RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSES

2019-2020

Department of Electronics and Communication Engineering

19ECE01-Internet of Things

MARK SHEET

Sl. No	Register Number	Student Name	Mark
1	16TC2201	ARIPREETHA D	96
2	16TC2202	SIVAGAMI S	92
3	16TC2203	THULASI K	92

HOD

PRINCIPAL

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE
2019-2020

Department of Electronics and Communication Engineering

19ECE01-Internet of Things

NAME:

CLASS:

DATE:

1. What does IoT stand for?
   A) Internet of Technology
   B) Internet of Telecommunication
   C) Internet of Things
   D) Internet of Transactions
   Answer: C) Internet of Things

2. Which of the following best describes the Internet of Things (IoT)?
   A) A network of physical devices connected to the internet that can collect and exchange data
   B) A network of computers connected to each other
   C) A network of virtual reality devices
   D) A network of social media platforms
   Answer: A) A network of physical devices connected to the internet that can collect and exchange data

3. Which communication protocol is commonly used for IoT devices to exchange data over the internet?
   A) HTTP
   B) FTP
   C) TCP/IP
   D) MQTT
   Answer: D) MQTT

4. What is the primary purpose of sensors in IoT devices?
   A) To process data
   B) To store data
   C) To collect data from the environment
   D) To display data
   Answer: C) To collect data from the environment

5. Which of the following is NOT a common application of IoT?
   A) Smart home automation
   B) Industrial automation
   C) Healthcare monitoring

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

C) Healthcare monitoring
D) Social media networking
Answer: D) Social media networking

6. What does the term "smart city" refer to in the context of IoT?
   A) A city with advanced telecommunications infrastructure
   B) A city with a high concentration of technology companies
   C) A city that utilizes IoT technology to improve infrastructure and services
   D) A city with a large population of tech-savvy residents
   Answer: C) A city that utilizes IoT technology to improve infrastructure and services

7. Which of the following is NOT a challenge in implementing IoT systems?
   A) Security and privacy concerns
   B) Compatibility issues between devices and protocols
   C) Limited availability of sensors and actuators
   D) Scalability and management of a large number of devices
   Answer: C) Limited availability of sensors and actuators

8. What is the term for the network infrastructure that connects IoT devices to the internet?
   A) Intranet
   B) Internet Service Provider (ISP)
   C) Local Area Network (LAN)
   D) IoT Gateway
   Answer: D) IoT Gateway

9. Which wireless technology is commonly used for short-range communication between IoT devices?
   A) Bluetooth
   B) Wi-Fi
   C) Cellular
   D) Zigbee
   Answer: A) Bluetooth

10. Which of the following is NOT a benefit of using IoT technology?
    A) Improved efficiency and productivity
    B) Enhanced data collection and analysis
    C) Increased environmental pollution
    D) Better decision-making through real-time insights
    Answer: C) Increased environmental pollution

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post.
Puducherry

11. What is the primary advantage of using edge computing in IoT systems?
    A) Reduced latency and faster response times
    B) Lower hardware costs
    C) Enhanced security
    D) Simplified data management
    Answer: A) Reduced latency and faster response times

12. Which of the following is an example of a wearable IoT device?
    A) Smart thermostat
    B) Smart refrigerator
    C) Fitness tracker
    D) Smart doorbell
    Answer: C) Fitness tracker

13. What is the term for the process of converting raw data collected by IoT devices into meaningful insights?
    A) Data collection
    B) Data visualization
    C) Data analysis
    D) Data transmission
    Answer: C) Data analysis

14. Which industry sector is expected to benefit the most from IoT technology?
    A) Entertainment
    B) Healthcare
    C) Agriculture
    D) Fashion
    Answer: B) Healthcare

15. What does the term "Digital Twin" refer to in the context of IoT?
    A) A virtual model that replicates physical assets, processes, or systems
    B) A device that duplicates the functionality of another device
    C) A digital certificate used for secure communication
    D) A software tool for managing IoT devices
    Answer: A) A virtual model that replicates physical assets, processes, or systems

16. What is the term for IoT devices that act autonomously based on predefined rules or algorithms?
    A) Smart devices
    B) Autonomous devices
    C) Intelligent devices
    D) Automated devices
    Answer: A) Smart devices

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

17. Which of the following is a potential security threat in IoT systems?
    A) Data encryption
    B) Access control
    C) Distributed Denial of Service (DDoS) attacks
    D) Firewalls
    Answer: C) Distributed Denial of Service (DDoS) attacks

18. What is the term for the unique identifier assigned to each IoT device for communication purposes?
    A) MAC address
    B) IP address
    C) RFID tag
    D) UUID (Universally Unique Identifier)
    Answer: D) UUID (Universally Unique Identifier)

