SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade

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

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB204 – AUTOMOTIVE ELECTRICAL AND ELECTRONICS ENGINEERING

II YEAR / IV SEMESTER

Unit 5 – Electronics Systems

Topic : Security System

KEYLESS ENTRY AND START SYSTEM

- **RFID and Smart Keys**: These systems allow drivers to unlock and start their vehicles without inserting a key. They use radio frequency identification (RFID) or smart key fobs that communicate with the vehicle's onboard systems.
- **Passive Keyless Entry (PKE)**: Enhances convenience by automatically unlocking the doors when the key fob is in proximity.

IMMOBILIZERS

- **Engine Immobilizers**: Prevent the engine from starting unless the correct key (or key fob) is present. This system typically integrates with the vehicle's electronic control unit (ECU).
- **Transponder Keys**: Keys with embedded chips that communicate with the immobilizer system to verify authorization

ALARM SYSTEM

- **Audible Alarms**: Trigger a loud alarm if unauthorized entry or tampering is detected, deterring potential thieves.
- **Silent Alarms**: Notify the vehicle owner or a monitoring service of a security breach without making noise, allowing for a discreet response.

GPS TRACKING AND TELEMATICS

- **Real-Time Tracking**: Allows vehicle owners and authorities to track the location of a stolen vehicle using GPS.
- **Geofencing**: Sets virtual boundaries and alerts the owner if the vehicle crosses these boundaries.
- **Telematics Systems**: Provide comprehensive monitoring of vehicle status and location, often integrated with fleet management systems.

BIOMETRIC SECURITY

- **Fingerprint Recognition**: Requires a valid fingerprint scan to start the vehicle or unlock doors.
- **Facial Recognition**: Uses cameras and facial recognition technology to verify the identity of the driver.
- **Iris Scanning**: Another form of biometric security that ensures only authorized individuals can start the vehicle.

CYBERSECURITY MEASURES

- **Secure Communication Protocols**: Encrypt communication between key systems to prevent interception and tampering.
- **Intrusion Detection Systems (IDS)**: Monitor network traffic within the vehicle for signs of malicious activity.
- **Software Updates**: Regular over-the-air (OTA) updates to patch vulnerabilities and improve security features.
- **Firewalls and Gateways**: Protect critical systems from unauthorized access and cyber-attacks.

DRIVER BEHAVIOUR MONITORING

- **In-Cabin Cameras**: Monitor the driver's behavior to detect signs of distraction or fatigue, enhancing security by ensuring the driver is alert and attentive.
- **Telematics Data Analysis**: Monitors driving patterns and behaviors, potentially identifying unauthorized or suspicious use of the vehicle.

REMOTE CONTROL AND MONITORING

- **Smartphone Integration**: Allows vehicle owners to remotely lock/unlock doors, start the engine, and monitor the vehicle's status using a smartphone app.
- **Remote Shutdown**: Enables the owner or authorities to remotely disable the vehicle if it is reported stolen.

THANK YOU !!!