.
 - This system is very useful in monitoring soil moisture with a moisture sensing system to notice dry soil.
 - This advanced system simply handles routine agricultural tasks by simply allowing cultivators & farmers to focus on agricultural tasks.

- She discussed about the Precision agriculture.



She explained about the weather report system based on Iot with AI, Environmental monitoring system, crop health monitoring and how AI models can forecast crop yields, predict weather patterns, and identify potential risks or opportunities based on historical and real-time IoT data. Also discussed about the fertilizers using drone, livestock management.

- How the AI-powered IoT systems can monitor livestock health, behaviour, and location in real-time, enabling farmers to optimizing animal welfare and productivity.
- For example, AI algorithms can analyze data on animal movement, body temperature, and feeding patterns to detect early signs of illness or stress, allowing for timely intervention.

Smart irrigation system:



She explained about how to sense the moisture and irrigates the plants

Harvesting robot:

- Harvesting robots are designed to harvest crops such as fruits and vegetables.
- They use sensors and cameras to detect when the crops are ready to be picked, then use robotic arms or other tools to carefully harvest them without damaging the produce.



Harvesting robot



Harvest using Image processing

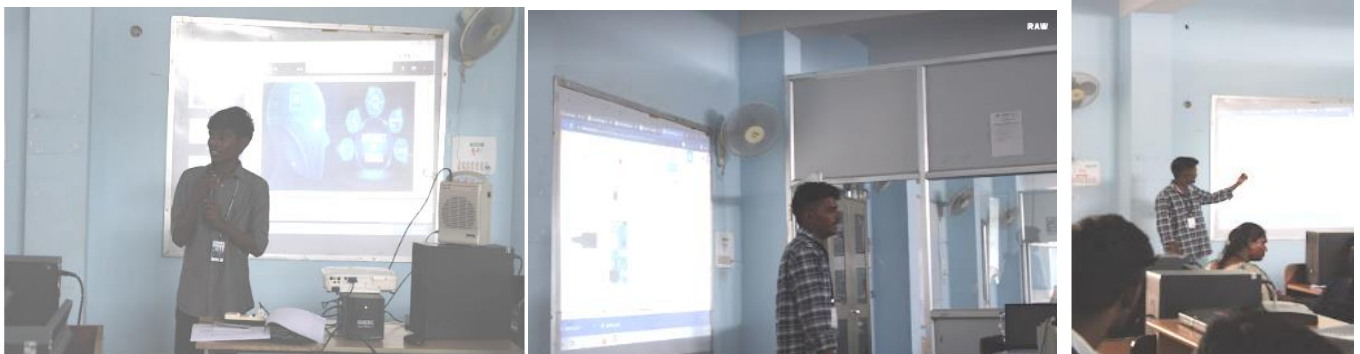
Smart garden using IoT:

The monitoring system for smart gardens using IOT is used to sense the soil moisture of plants & supply water to them. Moisture & fertility level of soil mainly changes based on the type of soil. So this system uses moisture and soil sensor to detect soil moisture.

She also discussed about the Benefits of IoT in agriculture and disease predictor etc.

SESSION:3

The afternoon session was completely Hands on session. This session was handled by **Mr.Backia Regil.P and Mr. Athithyan .G from II ECE-A**. They gave very good demonstration about the **Gas leakage detector using IoT**.

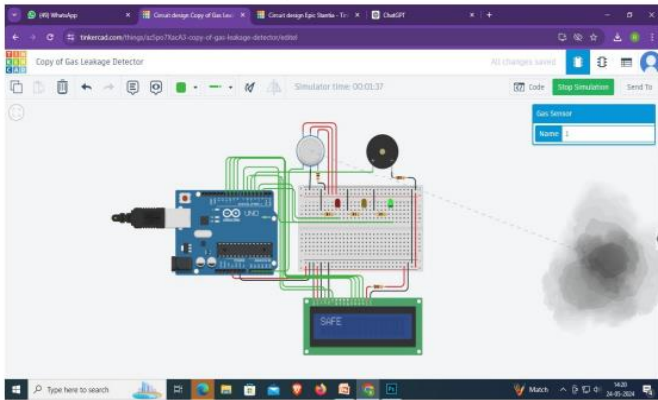


Resource persons Mr.Backia Regil .P and Mr.Athithyan .G from II ECE-A during the demonstration session.