19. Which of the following is a characteristic of a secure IoT ecosystem?
    A) Open access to all data
    B) Lack of authentication mechanisms
    C) Use of strong encryption techniques
    D) Sharing sensitive data without consent
    Answer: C) Use of strong encryption techniques

20. What does LPWAN stand for in the context of IoT communication?
    A) Long Processing Wide Area Network
    B) Low Power Wide Area Network
    C) Low Processing Wireless Access Network
    D) Large Power Wireless Area Network
    Answer: B) Low Power Wide Area Network

21. Which of the following is a common application of Industrial IoT (IIoT)?
    A) Smart agriculture
    B) Home automation
    C) Remote patient monitoring
    D) Predictive maintenance in manufacturing
    Answer: D) Predictive maintenance in manufacturing

22. What is the primary challenge associated with IoT device management at scale?
    A) Limited availability of IoT platforms
    B) Security vulnerabilities
    C) Device provisioning and firmware updates
    D) Lack of communication protocols
    Answer: C) Device provisioning and firmware updates

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

23. Which IoT application involves the use of connected devices to monitor and manage water usage in agriculture?
A) Smart parking
B) Smart lighting
C) Precision agriculture
D) Smart healthcare
Answer: C) Precision agriculture

24. Which of the following is an example of a smart building IoT application?
A) Monitoring air quality in urban areas
B) Optimizing energy consumption in commercial buildings
C) Tracking vehicle fleets
D) Monitoring soil moisture levels in agriculture
Answer: B) Optimizing energy consumption in commercial buildings

25. Which IoT application involves the use of connected devices to monitor and optimize water distribution systems in cities?
A) Smart parking
B) Smart lighting
C) Smart irrigation
D) Environmental monitoring
Answer: C) Smart irrigation

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE
2019-2020

Department of Electronics and Communication Engineering

19ECE01-Internet of Things

NAME: THULASI. K
CLASS: IV / ECE
DATE: 20/08/2019

1. What does IoT stand for?
   A) Internet of Technology
   B) Internet of Telecommunication
   C) Internet of Things
   D) Internet of Transactions

23/25 92%

2. Which of the following best describes the Internet of Things (IoT)?
   A) A network of physical devices connected to the internet that can collect and exchange data
   B) A network of computers connected to each other
   C) A network of virtual reality devices
   D) A network of social media platforms

3. Which communication protocol is commonly used for IoT devices to exchange data over the internet?
   A) HTTP
   B) FTP
   C) TCP/IP
   D) MQTT

4. What is the primary purpose of sensors in IoT devices?
   A) To process data
   B) To store data
   C) To collect data from the environment
   D) To display data

5. Which of the following is NOT a common application of IoT?
   A) Smart home automation
   B) Industrial automation
   C) Healthcare monitoring
   D) Social media networking
   Answer: D) Social media networking

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

6. What does the term "smart city" refer to in the context of IoT?
   A) A city with advanced telecommunications infrastructure
   B) A city with a high concentration of technology companies
   C) A city that utilizes IoT technology to improve infrastructure and services
   D) A city with a large population of tech-savvy residents

7. Which of the following is NOT a challenge in implementing IoT systems?
   A) Security and privacy concerns
   B) Compatibility issues between devices and protocols
   C) Limited availability of sensors and actuators
   D) Scalability and management of a large number of devices

8. What is the term for the network infrastructure that connects IoT devices to the internet?
   A) Intranet
   B) Internet Service Provider (ISP)
   C) Local Area Network (LAN)
   D) IoT Gateway

9. Which wireless technology is commonly used for short-range communication between IoT devices?
   A) Bluetooth
   B) Wi-Fi
   C) Cellular
   D) Zigbee

10. Which of the following is NOT a benefit of using IoT technology?
    A) Improved efficiency and productivity
    B) Enhanced data collection and analysis
    C) Increased environmental pollution
    D) Better decision-making through real-time insights

11. What is the primary advantage of using edge computing in IoT systems?
    A) Reduced latency and faster response times
    B) Lower hardware costs
    C) Enhanced security
    D) Simplified data management

12. Which of the following is an example of a wearable IoT device?
    A) Smart thermostat
    B) Smart refrigerator
    C) Fitness tracker
    D) Smart doorbell

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

13. What is the term for the process of converting raw data collected by IoT devices into meaningful insights?
    A) Data collection
    B) Data visualization
    C) Data analysis
    D) Data transmission

14. Which industry sector is expected to benefit the most from IoT technology?
    A) Entertainment
    B) Healthcare
    C) Agriculture
    D) Fashion

