Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 16 – 12- 2025 **Time:** 01:00pm – 04:00pm

School: SOE	**Program:** B.Tech	
Course Code: ECE3080	**Course Name:** IOT Edge Nodes and Its Applications	
Semester: VII	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	141	14	22	14	14	22

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	One of the ways IoT devices communicate on a network is Publish - Response. Give one real-time example of publish–response in IoT.	**2 Marks**	**L3**	**CO6**
2.	The Application Layer interface directly interacts with the application and provides common web application services. Name any two application layer protocols used in IoT.	**2 Marks**	**L1**	**CO1**
3.	What is a stateless protocol, and can you name one commonly used in IoT?	**2 Marks**	**L1**	**CO4**
4.	What are the six Vs of Big Data?	**2 Marks**	**L1**	**CO2**
5.	Define edge computing?	**2 Marks**	**L1**	**CO2**
6.	Name the Key features of containers for microservices	**2 Marks**	**L1**	**CO3**
7.	Highlight the basic features of Ethernet.	**2 Marks**	**L1**	**CO4**
8.	Mention the basic two differences between XMPP and AMQP.	**2 Marks**	**L1**	**CO4**
9.	What does LoRaWAN stand for, and what is its primary purpose?	**2 Marks**	**L1**	**CO5**
10.	List two applications of augmented reality in industrial environments.	**2 Marks**	**L1**	**CO1**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Explain the different characterizations of IoT. How do these characterizations help in understanding its applications and impacts in various industries?	**10 Marks**	**L2**	**CO1**
	b.	How would you apply the concepts of the big data analytics life cycle to develop a data-driven strategy for improving customer engagement in a retail business? Describe the steps you would take in each phase of the life cycle to achieve this goal.	**10 Marks**	**L3**	**CO3**
		Or			
12.	**a.**	Compare and contrast cloud computing and fog computing in terms of latency, capacity, responsiveness, security, speed, integration, mobility, location awareness, communication modes and number of server nodes. Discuss the advantages and challenges of each in real-world applications.	**10 Marks**	**L3**	**CO3**
	b.	Explain the key components of the IoT reference model and their functions	**10 Marks**	**L2**	**CO1**

13.	**a.**	What is Edge computing. Discuss in detail the advantages of edge Computing.	**10 Marks**	**L2**	**CO3**
	b.	Describe different power consumption models in edge devices and explain the power management techniques that enhance energy efficiency in edge computing systems.	**10 Marks**	**L2**	**CO4**
		Or			
14.	**a.**	Describe the concept of federated learning and summarize the key steps involved in its implementation process.	**10 Marks**	**L2**	**CO3**
	b.	Describe the role of power management in edge computing and explain how it influences both system performance and environmental sustainability	**10 Marks**	**L2**	**CO4**

15.	**a.**	Describe how Proximity Network Communication Protocols function in modern communication systems, and analyze their significance by providing a real-world example of their application.	**10 Marks**	**L2**	**CO2**
	b.	Discuss the role of Industrial Internet of Things (IIoT) technologies in enhancing urban infrastructure within smart cities. Provide an example to illustrate your explanation.	**10 Marks**	**L2**	**CO6**

		Or			
16.	**a.**	Explain how LoRa WAN technology can be integrated with augmented reality (AR) to enhance applications such as remote monitoring or smart cities. Provide examples to illustrate your explanation.	**10 Marks**	**L2**	**CO2**
	b.	Demonstrate how integrating wireless communication technology into industrial gateways can facilitate the real-time monitoring and control of industrial processes. Support your explanation with a relevant practical example	**10 Marks**	**L3**	**CO6**

17.	**a.**	Write a note on Network slicing in 5G. Also highlight on Network slice lifecycle.	**10 Marks**	**L2**	**CO4**
	b.	Evaluate how robot surveillance systems can be integrated into a smart city infrastructure to enhance security. Discuss the practical applications, technologies, and operational challenges involved in their deployment.	**10 Marks**	**L4**	**CO6**
		Or			
18.	**a.**	Explain the different communication models used in edge computing. Illustrate their features and discuss how they contribute to improving the efficiency and performance of edge networks.	**10 Marks**	**L2**	**CO4**
	b.	Explain the various techniques used for health monitoring in IoT (Internet of Things) devices. Discuss how these techniques can help in real-time health data collection and analysis to improve patient care.	**10 Marks**	**L2**	**CO6**