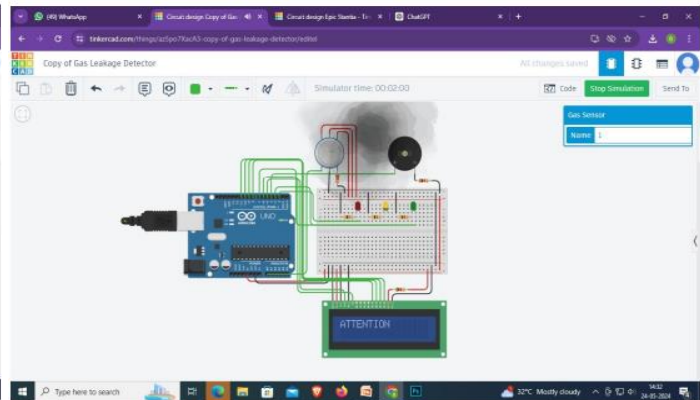
They have started with how to write the programs using tinkercad and they have explained the project step by step in a very clear manner.



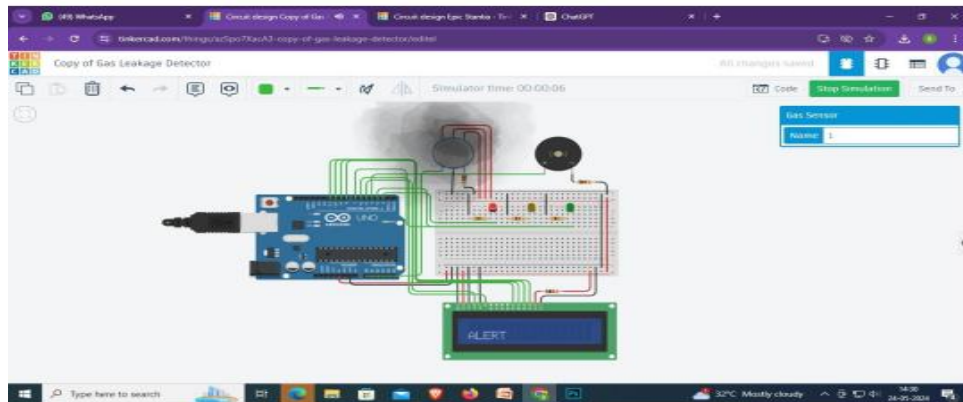
STEP 12 : SAFE(GREEN LED)



STEP 13 :(YELLOW LED-ATTENTION)



STEP 14 :(RED LED-ALERT)



As a conclusion they have stated that, A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals. Another benefit of Tinker cad is that it has now evolved to incorporate “circuits” functionality. This allows students to design circuits, program micro-controllers and incorporate the electronics directly into their 3D designs.

DAY-2 WORKSHOP:



Dignitaries on the Dias



Resource persons were honored with a shawl



Resource person and Staff coordinator were honored

SESSION:1

The second day, first session was handled by **Mr. Suthersan.A from II ECE- B**. He explained about the Internet of Things, Its features, the benefits of IoT for business, Artificial Intelligence, Role of AI in society 4.0 etc.

AI in diverse domains such as Life style, Healthcare & medicine, Food & Agriculture, Banking & Finance, Transportation and Automobiles, E-Commerce, Robotics, Education and Entertainment etc..

He explained about the machine learning and deep learning concepts.



Resource Person Mr.Suthersan.A, II ECE-B delivering the lecture to the Participants

He also explained about how the data will be stored in the cloud and discussed about the volume of data occupied every minute in various social media.