15. What does the term "Digital Twin" refer to in the context of IoT?
    A) A virtual model that replicates physical assets, processes, or systems
    B) A device that duplicates the functionality of another device
    C) A digital certificate used for secure communication
    D) A software tool for managing IoT devices

16. What is the term for IoT devices that act autonomously based on predefined rules or algorithms?
    A) Smart devices
    B) Autonomous devices
    C) Intelligent devices
    D) Automated devices

17. Which of the following is a potential security threat in IoT systems?
    A) Data encryption
    B) Access control
    C) Distributed Denial of Service (DDoS) attacks
    D) Firewalls

18. What is the term for the unique identifier assigned to each IoT device for communication purposes?
    A) MAC address
    B) IP address
    C) RFID tag
    D) UUID (Universally Unique Identifier)

19. Which of the following is a characteristic of a secure IoT ecosystem?
    A) Open access to all data
    B) Lack of authentication mechanisms
    C) Use of strong encryption techniques
    D) Sharing sensitive data without consent

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

20. What does LPWAN stand for in the context of IoT communication?
A) Long Processing Wide Area Network
B) Low Power Wide Area Network
C) Low Processing Wireless Access Network
D) Large Power Wireless Area Network

21. Which of the following is a common application of Industrial IoT (IIoT)?
A) Smart agriculture
B) Home automation
C) Remote patient monitoring
D) Predictive maintenance in manufacturing

22. What is the primary challenge associated with IoT device management at scale?
A) Limited availability of IoT platforms
B) Security vulnerabilities
C) Device provisioning and firmware updates
D) Lack of communication protocols

23. Which IoT application involves the use of connected devices to monitor and manage water usage in agriculture?
A) Smart parking
B) Smart lighting
C) Precision agriculture
D) Smart healthcare

24. Which of the following is an example of a smart building IoT application?
A) Monitoring air quality in urban areas
B) Optimizing energy consumption in commercial buildings
C) Tracking vehicle fleets
D) Monitoring soil moisture levels in agriculture

25. Which IoT application involves the use of connected devices to monitor and optimize water distribution systems in cities?
A) Smart parking
B) Smart lighting
C) Smart irrigation
D) Environmental monitoring

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Pondicherry University)

NO:1, MUTHUPILLAI PALAYAM ROAD, G.N. PALAYAM, VILLIYANUR, PUDUCHERRY - 605 110

Certificate of Completion

2019-2020

This is to certify that Mr/Ms ..... SIVAGAMI S .....

Year..IV.. Department...ECE... has successfully Completed the Value added course.

SCORE: .....92.....

COURSE TITLE: ..... INTERNET OF THINGS .....

COURSE DURATION: ..9-8-19 to 13-8-19.....

HOD

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

PRINCIPAL

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSES

2019-2020

Department of Electronics and Communication Engineering

19ECE02- Cognitive radio

MARK SHEET

Sl. No	Register Number	Student Name	Mark
1	17TC2204	ANITHA R	88
2	17TC2205	DEEPA M	96
3	17TC2206	DEEPIKA M	92
4	17TC2207	DEIVAYANAI V	92
5	17TC2208	IYYAPPAN K	96
6	17TC2209	KALAIYARASI G	96
7	17TC2210	KEERTHANA K	84
8	17TC2211	KEERTHANA K	96
9	17TC2213	NILAVARASI R	88
10	17TC2212	MUTHULAKSHMI N	88
11	17TC2215	NITHIYAKUMARI J	88

HOD

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

PRINCIPAL

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE

2019-2020

Department of Electronics and Communication Engineering

19ECE02-Cognitive radio

NAME:

CLASS:

DATE:

1. What is Cognitive Radio (CR)?
   A) A radio technology that uses cognitive processes to enhance signal strength
   B) A radio technology that adapts its parameters based on observations of the radio frequency environment
   C) A radio technology that prioritizes voice communication over data transmission
   D) A radio technology that employs quantum principles for communication
   Answer: B) A radio technology that adapts its parameters based on observations of the radio frequency environment

2. Which of the following is a primary objective of Cognitive Radio?
   A) To increase the cost of wireless communication devices
   B) To decrease the spectrum utilization efficiency
   C) To optimize spectrum usage and improve overall system performance
   D) To limit the number of users accessing the spectrum
   Answer: C) To optimize spectrum usage and improve overall system performance

3. What role does spectrum sensing play in Cognitive Radio networks?
   A) It allocates spectrum resources to users.
   B) It monitors the available spectrum and detects unused frequencies.
   C) It encrypts data transmitted over the radio.
   D) It regulates the power of transmitted signals.
   Answer: B) It monitors the available spectrum and detects unused frequencies.

