B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Third Semester

Computer Science and Engineering (IoT)

20CIPC302 - INTRODUCTION TO INTERNET OF THINGS

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)
Answer ALL Questions

		Marks	K-Level	CO

1. An IoT network is a collection of _____ devices.   `1   K1   CO1`
   (a) Signal   (b) Machine to Machine
   (c) Interconnected   (d) Network to Network

2. Microsoft Azure IoT is a _____.   `1   K1   CO1`
   (a) Hardware   (b) IoT platform
   (c) Programming Language   (d) None of the above

3. What is the function of a Gateway in IoT networks?   `1   K1   CO1`
   (a) To increase the range of Wi-Fi signal
   (b) To convert between different communication protocols
   (c) To store data from IoT devices
   (d) To generate power for IoT devices

4. Which of the following devices is used to measure the gases or liquid?   `1   K1   CO2`
   (a) Optical sensor   (b) Smoke sensor   (c) Gas sensor   (d) Pressure sensor

5. What is the primary function of smart devices within the IoT ecosystem?   `1   K1   CO2`
   (a) To store large amounts of data
   (b) To manufacture other devices
   (c) To create user interfaces
   (d) To send and receive data over networks

6. Which of the following sensors is commonly used in IoT-enabled autonomous vehicles to detect the surroundings?   `1   K1   CO2`
   (a) Pressure sensor   (b) Lidar sensor   (c) Humidity sensor   (d) Heat sensor

7. The low-end sensor nodes are _____   `1   K1   CO3`
   (a) Cheap   (b) Static   (c) Simple and energy efficient   (d) All of the above

8. _____ are the machine to machine communication applications   `1   K1   CO3`
   (a) Environment monitoring   (b) Civil protection and public safety
   (c) Supply chain management   (d) All of the above

9. What is the standard form of SDP?   `1   K1   CO3`
   (a) Service Discovery Protocol   (b) Service Deficient Protocol\
   (c) Service Domain Protocol   (d) None of the above

10. Which of the following is the first step in IoT system design methodology?   `1   K1   CO4`
    (a) Data Collection   (b) Defining Use Case and Purpose
    (c) Choosing Communication Protocol   (d) Security Implementation

11. What is the primary focus of the operational view in IoT design methodology?   `1   K1   CO4`
    (a) Hardware and software integration
    (b) How the system interacts with users and external systems
    (c) Detailed data management and storage solutions
    (d) Designing network protocols

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13287**

12. What is the primary function of IoT platforms? (a)To increase the processing power of IoT devices (b)To provide a user-friendly interface for managing IoT devices (c) To facilitate the integration and management of IoT devices and data (d)To reduce the cost of IoT development	*1*	*K1*	*CO4*
13. Which of the following is a mutable Python data type used frequently in IoT systems? (a) String (b) List (c) Tuple (d) Integer	*1*	*K1*	*CO5*
14. What is the role of control flow in Python for IoT systems? (a) To define modules (b) To execute functions (c) To manage decision-making based on sensor input (d) To display results	*1*	*K1*	*CO5*
15. Which Python function is used to define reusable blocks of code in IoT systems? (a) print() (b) def (c) input() (d) import()	*1*	*K1*	*CO5*
16. Which Python keyword is used to exit a function in IoT systems after processing sensor data? (a) break (b) return (c) pass (d) continue	*1*	*K1*	*CO5*
17. What function in Python is used to convert Python objects into JSON strings? (a) json.dumps() (b) json.loads() (c) json.encode() (d) json.decode()	*1*	*K1*	*CO6*
18. Which cloud platform is commonly used to host IoT data and provide remote access? (a) Google Cloud (b) MySQL (c) Firebase (d) Dropbox	*1*	*K1*	*CO6*
19. In an IoT weather monitoring system, which sensor is typically used for measuring atmospheric pressure? (a) DHT11 (b) BMP180 (c) PIR Sensor (d) LDR	*1*	*K1*	*CO6*
20. What kind of interface does Raspberry Pi offer to connect sensors and actuators? (a) HDMI (b) USB (c) GPIO (d) VGA	*1*	*K1*	*CO6*

PART - B (10 × 2 = 20 Marks)
Answer ALL Questions

21. Summarize the function of communication functional block in anIoT system.	*2*	*K2*	*CO1*
22. What is the primary purpose of the MQTT protocol in IoT communications?	*2*	*K1*	*CO1*
23. Outline the significance of WebSocket in IoT applications.	*2*	*K2*	*CO2*
24. What is the main advantage of using JSON in IoT APIs?	*2*	*K1*	*CO2*
25. Describe how SDN can be used for various levels of IoT.	*2*	*K2*	*CO3*
26. How do data collection and analysis approaches differ in M2M and IoT?	*2*	*K1*	*CO3*
27. Compare IPV4 and IPV6.	*2*	*K2*	*CO4*
28. List out the commands in HTTP.	*2*	*K1*	*CO4*
29. Explain the significance of multi-factor authentication (MFA) in cloud-based remote access.	*2*	*K2*	*CO5*
30. What is the purpose of the raspi-config tool in Raspberry Pi OS?	*2*	*K1*	*CO6*

PART - C (6 × 10 = 60 Marks)
Answer ALL Questions

31. a) Explain in brief about the characteristics of IoT.	*10*	*K2*	*CO1*
OR			
b) Discuss in brief about CoAP and 6LowPan.	*10*	*K2*	*CO1*
32. a) Explain smart cities and how IoT is useful in their implementation.	*10*	*K2*	*CO2*
OR			
b) Discuss the impact of IoT applications on modern agriculture by discussing their benefits and challenges in three key areas: precision farming, livestock management, and resource management.	*10*	*K2*	*CO2*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

33.	a)	Demonstrate IoT systems management with NETCONF-YANG.	*10*	*K2*	*CO3*
		OR			
	b)	Explain the function of a centralized network controlled in SDN.	*10*	*K2*	*CO3*
34.	a)	Explain the key processes or workflows the IoT system needs to support.	*10*	*K2*	*CO4*
		OR			
	b)	Explain the functional View Specification in the IoT design methodology.	*10*	*K2*	*CO4*
35.	a)	Discuss any five Python Modules with examples.	*10*	*K2*	*CO5*
		OR			
	b)	Explain Virtual Private Network (VPN) in detail and how does it help in cloud-based remote access.	*10*	*K2*	*CO5*
36.	a)	Apply urllib package for sending HTTP requests in IoT systems, and provide an example showing how to send data from an IoT sensor to a cloud server using an HTTP POST request.	*10*	*K3*	*CO6*
		OR			
	b)	Develop the home intrusion detection Iot system with Raspberry Pi.	*10*	*K3*	*CO6*