KUMARAGURU
college of technology
character is life

B.E/B.TECH DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Fifth Semester

INFORMATION SCIENCE AND ENGINEERING

U18ISE0005: IoT Architecture and Protocols

COURSE OUTCOMES

CO1: Appreciate the evolution and applications of IoT.

CO2: Evaluate the available sensors for an application and understand circuits.

CO3: Analyze different options for Embedded systems and understand the concept of MGC Architecture.

CO4: Analyze different connectivity and network protocol option and choose the appropriate one for a given application.

CO5: Deploy IoT devices that are integrated with services such IoT Core, IoT Device Management and IoT Analytics.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1. Write importance of sensors in IoT devices and give an example of a sensor commonly used in IoT applications.	CO1	[K2]
2. List the challenges faced in agriculture IoT monitoring System.	CO1	[K2]
3. Write the behavior of the temperature sensor.	CO2	[K2]
4. List any two technology drivers.	CO2	[K2]
5. Define a microcontroller.	CO3	[K2]
6. Write the significance of sensors in embedded systems.	CO3	[K2]
7. Differentiate between Computation vs Communication	CO4	[K2]
8. Define Massive Multiple Access.	CO4	[K2]
9. Give an example for IoT rules.	CO5	[K2]
10. Write the role of edge computing in IoT environment.	CO5	[K2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11. a) In the event of an emergency, such as sudden temperature changes or irregular	8	CO1	[K3]

breathing patterns, how can IoT baby monitoring systems alert parents or caregivers? What measures could be in place to ensure a rapid response?

	b)	In a smart manufacturing environment, how can predictive maintenance using IoT sensors and data analytics improve the efficiency of machinery? Provide examples of how this technology can prevent unplanned downtime.	8	CO1	[K₃]
12.	a)	How can IoT devices be used to monitor and ensure the proper temperature of food during transportation and storage, reducing the risk of spoilage and contamination?	8	CO1	[K₃]
	b)	Explain the wireless communication technology used in IoT.	8	CO2	[K₂]
13.	a)	In a smart home environment, smart appliances, lighting systems, and HVAC systems are connected to an IoT-based energy management system. Describe how a homeowner can face challenges related to battery issues in smart devices and suggest strategies to optimize energy consumption.	8	CO2	[K₃]
	b)	Discuss the Analog to Digital Interfaces in sensor and circuits	8	CO2	[K₂]
14.	a)	Draw the Gateway and Cloud (MGC) Architecture and explain in detail.	8	CO3	[K₂]
	b)	Illustrate about massive multiple access in IoT .	8	CO3	[K₂]
15.	a)	Explain the significance of reliable connectivity challenges in IoT devices and its impact on the overall performance of an IoT system.	8	CO4	[K₃]
	b)	Discuss the Energy Harvesting Transmitters.	8	CO4	[K₂]
16.	a)	Explain the MQTT protocol in AWS.	8	CO5	[K₂]
	b)	Discuss the IoT Core Services.	8	CO5	[K₂]

****