4. Which spectrum bands are typically targeted by Cognitive Radio for opportunistic access?
   A) Licensed bands only
   B) Unlicensed bands only
   C) Both licensed and unlicensed bands
   D) Military bands
   Answer: C) Both licensed and unlicensed bands

5. What is the purpose of spectrum mobility in Cognitive Radio networks?
   A) To prevent unauthorized users from accessing the spectrum

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

B) To reduce interference in neighboring bands
C) To enable seamless switching between different frequency bands
D) To increase the transmission power of radio signals
Answer: C) To enable seamless switching between different frequency bands

6. Which technology allows Cognitive Radios to dynamically adjust their parameters to optimize performance?
   A) Artificial intelligence
   B) Machine learning
   C) Quantum computing
   D) Genetic algorithms
   Answer: B) Machine learning

7. What is the term for the ability of Cognitive Radios to communicate and negotiate spectrum usage dynamically?
   A) Spectrum fragmentation
   B) Spectrum agility
   C) Spectrum awareness
   D) Spectrum sharing
   Answer: D) Spectrum sharing

8. Which of the following is NOT a potential benefit of Cognitive Radio technology?
   A) Enhanced spectrum efficiency
   B) Improved network security
   C) Increased flexibility in spectrum usage
   D) Enhanced interoperability between different wireless systems
   Answer: B) Improved network security

9. Which regulatory body oversees spectrum management and usage policies for Cognitive Radio technology?
   A) Federal Aviation Administration (FAA)
   B) International Telecommunication Union (ITU)
   C) Federal Communications Commission (FCC)
   D) National Aeronautics and Space Administration (NASA)
   Answer: C) Federal Communications Commission (FCC)

10. What is the term for the process by which Cognitive Radios dynamically select the optimal frequency bands for transmission?
    A) Spectrum sensing
    B) Spectrum mobility
    C) Spectrum allocation
    D) Spectrum decision
    Answer: D) Spectrum decision

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

11. Which of the following is a major challenge in the implementation of Cognitive Radio networks?
    A) Limited spectrum availability
    B) Lack of advanced signal processing algorithms
    C) High hardware costs
    D) Limited radio frequency interference
    Answer: A) Limited spectrum availability

12. What is the term for the phenomenon where Cognitive Radios detect and utilize unused spectrum bands opportunistically?
    A) Dynamic spectrum access
    B) Spectrum fragmentation
    C) Spectrum scarcity
    D) Spectrum awareness
    Answer: A) Dynamic spectrum access

13. Which of the following is NOT a function of the Cognitive Engine in Cognitive Radio networks?
    A) Spectrum sensing
    B) Spectrum analysis
    C) Spectrum regulation
    D) Spectrum decision making
    Answer: C) Spectrum regulation

14. What is the primary advantage of using Cognitive Radio technology in wireless communications?
    A) Increased spectrum scarcity
    B) Improved network congestion
    C) Enhanced spectrum efficiency
    D) Reduced need for spectrum sharing
    Answer: C) Enhanced spectrum efficiency

15. Which technique allows Cognitive Radios to coexist with primary users of the spectrum without causing interference?
    A) Power control
    B) Frequency hopping
    C) Time-division multiplexing
    D) Channel bonding
    Answer: A) Power control

16. Which of the following is a potential application of Cognitive Radio in military communications?
    A) Voice over Internet Protocol (VoIP) calls
    B) Real-time video streaming
    C) Dynamic spectrum access for tactical operations

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 [illegible]

D) Satellite communication
Answer: C) Dynamic spectrum access for tactical operations

17. What is the primary limitation of Cognitive Radio technology in real-world deployments?
    A) Limited computational resources
    B) High latency
    C) Unpredictable spectrum availability
    D) Lack of regulatory support
    Answer: A) Limited computational resources

18. Which of the following is a potential security concern in Cognitive Radio networks?
    A) Spectrum underutilization
    B) Interference from neighboring devices
    C) Unauthorized access to spectrum resources
    D) Excessive power consumption
    Answer: C) Unauthorized access to spectrum resources

19. Which spectrum access policy allows Cognitive Radios to use licensed spectrum temporarily when it's not in use by the primary user?
    A) Exclusive access
    B) Shared access
    C) Opportunistic access
    D) Hybrid access
    Answer: C) Opportunistic access

20. Which of the following is a potential benefit of Cognitive Radio technology for rural internet connectivity?
    A) Increased interference
    B) Reduced network coverage
    C) Enhanced spectrum utilization
    D) Decreased data rates
    Answer: C) Enhanced spectrum utilization

21. Which of the following is NOT a primary component of a Cognitive Radio system?
    A) Sensing module
    B) Decision engine
    C) Encryption module
    D) Radio interface
    Answer: C) Encryption module

