Reg. No.: 21BPS1364

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VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test-2 – JULY 2023

Programme	:	B.Tech (CSE and its Specialization)	Semester	:	Fall Inter Sem 2022-23
Course	:	Internet of Things	Code	:	BECE351E
Faculty	:	Dr. Saraswathi D Dr. Manjula V Dr. Edward Jero Dr. Noel Jeygar Robert V	Slot(s)	:	TF2
			Class Nbr(s)	:	CH2022232501036 CH2022232501035 CH2022232501034 CH2022232501037
Time	:	1½ Hours	Max. Marks	:	50

Answer ALL Questions

1.	Smart cities should provide digital infrastructure to encourage senior citizens to engage in physical activity and healthy lifestyles. Senior citizens need to have access to information about this infrastructure to be motivated to spend time in their neighborhoods and reduce their risk of isolation. Discuss how IoT applications of smart cities support this using communication protocols. Elaborate the communication protocol that is suitable for the given scenario with neat sketches	[10]
2.	The US Forest Service and other government agencies respond to an average of 73,000 wildfires each year, burning about 7 million acres of land and 2,600 structures. Given this ever-present threat, organisations are looking towards technology to enhance detection, provide real-time alerting, and improve response. Suggest a suitable design and deployment of IoT level for the given scenario. Where system collects data from all installed sensors, serves to continuously monitor the environment and stores data in the cloud database. It performs cloud-based analysis from collected data and is used to predict/generate results with greater accuracy Justify your answer with suitable design illustrations and its functionality.	[10]
3.	In a smart retail environment, a store has implemented various IoT devices such as smart shelves, electronic price tags, and customer tracking systems. The store aims to enhance customer experience, optimize inventory management, and personalize promotions. Design an architecture for an edge computing device that can handle the data processing and decision-making tasks to support these objectives.	[10]
4.	Imagine a smart manufacturing facility that relies on real-time data processing for efficient production processes. The facility has various sensors and machines generating a vast amount of data. Design a fog computing architecture for the facility, explain why fog computing is preferred over cloud computing in this scenario, and describe with a neat architecture how machine learning techniques can be incorporated into the fog computing environment to optimize operations and enhance productivity.	[10]
5.	A hospital has implemented an IoT-based healthcare system to monitor and manage patient vitals, medication administration, and medical equipment. The system utilizes various interconnected devices and networks to provide efficient healthcare services. However, the hospital faces significant security challenges and potential IoT attacks that could compromise patient safety and sensitive medical data. Identify the specific security challenges and potential IoT attacks that the hospital may encounter based on the given scenario and elaborate these.	[10]