

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



B. Tech (Sixth Semester - Regular) Examinations, April 2026 23BECPC36001 – Embedded Systems and Internet of Things (ECE)

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. How is an embedded system different from a general-purpose computer?	CO1	K1
b. Why is an infinite loop used in embedded systems?	CO3	K4
c. What is the use of setup() function?	CO5	K3
d. What is MQTT protocol?	CO4	K2
e. Describe the role of sensors in smart farming.	CO2	K5

PART – B**(10 x 5 = 50 Marks)**Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Explain the classification of embedded systems based on performance and functional requirements with suitable examples.	5	CO1	K2
b. Discuss the operational quality attributes of Embedded Systems.	5	CO1	K1
(OR)			
c. Explain the key characteristics of embedded systems ?	5	CO1	K3
d. Differentiate between embedded system hardware and embedded system software with examples.	5	CO1	K1
3.a. Explain the comparison between embedded C and C programming?	5	CO2	K1
b. Write an embedded C program to toggle bit D0 of the port P1 (P1.0) 50000 times.	5	CO2	K3
(OR)			
c. Describe the role of header files, main function, and infinite loop in embedded C programming structure?	5	CO2	K4
d. Design an embedded based electronic circuit to interface seven segment display using 8051 microcontroller.	5	CO2	K5
4.a. Explain the concept of IoT devices and describe their key components with suitable examples.	5	CO3	K3
b. What are Arduino shields? Explain their purpose and types with examples.	5	CO3	K2
(OR)			
c. Discuss the advantages of IoT in improving quality of life in daily human activities.	5	CO3	K5
d. Design an IoT based system to interface temperature and humidity sensor using Arduino.	5	CO4	K4
5.a. Explain the working principle of the Request–Response model in an IoT communication network.	5	CO4	K2
b. Write Short notes on REST based Communication API?	5	CO4	K4

(OR)

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| c. | What is the need of GPIO pins in Raspberry Pi and Explain the Interfacing of LED with Raspberry Pi to make the LED continuously Blinking? | 5 | CO5 | K2 |
| d. | Explain the working of GPS modules in IoT. Discuss how location tracking is achieved. | 5 | CO5 | K1 |
| 6.a. | Explain the concept of IoT-based home automation. Describe its components and working principle. | 5 | CO5 | K4 |
| b. | Discuss the role of IoT in modern agriculture. Analyze its impact on productivity and resource management. | 5 | CO5 | K2 |

(OR)

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| c. | Analyze the role of IoT in waste management systems in smart cities? | 5 | CO6 | K5 |
| d. | Discuss the advantages and challenges of IoT in healthcare systems? | 5 | CO6 | K3 |

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