Reg. No.															

Question Paper Code	13475

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

Fifth Semester

Computer Science and Engineering (IoT)

20CIPC501 - IOT ARCHITECTURE AND PROGRAMMING IN IOT

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	In an IoT healthcare application, which capability is critical for ensuring patient data privacy? (a) Data visualization (b) Low latency (c) Data encryption (d) Centralized storage	*1*	*K1*	*CO1*
2.	To ensure scalability, IoT systems should be designed with a ____. (a) monolithic architecture (b) modular architecture (c) centralized architecture (d) proprietary architecture	*1*	*K1*	*CO1*
3.	ITU-T contributes to IoT by creating ____ and guidelines. (a) hardware (b) network limitations (c) security protocols (d) data rate enhancements	*1*	*K1*	*CO2*
4.	What distinguishes the European Telecommunications Standards Institute (ETSI) model from other standardization bodies? (a) Regional Focus (b) Global Dominance (c) Market Monopoly (d) Research Process	*1*	*K1*	*CO2*
5.	Which of the following is the way in which an IoT device is associated with data? (a) Internet (b) Cloud (c) Automata (d) Network	*1*	*K1*	*CO3*
6.	_____ is widely used in various environments, from servers to embedded systems. (a) Windows-OS (b) Linux-OS (c) MAC–OS (d) Ubuntu	*1*	*K1*	*CO3*
7.	What is the baud rate used for XBEE? (a) 9560 (b) 9600 (c) 6900 (d) 9540	*1*	*K1*	*CO4*
8.	Raspberry Pi uses _____ as its Primary Operating System. (a) Raspbian (b) X-CTU (c) Digi (d) Fedora	*1*	*K1*	*CO4*
9.	Which board would be suitable for a project requiring higher performance than the ESP- 12? (a) ESP-01 (b) ESP-07 (c) ESP-32 (d) ESP 8266	*1*	*K1*	*CO5*
10.	What is an alternative solution to the Olimex board for working with the ESP8266 module? (a) Adafruit ESP 8266 breakout board (b) Arduino board (c) Raspberry Pi (d) BeagleBone	*1*	*K1*	*CO6*

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Explain how conceptual elements and actual elements are needed in architectural design.	*2*	*K2*	*CO1*
12.	Interpret the statement “Design principles are needed for ensuring trust, security, and privacy IoT solutions”.	*2*	*K2*	*CO1*
13.	Demonstrate IoT interactions between Human Users and Active Digital Artifacts.	*2*	*K2*	*CO2*
14.	Explain the trust level/score of an entity in IoT.	*2*	*K2*	*CO2*
15.	Compare EEPROM and Flash Memory.	*2*	*K2*	*CO3*
16.	Outline the popular Operating Systems for IoT.	*2*	*K2*	*CO3*
17.	Draw the pin diagram of XBEE module.	*2*	*K1*	*CO4*
18.	Illustrate the Steps to Configure XBEE as a Router.	*2*	*K2*	*CO4*
19.	Outline the key features of ESP 8266.	*2*	*K2*	*CO5*

20.	List out the Components Needed for controlling a servomotor.		*2*	*K1*	*CO5*
21.	How to check the Wi-fi status? Write a code for the same.		*2*	*K1*	*CO6*
22.	Illustrate the methodologies required to program ESP 8266 and ESP 32.		*2*	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain in detail about the needs of business process in IoT.	*11*	*K2*	*CO1*
		OR			
	b)	Explain in detail cloud computing models needed for Internet of Things (IoT).	*11*	*K2*	*CO1*
24.	a)	Demonstrate the IoT Information Model using Unified Modeling Language (UML) diagrams.	*11*	*K2*	*CO2*
		OR			
	b)	Draw and illustrate the needs of ITU-T IoT Reference Model.	*11*	*K2*	*CO2*
25.	a)	Explain how to select OS for Internet of Things and discuss about the importance and features of selecting OS.	*11*	*K2*	*CO3*
		OR			
	b)	Discuss in detail about FPU and Object model for IoT platform.	*11*	*K2*	*CO3*
26.	a)	Illustrate the process which is used for loading firmware onto an XBEE module and how does it enhance its capabilities?	*11*	*K2*	*CO4*
		OR			
	b)	Illustrate the steps to configure an XBEE module as a router in a mesh network.	*11*	*K2*	*CO4*
27.	a)	Explain the key features of ESP 8266, along with the hardware requirements of ESP 8266.	*11*	*K2*	*CO5*
		OR			
	b)	Explain the need of ESP 8266, along with the software requirements of ESP 8266.	*11*	*K2*	*CO5*
28.	a)	Develop a program to control a tri-color LED and mix colors using PWM (Pulse Width Modulation) to adjust the brightness of each color channel.	*11*	*K3*	*CO6*
		OR			
	b)	Develop a program to control the Servo Motor using ESP 8266.	*11*	*K3*	*CO6*