22. In which scenario would Cognitive Radio technology be most beneficial?
    A) A fixed-frequency radio system with no interference
    B) A crowded spectrum with varying levels of utilization
    C) A satellite communication system with dedicated channels

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

D) A wired network with no wireless components
Answer: B) A crowded spectrum with varying levels of utilization

23. What does Cognitive Radio enable in terms of spectrum utilization?
A) Static allocation of frequency bands
B) Dynamic and adaptive allocation of frequency bands
C) Exclusive access to spectrum by licensed users
D) Limited access to unlicensed bands
Answer: B) Dynamic and adaptive allocation of frequency bands

24. Which industry sector is likely to benefit the most from Cognitive Radio applications?
A) Agriculture
B) Entertainment
C) Telecommunications
D) Retail
Answer: C) Telecommunications

25. What advantage does Cognitive Radio offer over traditional radio systems?
A) Fixed frequency allocation
B) Limited coverage area
C) Static modulation schemes
D) Dynamic spectrum utilization
Answer: D) Dynamic spectrum utilization

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE

2019-2020

Department of Electronics and Communication Engineering

19ECE02-Cognitive radio

NAME: DEEPA.M

CLASS: III / ECE

DATE: 20/08/2019

24/25

96%

1. What is Cognitive Radio (CR)?
   A) A radio technology that uses cognitive processes to enhance signal strength
   B) A radio technology that adapts its parameters based on observations of the radio frequency environment
   C) A radio technology that prioritizes voice communication over data transmission
   D) A radio technology that employs quantum principles for communication

2. Which of the following is a primary objective of Cognitive Radio?
   A) To increase the cost of wireless communication devices
   B) To decrease the spectrum utilization efficiency
   C) To optimize spectrum usage and improve overall system performance
   D) To limit the number of users accessing the spectrum

3. What role does spectrum sensing play in Cognitive Radio networks?
   A) It allocates spectrum resources to users.
   B) It monitors the available spectrum and detects unused frequencies.
   C) It encrypts data transmitted over the radio.
   D) It regulates the power of transmitted signals.

4. Which spectrum bands are typically targeted by Cognitive Radio for opportunistic access?
   A) Licensed bands only
   B) Unlicensed bands only
   C) Both licensed and unlicensed bands
   D) Military bands

5. What is the purpose of spectrum mobility in Cognitive Radio networks?
   A) To prevent unauthorized users from accessing the spectrum
   B) To reduce interference in neighboring bands
   C) To enable seamless switching between different frequency bands
   D) To increase the transmission power of radio signals

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

6. Which technology allows Cognitive Radios to dynamically adjust their parameters to optimize performance?
   A) Artificial intelligence
   B) Machine learning
   C) Quantum computing
   D) Genetic algorithms

7. What is the term for the ability of Cognitive Radios to communicate and negotiate spectrum usage dynamically?
   A) Spectrum fragmentation
   B) Spectrum agility
   C) Spectrum awareness
   D) Spectrum sharing

8. Which of the following is NOT a potential benefit of Cognitive Radio technology?
   A) Enhanced spectrum efficiency
   B) Improved network security
   C) Increased flexibility in spectrum usage
   D) Enhanced interoperability between different wireless systems

9. Which regulatory body oversees spectrum management and usage policies for Cognitive Radio technology?
   A) Federal Aviation Administration (FAA)
   B) International Telecommunication Union (ITU)
   C) Federal Communications Commission (FCC)
   D) National Aeronautics and Space Administration (NASA)

10. What is the term for the process by which Cognitive Radios dynamically select the optimal frequency bands for transmission?
    A) Spectrum sensing
    B) Spectrum mobility
    C) Spectrum allocation
    D) Spectrum decision

11. Which of the following is a major challenge in the implementation of Cognitive Radio networks?
    A) Limited spectrum availability
    B) Lack of advanced signal processing algorithms
    C) High hardware costs
    D) Limited radio frequency interference

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

12. What is the term for the phenomenon where Cognitive Radios detect and utilize unused spectrum bands opportunistically?
    A) Dynamic spectrum access
    B) Spectrum fragmentation
    C) Spectrum scarcity
    D) Spectrum awareness

13. Which of the following is NOT a function of the Cognitive Engine in Cognitive Radio networks?
    A) Spectrum sensing
    B) Spectrum analysis
    C) Spectrum regulation
    D) Spectrum decision making

14. What is the primary advantage of using Cognitive Radio technology in wireless communications?
    A) Increased spectrum scarcity
    B) Improved network congestion
    C) Enhanced spectrum efficiency
    D) Reduced need for spectrum sharing

15. Which technique allows Cognitive Radios to coexist with primary users of the spectrum without causing interference?
    A) Power control
    B) Frequency hopping
    C) Time-division multiplexing
    D) Channel bonding

