ODD SEMESTER EXAMINATION, 2024 – 25

3rd Year (V Sem) B.Tech.: Electronics & Communication Engineering

Embedded System

Duration: 3:00 hrs   **Max Marks: 100**

Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.

Q 1.	Answer any two parts of the following.	(10x2= 20)
	a) (i) Compare Embedded Systems with General Computing Systems.	(5 marks)
	(ii) Explain the classification of Embedded Systems with suitable examples.	(5 marks)
	b) Discuss the characteristics and quality attributes of Embedded Systems.	(10 marks)
	c) Explain the major application areas and the purpose of Embedded Systems.	(10 marks)
Q 2.	Answer any two parts of the following.	(10x2= 20)
	a) (i) Differentiate between General Purpose Processors and Domain-Specific Processors.	(5 marks)
	(ii) What is Memory Shadowing?	(5 marks)
	b) Discuss the different types of memory used in embedded systems.	(10 marks)
	c) Explain communication interfaces in embedded systems and differentiate them.	(10 marks)
Q 3.	Answer any two parts of the following.	(10x2= 20)
	a) (i) Explain the importance of Watchdog Timer in Embedded systems.	(5 marks)
	(ii) Differentiate Serial and Parallel Communication with examples.	(5 marks)
	b) Describe and compare I2C, SPI, and UART Communication Protocols with applications.	(10 marks)
	c) Explain Parallel Communication Buses.	(10 marks)
Q 4.	Answer any two parts of the following.	(10x2= 20)
	a) (i) How Interrupt Service Routine (ISR) works in embedded systems.	(5 marks)
	(ii) What is Interrupt Latency? How it effects on meeting deadlines in real-time systems.	(5 marks)
	b) Explain CPU Scheduling, Threads, and Tasks in embedded systems.	(10 marks)
	c) Explain Semaphore Functions and Message Queue Functions in embedded systems.	(10 marks)
Q 5.	Answer any two parts of the following.	(10x2= 20)
	a) (i) Explain process scheduling in a Real-Time Operating System (RTOS).	(5 marks)
	(ii) What is the role of Timer and Event functions in RTOS?	(5 marks)
	b) Explain the key features of Real-Time Operating Systems.	(10 marks)
	c) Describe the process management, scheduling, and co-operating processes in RTOS.	(10 marks)

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