O.P.Code:23EC0431 | R23 | H.T.No. | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. III Year II Semester Regular Examinations April-2026

EMBEDDED SYSTEMS & IoT

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	What is an embedded system? Give one example.	CO1	L1	2M
	b	What are IoT levels?	CO1	L1	2M
	c	What are the key features of ARM architecture compared to 8051 and 8086?	CO2	L1	2M
	d	Mention the role of Timer/Counter in ARM.	CO2	L1	2M
	e	Differentiate between list and tuple in Python.	CO3	L1	2M
	f	Define REST API.	CO3	L1	2M
	g	Define Internet of Things (IoT). Mention any two fundamental characteristics of IoT.	CO4	L1	2M
	h	Compare Wi-Fi and LoRa in terms of data rate and communication range	CO4	L1	2M
	i	What is an IoT platform? Mention any two services provided by an IoT platform.	CO5	L1	2M
	j	Define API endpoint in the context of IoT platforms.	CO5	L1	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	Define an embedded system and write any four important characteristics of embedded systems.	CO1	L1	5M
	b	Explain the different classifications of embedded systems. Give an example for each.	CO1	L2	5M
		OR			
3	a	Define IoT and describe the characteristics.	CO1	L2	4M
	b	Illustrate the physical design with a generic block diagram of an IoT device and explain it briefly.	CO1	L2	6M

UNIT-II

4		Explain the architecture of ARM processor with neat block diagram.	CO2	L3	10M
		OR			
5	a	Explain the register organization of ARM Processor.	CO2	L2	5M
	b	Describe the various operating modes of ARM processor?	CO2	L2	5M

UNIT-III

6	a	Explain the features of Python that make it suitable for rapid application development.	CO3	L2	5M
	b	Write any five Python built-in functions and explain their purpose with examples.	CO3	L3	5M
		OR			
7	a	What is inheritance? Explain any two types with examples.	CO3	L2	5M
	b	Explain REST architecture and its key principles.	CO3	L3	5M

UNIT-IV

8	a	Explain the fundamental characteristics of IoT with suitable examples.	CO4	L2	
	b	Write a short note on the IoT Reference Model and its different layers.	CO4		
		OR			
9	a	Describe the role of gateways in IoT communication.	CO4	L2	
	b	Differentiate between device-to-device and device-to-cloud communication.	CO4	L4	

UNIT-V

10	a	Explain the architecture of an IoT platform with a neat block diagram..	CO5	L2	
	b	Describe the major components of IBM Internet of Things Platform.	CO5	L2	
		OR			
11		Describe device creation, API endpoints, and data transmission mechanisms in IoT platforms.	CO5	L4	1

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