16. Which of the following is a potential application of Cognitive Radio in military communications?
    A) Voice over Internet Protocol (VoIP) calls
    B) Real-time video streaming
    C) Dynamic spectrum access for tactical operations
    D) Satellite communication

17. What is the primary limitation of Cognitive Radio technology in real-world deployments?
    A) Limited computational resources
    B) High latency
    C) Unpredictable spectrum availability
    D) Lack of regulatory support

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

18. Which of the following is a potential security concern in Cognitive Radio networks?
    A) Spectrum underutilization
    B) Interference from neighboring devices
    C) Unauthorized access to spectrum resources
    D) Excessive power consumption

19. Which spectrum access policy allows Cognitive Radios to use licensed spectrum temporarily when it's not in use by the primary user?
    A) Exclusive access
    B) Shared access
    C) Opportunistic access
    D) Hybrid access

20. Which of the following is a potential benefit of Cognitive Radio technology for rural internet connectivity?
    A) Increased interference
    B) Reduced network coverage
    C) Enhanced spectrum utilization
    D) Decreased data rates

21. Which of the following is NOT a primary component of a Cognitive Radio system?
    A) Sensing module
    B) Decision engine
    C) Encryption module
    D) Radio interface

22. In which scenario would Cognitive Radio technology be most beneficial?
    A) A fixed-frequency radio system with no interference
    B) A crowded spectrum with varying levels of utilization
    C) A satellite communication system with dedicated channels
    D) A wired network with no wireless components

23. What does Cognitive Radio enable in terms of spectrum utilization?
    A) Static allocation of frequency bands
    B) Dynamic and adaptive allocation of frequency bands
    C) Exclusive access to spectrum by licensed users
    D) Limited access to unlicensed bands

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

24. Which industry sector is likely to benefit the most from Cognitive Radio applications?
    A) Agriculture
    B) Entertainment
    C) Telecommunications
    D) Retail

25. What advantage does Cognitive Radio offer over traditional radio systems?
    A) Fixed frequency allocation
    B) Limited coverage area
    C) Static modulation schemes
    D) Dynamic spectrum utilization

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Pondicherry University)

NO:1, MUTHUPILLAI PALAYAM ROAD. G.N. PALAYAM. VILLIYANUR. PUDUCHERRY - 605 110

Certificate of Completion

2019-2020

This is to certify that Mr/Ms .....ANITHA...R.....

Year...III..... Department...ECE.... has successfully Completed the Value added course.

SCORE: .....88.....

COURSE TITLE: .....COGNITIVE...RADIO.....

COURSE DURATION: ..31.8.19..to...13/9/19

HOD

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., PhD.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

PRINCIPAL

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSES

2019-2020

Department of Electronics and Communication Engineering

19ECE03- PCB Design and Fabrication.

MARK SHEET

Sl. No	Register Number	Student Name	Marks
1	18TC1201	ABITHA V	88
2	18TC1202	AGALYA B	96
3	18TC1203	ANITHA N	92
4	18TC1204	FOUSIA BEGAM Y	92
5	18TC1205	JOTHILAKSHMI A	96
6	18TC1206	KAMARUNISHA H	96
7	18TC1207	KAVITHA U	84
8	18TC1208	MATHIYARASI S	96
9	18TC1209	NASIRA BANU M	88
10	18TC1210	PAVITHRA S	88
11	18TC1211	PRIYADARSINI D	88
12	18TC1212	RAJALAKSHMI M	88
13	18TC1213	RAJESWARI P	96
14	18TC1214	SANGARI A	92
15	18TC1215	SANGEETHA K	92

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillaiyalayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

16	18TC1216	SUVEDHA V	96
17	18TC1217	VASHUMATHY S	96
18	18TC1218	VISHNUPRIYA S	84

HOD

PRINCIPAL

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph

PRINCIPAL

RAAK College of Engineering & Technolo

No.1, Muthupillai Palayam Road,

Sulthanpet Post,

Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE

2019-2020

Department of Electronics and Communication Engineering

19ECE03-PCB Design and Fabrication

NAME :

CLASS :

DATE :

1. What does PCB stand for?
   A) Printed Circuit Board
   B) Personal Circuit Board
   C) Private Circuit Board
   D) Plastic Circuit Board
   Answer: A) Printed Circuit Board

2. Which material is commonly used as the substrate in PCBs?
   A) Copper
   B) Aluminum
   C) Fiberglass
   D) Silicon
   Answer: C) Fiberglass

3. What is the purpose of the solder mask in a PCB?
   A) To protect the copper traces from oxidation and shorts
   B) To insulate the board
   C) To provide mechanical strength
   D) To improve signal integrity
   Answer: A) To protect the copper traces from oxidation and shorts