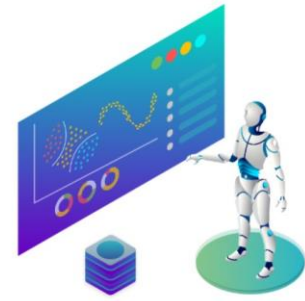
Data Storage

Historically, data was stored in:



Cloud Storage

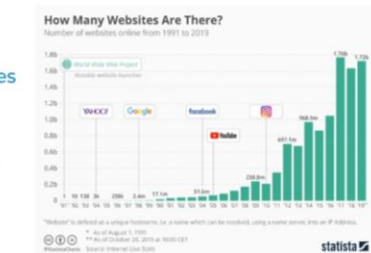
Storing large amounts of data digitally enabled computers to identify patterns in the data



Volume of Data

Total Number of Websites from 1991 to 2019

> 1.72 billion websites!



Source: statista

Volume of Data

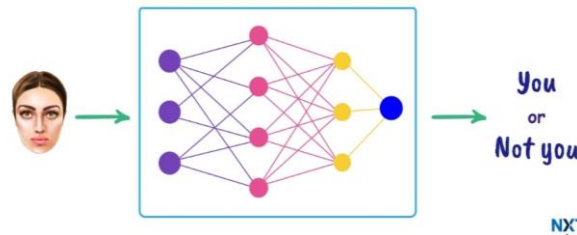
Over 2.5 Quintillion (10^{18}) Bytes of Data is Created Each Day!



Source: Data Never Sleeps 7.0 - Domo

He also discussed about the artificial neural networks and the pattern recognition with real time examples.

Learning



NXT

He explained in detail about the data science and machine learning concepts.

Data Science



Data Science is the science of extracting knowledge and insights from data

Machine Learning



Machine Learning is a field of study that gives computers the ability to learn

SESSION:2

The second session was handled by **Mr. Suriyanarayanan.R from II ECE-B**. He explained about the Arduino, open source Hardware, various kinds of Arduino boards, various types of microcontrollers used and commonly used Arduino boards.



Resource Person Mr. Suriyanarayanan.R II ECE-B delivering the lecture to the Participants

The reason to use Arduino Uno:

- Most popular board in Arduino board family
- Best board to start with Electronics and coding

The main components in Arduino Uno are: USB Jack, Power Jack, Voltage regulator, Crystal Oscillator, Rest buttons, power pins, LEDs, Microcontroller etc. He explained in a detailed manner about the components and their working.



He explained about the Arduino's Microcontroller ATMEGA328P.

The three main segments in that are Flash memory- 32Kbytes, SRAM- 2K bytes, EEPROM – 1Kbytes. The peripheral features, and also about the communication protocol. He also explained about the purpose of the three memory segments.

- Flash memory (program space), is where the Arduino sketch is stored.
- SRAM (static random access memory) is where the sketch creates and manipulates variables when it runs.

➤ EEPROM is memory space that programmers can use to store long-term information. At last he concluded about, how we have to do the projects using this Arduino microcontroller.

SESSION:3

The afternoon session was handled by **Mr.Mohamed Kasim.J and Mr. Naveen.G from II ECE -B.**

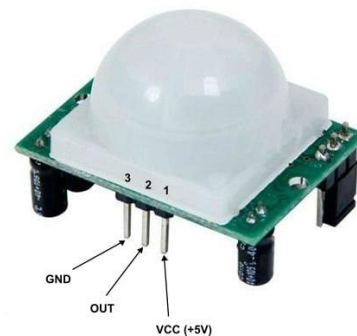


Resource Persons Mr.Mohamed Kasim.J and Mr. Naveen.G from II ECE -B during the demonstration session

They explained about the project titled **Monitoring the Garden Using PIR Sensor.**



