Reg. No.															

Question Paper Code	13448

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Computer Science and Engineering

(Common to Electronics and Communication Engineering)

20CSOE908 - INTERNET OF THINGS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following communication technologies is widely used in IoT applications? (a) Bluetooth (b) Zigbee (c) LoRaWAN (d) All of the above	1	K1	CO1
2.	The Core IoT Functional Stack consists of how many layers? (a) 3 (b) 5 (c) 7 (d) 4	1	K1	CO1
3.	LoRaWAN operates in which frequency range? (a) 2.4 GHz (b) 915 MHz (c) 5 GHz (d) 60 GHz	1	K1	CO2
4.	Which IP version is optimized for IoT networks? (a) IPv4 (b) IPv5 (c) IPv6 (d) IPv3	1	K1	CO2
5.	The Arduino IDE is based on which programming language? (a) Python (b) C/C++ (c) Java (d) Assembly	1	K1	CO3
6.	How many GPIO pins are available on the Raspberry Pi 4 Model B? (a) 26 (b) 30 (c) 40 (d) 50	1	K1	CO3
7.	Analyze the type of data generated by an IoT-enabled security camera. (a) Structured data (b) Unstructured data (c) Semi-structured data (d) Static data	1	K1	CO4
8.	Which database systems can be used with Django? (a) Only MySQL (b) Only PostgreSQL (c) Any relational database system (d) NoSQL databases only	1	K1	CO4
9.	In a Layered Architecture of Smart Cities, which layer is responsible for data collection and transmission from various devices? (a) Application layer (b) Data layer (c) Network layer (d) Physical layer	1	K1	CO5
10.	Which of the following is a popular NoSQL database used in Big Data systems? (a) MySQL (b) Mongo DB (c) Postgre SQL (d) O racle	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	Compare Fog and Edge computing.	2	K2	CO1
12.	Summarize the benefits of correct convergence of IT and OT as IoT.	2	K2	CO1
13.	Give the relationship between IEEE 1901.2a and NB-PLC.	2	K2	CO2
14.	Write the concept of constrained nodes and constrained networks.	2	K1	CO2
15.	List the steps involved in IoT Design methodology.	2	K1	CO3
16.	Outline the use of an Integrated Development Environment (IDE) in IoT programming.	2	K2	CO3
17.	Compare Data in motion vs Data at Rest.	2	K2	CO4
18.	Name the core functions of Edge Analytics.	2	K1	CO4
19.	Define connected manufacturing.	2	K1	CO5
20.	List the three stages of power supply-chain in power utility industry.	2	K2	CO5
21.	Compare Big Data and Edge Analytics.	2	K2	CO6

22.		Define Watson IoT Platform.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain in detail the Hierarchy followed in Edge, Fog and Cloud with suitable illustration.	*11*	*K2*	*CO1*
		OR			
	b)	Explain each layer of the one M2M IoT standardized architecture with neat diagram.	*11*	*K2*	*CO1*
24.	a)	Describe the LoRaWAN security and Narrowband Power line communication with necessary diagrams.	*11*	*K3*	*CO2*
		OR			
	b)	Summarize the Application Layer Protocols CoAP and MQTT in detail.	*11*	*K3*	*CO2*
25.	a)	Explain the key steps involved in IoT Design methodology.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the process of using the Integrated Development Environment (IDE) to prepare an Arduino sketch with the steps for setting up of arduino board.	*11*	*K2*	*CO3*
26.	a)	Examine the Python Web Application framework – Django architecture and steps to develop a django project.	*11*	*K3*	*CO4*
		OR			
	b)	Describe in detail about Xively cloud for IT and Illustrate Xively dashboard device details.	*11*	*K3*	*CO4*
27.	a)	Examine the challenges faced for parking in cities and explain how smart parking provides a solution to this.	*11*	*K3*	*CO5*
		OR			
	b)	Explain in detail the architecture of Converged Plantwide Ethernet Model with suitable illustration and give implementation guidance of CPwE.	*11*	*K3*	*CO5*
28.	a)	Describe in detail about Hadoop ecosystem and the two key components with suitable illustration.	*11*	*K3*	*CO6*
		OR			
	b)	Examine the Features of IBM Watson IoT platform, and brief on the services provided in it.	*11*	*K3*	*CO6*