4. Which layer of a PCB provides the electrical connections between components?
   A) Substrate
   B) Copper layer
   C) Solder mask
   D) Silkscreen
   Answer: B) Copper layer

5. What is the function of the silkscreen layer on a PCB?
   A) To provide a surface for soldering
   B) To protect the copper traces
   C) To indicate component locations and labels
   D) To insulate the board
   Answer: C) To indicate component locations and labels

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

6. Which software is commonly used for PCB design?
   A) CREO
   B) CAD
   C) Altium Designer
   D) MATLAB
Answer: C) Altium Designer

7. What is the typical unit of measurement for PCB trace width?
Inches
   A) Millimeters
   B) Micrometers
   C) Centimeters
   D) D)Miles
Answer: D) Miles

8. What does DRC stand for in PCB design?
   A) Design Rule Check
   B) Direct Route Calculation
   C) Design Rectification Code
   D) Digital Routing Configuration
Answer: A) Design Rule Check

9. Which process involves coating the PCB with a layer of copper?
   A) Etching
   B) Plating
   C) Drilling
   D) Soldering
Answer: B) Plating

10. What is the purpose of vias in a PCB?
   A) To provide mechanical support
   B) To connect different layers of the PCB electrically
   C) To improve thermal dissipation
   D) To isolate components
Answer: B) To connect different layers of the PCB electrically

11. Which type of via connects the outer layers to the inner layers of a multilayer PCB?
   A) Blind via
   B) Buried via
   C) Through-hole via
   D) Microvia
Answer: A) Blind via

12. What is the primary advantage of using surface mount technology (SMT) over through-hole technology?

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

A) Lower cost
B) Easier to solder
C) Allows for higher component density
D) Better for high-current applications

Answer: C) Allows for higher component density

13. Which process removes unwanted copper from the PCB to create traces?
A) Drilling
B) Plating
C) Etching
D) Soldering

Answer: C) Etching

14. What is the typical purpose of a ground plane in a PCB?
A) To provide mechanical support
B) To reduce electromagnetic interference (EMI)
C) To connect power supplies
D) To enhance signal speed

Answer: B) To reduce electromagnetic interference (EMI)

15. Which material is commonly used for the conductive layer in PCBs?
A) Aluminum
B) Gold
C) Silver
D) Copper

Answer: D) Copper

16. What does SMT stand for in PCB assembly?
A) Surface Mount Technology
B) Signal Mount Technique
C) Standard Mount Technology
D) Solder Mount Technology

Answer: A) Surface Mount Technology

17. Which type of PCB is known for its flexibility and can be bent or folded?
A) Rigid PCB
B) Flex PCB
C) Rigid-Flex PCB
D) Metal Core PCB

Answer: B) Flex PCB

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.,
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

18. What is the main benefit of using multilayer PCBs?

A) Lower cost
B) Increased durability
C) Higher component density and more complex circuits
D) Easier manufacturing process

Answer: C) Higher component density and more complex circuits

19. What is the term for the space between adjacent copper traces on a PCB?
A) Trace gap
B) Trace clearance
C) Trace spacing
D) Trace width

Answer: B) Trace clearance

20. Which PCB manufacturing process uses UV light to transfer the design onto the board?
A) Soldering
B) Drilling
C) Photolithography
D) Etching

Answer: C) Photolithography

21. What is the purpose of a decoupling capacitor on a PCB?
A) To filter high-frequency noise
B) To store energy
C) To increase current flow
D) To provide mechanical stability

Answer: A) To filter high-frequency noise

22. Which inspection method uses X-rays to check the integrity of solder joints in PCBs?
A) Optical inspection
B) Automated inspection
C) X-ray inspection
D) Ultrasonic inspection

Answer: C) X-ray inspection

23. What does the term "pad" refer to in PCB design?
A) A space for placing text
B) A small area for soldering components
C) A hole for vias
D) A layer of insulation

Answer: B) A small area for soldering components

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

24. Which process involves creating the physical holes in a PCB for component leads?
    A) Etching
    B) Plating
    C) Drilling
    D) Soldering

Answer: C) Drilling

25. What is the term for a PCB that combines rigid and flexible substrates?
    A) Hybrid PCB
    B) Flex PCB
    C) Rigid-Flex PCB
    D) Multilayer PCB

Answer: C) Rigid-Flex PCB

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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

VALUE ADDED COURSE

2019-2020

Department of Electronics and Communication Engineering

19ECE03-PCB Design and Fabrication

NAME : KAVITHA.U

CLASS : II / ECE

DATE : 20/08/2019

1. What does PCB stand for?
   A) Printed Circuit Board
   B) Personal Circuit Board
   C) Private Circuit Board
   D) Plastic Circuit Board

