Reg. No.															

Question Paper Code	13318

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

Seventh Semester

Information Technology

20ITEL709 - 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.	Which of the following is considered the key enabling technology for the Internet of Things (IoT)? (a) Block chain (b) Artificial Intelligence (c) Cloud Computing (d) All of the above	1	K1	CO1
2.	Which of the following is NOT a part of the IoT World Forum (IoTWF) architecture? (a) Device Layer (b) Data Processing Layer (c) Storage Layer (d) Communication Layer	1	K1	CO1
3.	In the context of IoT, what is an actuator? (a) A device that collects data (b) A device that processes data (c) A device that performs actions based on data (d) A device that transmits data	1	K1	CO1
4.	Which IoT architecture layer is responsible for analyzing and interpreting the data collected by devices? (a) Perception Layer (b) Network Layer (c) Application Layer (d) Business Layer	1	K1	CO1
5.	Which of the following IEEE standards is specifically designed for low-power, low-data-rate IoT applications? (a) IEEE 802.11ah (b) IEEE 802.15.4 (c) IEEE 802.3 (d) IEEE 802.15.1	1	K1	CO2
6.	Which technology is specifically used for long-range, low-power communication in IoT networks? (a) LoRaWAN (b) Zigbee (c) Bluetooth (d) NFC	1	K1	CO2
7.	Which IP version is used in 6LoWPAN to enable IPv6 communication over low-power wireless networks? (a) IPv4 (b) IPv5 (c) IPv6 (d) IPX	1	K1	CO2
8.	Which type of topology is commonly used in IEEE 802.15.4 networks for IoT applications? (a) Bus topology (b) Mesh topology (c) Star topology (d) Hybrid topology	1	K1	CO2
9.	Which component is the "brain" of a microcontroller? (a) RAM (b) Processor (CPU) (c) EEPROM (d) I/O pins	1	K1	CO3
10.	Which of the following is NOT part of the IoT system building blocks? (a) Sensors (b) Actuators (c) Database servers (d) Communication networks	1	K1	CO3
11.	What type of communication protocol is commonly used with Arduino for interfacing with sensors? (a) Bluetooth (b) SPI (c) HTTP (d) SMTP	1	K1	CO3
12.	Which of the following is the primary input/output interface for communication with a Raspberry Pi? (a) USB ports (b) GPIO(General Purpose Input/Output) pins (c) HDMI port (d) Display port	1	K1	CO3

13. Which of the following is the main difference between structured and unstructured data? *1 K1 CO4*
(a) Structured data is stored in a relational database, while unstructured data is stored in a flat file.
(b) Structured data has a fixed schema, while unstructured data lacks a predefined format.
(c) Unstructured data is stored in SQL databases, while structured data is stored in NoSQL databases.
(d) Structured data is text-based, while unstructured data is binary.

14. Which of the following is an example of unstructured data? *1 K1 CO4*
(a) Relational database records (b) XML documents
(c) Audio and video files (d) CSV files

15. What is the main component of the Hadoop ecosystem that handles distributed storage? *1 K1 CO4*
(a) Apache Kafka (b) HDFS (c) Apache Spark (d) Apache Hive

16. Which AWS service is specifically designed for IoT applications? *1 K1 CO4*
(a) Amazon S3 (b) AWS IoT Core (c) AWS Lambda (d) Amazon EC2

17. Which of the following is a primary feature of the Cisco IoT System? *1 K1 CO5*
(a) It focuses on the storage of large datasets only.
(b) It is designed to facilitate secure and scalable IoT applications across industries
(c) It only works with cloud-based IoT systems.
(d) It supports non-real-time communication for IoT devices

18. What technology is most commonly used in smart cities to manage street lighting? *1 K1 CO5*
(a) 5G networks (b) IoT sensors and real-time data analytics
(c) Block chain (d) Edge computing

19. Which communication protocol is commonly used in CPwE for industrial IoT? *1 K1 CO6*
(a) MQTT (b) Zigbee (c) Ethernet/IP (d) Bluetooth Low Energy (BLE)

20. What type of device would typically be part of the IBM Watson IoT Platform ecosystem? *1 K1 CO6*
(a) Traffic cameras (b) Wearable health devices
(c) Smart street light (d) All of the above

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21. What is the Internet of Things (IoT)? *2 K1 CO1*
22. List the purpose of the oneM2M standard in IoT. *2 K1 CO1*
23. What is IEEE 802.15.4? *2 K1 CO2*
24. Differenciate between Low Power and Lossy Network (LLN). *2 K2 CO2*
25. What is an embedded system? *2 K1 CO3*
26. Define microcontroller. Give an example. *2 K1 CO3*
27. What is unstructured data with example? *2 K1 CO4*
28. Define the concept of data in motion and data at rest. *2 K1 CO4*
29. List the key benefits of Smart Traffic Control in urban areas. *2 K1 CO5*
30. Write the main components of the CPwE model. *2 K1 CO6*

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31. a) Explain the evolution of the Internet of Things. How have enabling technologies contributed to the growth of IoT? *10 K2 CO1*

OR

b) What are the role of sensors in an IoT system? Explain different types of sensors and their applications in various IoT domains. *10 K2 CO1*

32. a) Describe the enhancements introduced by IEEE 802.15.4g over 802.15.4. How does IEEE 802.15.4g address the needs of IoT applications? *10 K2 CO2*

OR

	b)	Compare and contrast the MAC layers of IEEE 802.15.4, IEEE 802.15.4e, and IEEE 802.15.4g in terms of their functionality and use cases in IoT.	*10*	*K4*	*CO2*
33.	a)	Describe the role of a microcontroller in embedded systems and IoT.	*10*	*K2*	*CO3*
		OR			
	b)	Write the different types of programming interfaces supported by Raspberry Pi for connecting and controlling external devices.	*10*	*K2*	*CO3*
34.	a)	Explain the concept of network analytics.	*10*	*K2*	*CO4*
		OR			
	b)	Explain the role of machine learning algorithms in predictive analytics for IoT.	*10*	*K2*	*CO4*
35.	a)	Illustrate the layered architecture of Smart and Connected Cities.	*10*	*K2*	*CO5*
		OR			
	b)	Describe the Cisco IoT System and its architecture. How it integrates with industrial automation systems?	*10*	*K2*	*CO5*
36.	a)	Explain the concept and working of Smart Lighting systems.	*10*	*K2*	*CO6*
		OR			
	b)	Describe the Converged Plant wide Ethernet (CPwE) model.	*10*	*K2*	*CO6*