PIR SENSOR



PIN Details

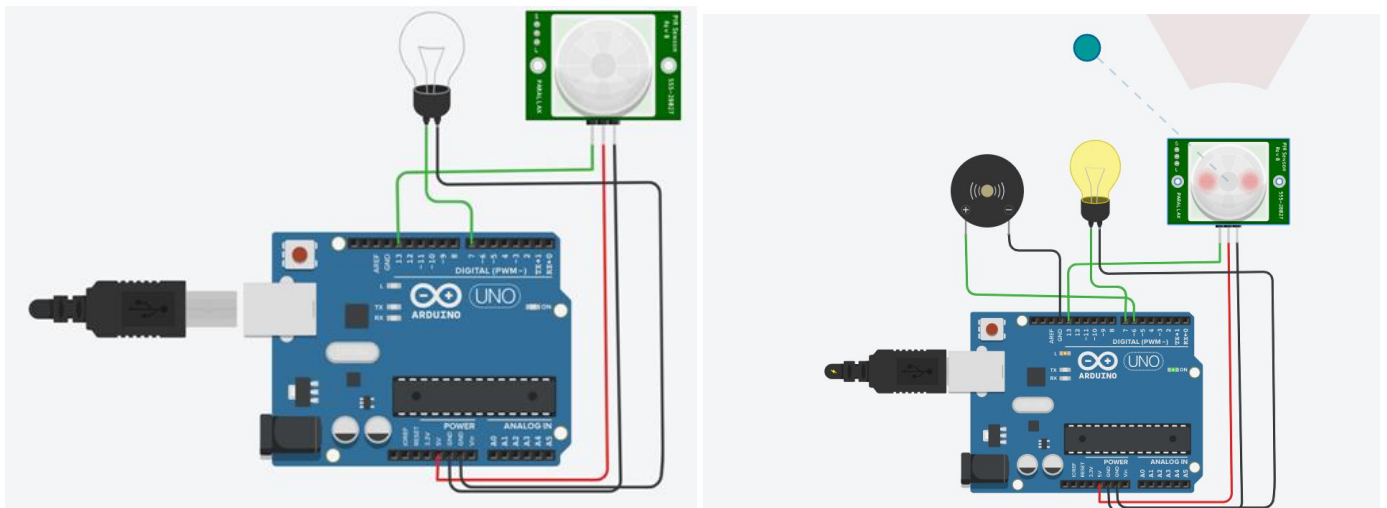
They gave very clear explanation about, what is a PIR sensor? How it works? What does a PIR Sensor detect? It's working principle, pin configurations and the range of PIR Sensor.

- **Passive infrared sensor** is an electronic sensor that measures infrared light radiating from objects.
- PIR sensors mostly used in PIR-based motion detectors.
- Also, it used in security alarms and automatic lighting applications.
- The below image shows a typical pin configuration of the PIR sensor, which is quite simple to understand the pin outs.

- The PIR sensor consist of 3 pins,
- Pin1 corresponds to the drain terminal of the device, which connected to the positive supply 5V DC.
- Pin2 corresponds to the source terminal of the device, which connects to the ground terminal via a 100K or 47K resistor. The Pin2 is the output pin of the sensor. The pin 2 of the sensor carries the detected IR signal to an amplifier.
- Pin3 of the sensor connected to the ground.

Range of PIR Sensor.

- Indoor passive infrared: Detection distances range from 25 cm to 20 m.
- Indoor curtain type: The detection distance ranges from 25 cm to 20 m.
- Outdoor passive infrared: The detection distance ranges from 10 meters to 150 meters.
- Outdoor passive infrared curtain detector: distance from 10 meters to 150 meters



At the last they have explained about the various sensor and its applications.



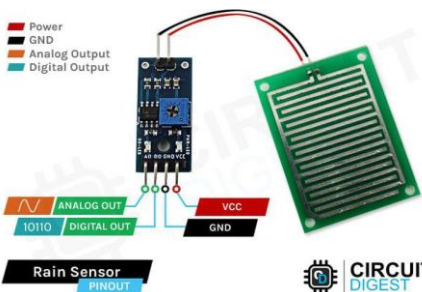
PIR Sensor



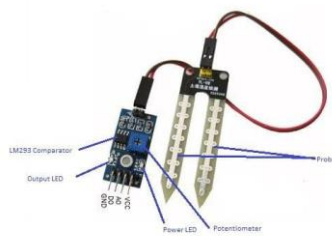
Ultrasonic Sensor



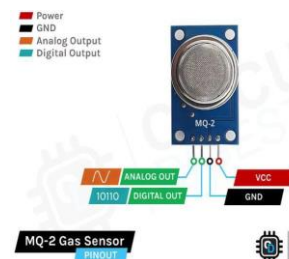
IR Sensor



Rain Drop Sensor



Soil Sensor



Gas/Smoke Sensor

Valedictory Session:



Dignitaries on the Dias



Principal was honored by Mrs.N.Mangaiyarkarasi



Vice principal was honored by Mr.R.Sathyaraj



Honoring Mr.R.Sathyaraj, Academic Coordinator/ECE



Dignitaries during their Valedictory Address

During the valedictory session, Dr.J.Arputha Vijaya Selvi, Principal/KCE and Dr.S.Sivakumar, Vice principal/ KCE appreciated all the students for their involvement and support.

