



B.E DEGREE EXAMINATIONS: NOV/DEC 2023

(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 as 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)

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|---|-----|-------------------|
| 1. List the best wireless technology for smart cities. | CO1 | [K ₂] |
| 2. Why is Precision Agriculture needed? | CO1 | [K ₂] |
| 3. Identify the sensors used in mobile phones. | CO2 | [K ₃] |
| 4. How to calculate the accuracy of the devices? | CO2 | [K ₂] |
| 5. Recall the requirements needed for selection of sensors. | CO3 | [K ₂] |
| 6. Infer the characteristics of Embedded System. | CO3 | [K ₂] |
| 7. Outline the features of LoRaWAN technology. | CO4 | [K ₂] |
| 8. List any two energy harvesting sources used for IoT devices. | CO4 | [K ₂] |
| 9. Identify the IoT core protocols used in AWS. | CO5 | [K ₃] |
| 10. Draw the architecture diagram of AWS IoT. | CO5 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|---|-----|-------------------|
| 11. a) Design the IoT activity tracking system for baby and elderly patient monitoring system. | 8 | CO1 | [K ₃] |
|--|---|-----|-------------------|

	b)	Design smart parking system enabled with IoT in parking area and specify the sensors and technology incorporated in the system.	8	CO1	[K ₃]
12.	a)	Compare the LM35 and DHT11 sensors. Identify which sensors is best for a home automation system.	6	CO2	[K ₄]
	b)	Identify the common battery issues in sensor devices, and how can they be effectively managed in IoT device.	10	CO2	[K ₃]
13.	a)	Elaborate on MGC architecture with a neat diagram.	8	CO3	[K ₂]
	b)	Describe about any two short range communication technology used in IoT.	8	CO3	[K ₃]
14.	a)	Identify the connectivity challenges incurred when IoT devices are transferring the data to the network.	8	CO4	[K ₃]
	b)	How does Massive Multiple Access enable efficient communication in IoT? List the key challenges associated with implementing MMA in IoT.	8	CO4	[K ₃]
15.	a)	Analyses the uses of AWS IoT Thing Shadow for remotely controlling and monitoring the IoT devices?	10	CO5	[K ₄]
	b)	Summarize about the MQTT Protocol in AWS.	6	CO5	[K ₂]
16.	a)	Write short notes on the following.	8	CO5	[K ₂]
		i) AWS Deeplens			
		ii) AWS IoT Greengrass			
	b)	Develop the system with IoT technology used to optimize supply chain management and Logistics in relation to packing and labeling.	8	CO1	[K ₄]
