CBCS SCHEME

USN

BEE613B

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

Embedded System Design

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Describe the elements of an embedded system with a block diagram.	10	L1	CO1
	b.	Explain the different classifications of embedded system. Give an example for each.	10	L1	CO1
		OR			
Q.2	a.	Describe the functions of opto-couples I2C and IrDA for embedded system.	10	L1	CO1
	b.	Explain the role of watchdog timmer in embedded system.	6	L1	CO1
	c.	Differentiate between RISC and CISC.	4	L1	CO1
		Module – 2			
Q.3	a.	With a functional block diagram, explain the working of a washing machine.	8	L1	CO2
	b.	Explain different characteristics of Embedded System.	8	L1	CO2
	c.	Explain the role of Embedded System in Automotive domain.	4	L1	CO2
		OR			
Q.4	a.	Explain operational quality attributes in any embedded system design.	8	L1	CO2
	b.	Explain different communication buses in automotive application.	7	L1	CO2
	c.	Explain product life cycle curve of an Embedded product development.	5	L1	CO2
		Module – 3			
Q.5	a.	Explain the fundamental issues in hardware and software co-design.	8	L1	CO3
	b.	Explain significance of open collector and tri-state output in embedded hardware development.	8	L1	CO3
	c.	Write difference between digital combinational and sequential circuit.	4	L1	CO3
		OR			
Q.6	a.	Explain the role of the Analog electronic components in Embedded hardware design.	8	L1	CO3
	b.	Explain the role of state machine in Embedded System design.	6	L1	CO3
	c.	Write the different types of IC design. Give an example for each.	6	L1	CO3
		Module – 4			
Q.7	a.	Explain the different embedded firmware design approaches in details.	10	L1	CO4
	b.	Explain the high level language based embedded firmware development technique.	10	L1	CO4
		OR			
Q.8	a.	Explain various details held by a map file generated during the process of cross compilier an embedded C-Project.	8	L1	CO4
	b.	Explain In Circuit Emulator (ICE) based debugging in detail.	8	L1	CO4
	c.	What is the difference between a simulator and an emulator?	4	L1	CO4

		Module – 5			
Q.9	a.	Explain Monolithic and Micro Kernel.	6	L1	CO5
	b.	Explain the basic functions of a real time Kernel.	10	L1	CO5
	c.	What is the difference between hard and soft real time system?	4	L1	CO5
		OR			
Q.10	a.	Explain the concept of multithreading.	8	L1	CO5
	b.	Explain the various factors to be considered for the selection of a scheduling criteria.	8	L1	CO5
	c.	Compare Threads and Processes.	4	L1	CO5

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