They appreciated and motivated the students who acted as resource person for this two day workshop. They encouraged the students with words. They motivated that, this type of workshop should be conducted frequently and all the students should come forward.



The moment of Appreciation – Students received their Participation Certificate

Finally, Mrs.D.Vennila, AP/ECE gave the vote of thanks with words and she appreciated all the student participants and the resource persons for their endless effort. Thus the workshop ended successfully with National Anthem.

OUTCOME:

- At the end of the workshop the students gathered more knowledge on Internet of Things and Artificial Intelligence.
- Students can able to identify the various sensors, actuators and microcontrollers that form the backbone of IoT infrastructure
- Hands-on experience with popular IoT development platforms like Arduino and Raspberry Pi enables learners to build their own IoT prototypes.
- Additionally, understanding different IoT platforms allows individuals to leverage existing frameworks and tools in their projects.

1. 
2. 
Co ordinators


HOD/ECE


Principal
PRINCIPAL
Kings College of Engineering,
PUNALKULAM - 613 303

Annexure: I
BROCHURE



KINGS
COLLEGE OF ENGINEERING
(An Autonomous Institution)
| Affiliated to Anna University, Chennai | Approved by AICTE, New Delhi |



ACREDITED WITH GRADE
B++
NAAC

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
PROUDLY PRESENTS

INTERNET OF THINGS WITH AI WORK SHOP

REGISTRATION FEE:
100/-



KINGS

27,28 MAY, 2024
10:00AM

Pallava Hall

STAFF COORDINATORS
Mrs.U.JEYAMALAR,
AP/ECE,
Mr.BALAKRISHNAN,
AP/ECE.

STUDENT COORDINATORS
Mr.B.GUNASEELAN
Mr.A.SUTHERSAN
Mr.M.ARUNAN
Mr.R.SURYANARAYANAN

Mrs. D.VENNILA AP/ECE IQAC MEMBER	Mr. R.SATHYARAJ AP/ECE ACADEMIC COORDINATOR	Dr. R.PONNI AP/ECE DEPUTY COE
Mrs. N.MANGAIYARKARASI AP/ECE SSS	Dr. T.SHANTHI HOD/ECE	Dr. S.SIVAKUMAR VICE PRINCIPAL
Dr. J.ARPUTHA VIJAYA SELVI PRINCIPAL	Dr. R. RAJENDRAN SECRETARY	

FOR CONTACT
8940979746
95971 77957



28, MAY 2024

SPEAKERS



SUTHERSAN A

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: IOT AND AI INTRODUCTION

TIME: 10:00AM-11:00AM

BREAK



SURIYA NARAYANAN R

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: SENSOR AND PROCESS OF MICROCONTROLLER

TIME: 11:30AM-12:30PM

LUNCH



MOHAMMED KASIM J

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: PRACTICAL DEMONSTRATION

TIME: 1:30PM-2:30PM

BREAK



NAVEEN G

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: PRACTICAL DEMONSTRATION

TIME: 3:00PM-4:10PM



27, MAY 2024



KIRUTHIKA D

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: IOT IN SMART HOME

TIME: 10:00AM-11:00AM

BREAK



ANITHA P

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: IOT IN AGRICULTURE

TIME: 11:30AM-12:30PM

LUNCH



BACKIA REJIL P

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: PRACTICAL DEMONSTRATION

TIME: 1:30PM-2:30PM

BREAK



ATHITHYAN G

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TOPIC: PRACTICAL DEMONSTRATION

TIME: 3:00PM-4:10PM

Annexure: II
Sample Certificates