21/25 = 84%

2. Which material is commonly used as the substrate in PCBs?
   A) Copper
   B) Aluminum
   C) Fiberglass
   D) Silicon

3. What is the purpose of the solder mask in a PCB?
   A) To protect the copper traces from oxidation and shorts
   B) To insulate the board
   C) To provide mechanical strength
   D) To improve signal integrity

4. Which layer of a PCB provides the electrical connections between components?
   A) Substrate
   B) Copper layer
   C) Solder mask
   D) Silkscreen

5. What is the function of the silkscreen layer on a PCB?
   A) To provide a surface for soldering
   B) To protect the copper traces
   C) To indicate component locations and labels
   D) To insulate the board

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

6. Which software is commonly used for PCB design?
   A) CREO
   B) CAD
   C) Altium Designer
   D) MATLAB

7. What is the typical unit of measurement for PCB trace width?
Inches
   A) Millimeters
   B) Micrometers
   C) Centimeters
   D) D)Miles

8. What does DRC stand for in PCB design?
   A) Design Rule Check
   B) Direct Route Calculation
   C) Design Rectification Code
   D) Digital Routing Configuration

9. Which process involves coating the PCB with a layer of copper?
   A) Etching
   B) Plating
   C) Drilling
   D) Soldering

10. What is the purpose of vias in a PCB?
   A) To provide mechanical support
   B) To connect different layers of the PCB electrically
   C) To improve thermal dissipation
   D) To isolate components

11. Which type of via connects the outer layers to the inner layers of a multilayer PCB?
   A) Blind via
   B) Buried via
   C) Through-hole via
   D) Microvia

12. What is the primary advantage of using surface mount technology (SMT) over through-hole technology?
   A) Lower cost
   B) Easier to solder
   C) Allows for higher component density
   D) Better for high-current applications

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

13. Which process removes unwanted copper from the PCB to create traces?
    A) Drilling
    B) Plating
    C) Etching
    D) Soldering

14. What is the typical purpose of a ground plane in a PCB?
    A) To provide mechanical support
    B) To reduce electromagnetic interference (EMI)
    C) To connect power supplies
    D) To enhance signal speed

15. Which material is commonly used for the conductive layer in PCBs?
    A) Aluminum
    B) Gold
    C) Silver
    D) Copper

16. What does SMT stand for in PCB assembly?
    A) Surface Mount Technology
    B) Signal Mount Technique
    C) Standard Mount Technology
    D) Solder Mount Technology

17. Which type of PCB is known for its flexibility and can be bent or folded?
    A) Rigid PCB
    B) Flex PCB
    C) Rigid-Flex PCB
    D) Metal Core PCB

18. What is the main benefit of using multilayer PCBs?
    A) Lower cost
    B) Increased durability
    C) Higher component density and more complex circuits
    D) Easier manufacturing process

19. What is the term for the space between adjacent copper traces on a PCB?
    A) Trace gap
    B) Trace clearance
    C) Trace spacing
    D) Trace width

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

20. Which PCB manufacturing process uses UV light to transfer the design onto the board?
   A) Soldering
   B) Drilling
   C) Photolithography
   D) Etching

21. What is the purpose of a decoupling capacitor on a PCB?
   A) To filter high-frequency noise
   B) To store energy
   C) To increase current flow
   D) To provide mechanical stability

22. Which inspection method uses X-rays to check the integrity of solder joints in PCBs?
   A) Optical inspection
   B) Automated inspection
   C) X-ray inspection
   D) Ultrasonic inspection

23. What does the term "pad" refer to in PCB design?
   A) A space for placing text
   B) A small area for soldering components
   C) A hole for vias
   D) A layer of insulation

24. Which process involves creating the physical holes in a PCB for component leads?
   A) Etching
   B) Plating
   C) Drilling
   D) Soldering

25. What is the term for a PCB that combines rigid and flexible substrates?
   A) Hybrid PCB
   B) Flex PCB
   C) Rigid-Flex PCB
   D) Multilayer PCB

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

RAAK

COLLEGE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Pondicherry University)

NO:1, MUTHUPILLAI PALAYAM ROAD, G.N. PALAYAM, VILLIYANUR, PUDUCHERRY - 605 110

Certificate of Completion

2019-2020

This is to certify that Mr/Ms .....SUVEDHA V.....

Year...II... Department...ECE... has successfully Completed the Value added course.

SCORE: .....96.....

COURSE TITLE: PCB DESIGN AND FABRICATION

COURSE DURATION: 9/8/19 to 13/8/19

HOD

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

PRINCIPAL