Code No: R203204C **R20** SET -1

III B. Tech II Semester Regular/Supplementary Examinations, May/June -2024
EMBEDDED SYSTEMS
(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1.	a)	Differentiate General Purpose Processor and Application Specific System Processor.	[7M]
	b)	What are the unique Characteristics of Embedded systems?	[7M]
		(OR)	
2.	a)	Discuss below Operational Quality attributes of embedded systems. i. Safety ii. reliability	[7M]
	b)	What is an Embedded system? Give the classification of embedded systems.	[7M]

UNIT-II

3.	a)	List different input devices? Explain the significance of input devices.	[7M]
	b)	Explain wireless devices in embedded systems.	[7M]
		(OR)	
4.	a)	Explain about serial communication devices and parallel device ports.	[7M]
	b)	Explain the purpose of (i) timer & Counting Device and (ii) Real Time Clock in an embedded system,	[7M]

UNIT-III

5.	a)	Explain any one of Embedded firmware design approaches in detail?	[7M]
	b)	What are the different possible sources of interrupts? Explain different interrupt service mechanisms.	[7M]
		(OR)	
6.	a)	Discuss the Mixing Assembly with high level language and mixing high level language with assembly	[7M]
	b)	List out few comparisons of Compiler versus Cross-compiler.	[7M]

UNIT-IV

7.	a)	What are the different types of Operating Systems? Explain.	[7M]
	b)	Explain Task Scheduling including its scheduling Algorithms with suitable example.	[7M]
		(OR)	
8.	a)	What are the difference between OS and RTOS?	[7M]
	b)	Differentiate between Hardware and Software Co-Design with all the salient features of them.	[7M]

UNIT-V

9.	a)	State the uses of assembler and deassembler in embedded application development.	[7M]
	b)	List and describe the debugging tools used in an embedded system.	[7M]
		(OR)	
10.	a)	Explain role of integrated development environment for embedded software Development.	[7M]
	b)	With a neat sketch explain digital camera hardware architecture.	[7M]

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Code No: R203204C **R20** SET -2

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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1.	a)	What are the Operational Quality Attributes? Explain with examples.	[7M]
	b)	What is Actuator? Explain its role in Embedded System Design? Illustrate with an example.	[7M]
		(OR)	
2.	a)	Explain about application specific embedded system with suitable example	[7M]
	b)	Explain how Digital Signal processor and Media processor are different than a general purpose processor and also compare them..	[7M]

UNIT-II

3.	a)	Explain the merits and limitations of parallel port over serial interface.	[7M]
	b)	Explain different I/O subsystems of embedded systems.	[7M]
		(OR)	
4.	a)	Write the details about the embedded hardware units and devices in a system.	[7M]
	b)	Discuss the significance of Watchdog timer in an Embedded System.	[7M]

UNIT-III

5.	a)	Tabulate the concepts of compiler and cross compiler relevant to an Embedded Firmware.	[7M]
	b)	Explain the following: (i) interrupt (ii) Interrupt Vector address and (iii) Interrupt Service Routine (ISR)? Explain the role of ISR in an embedded application development.	[7M]
		(OR)	
6.	a)	What are pseudo-ops? What is the use of it in assembly language programming?	[7M]
	b)	Explain differences between C & Embedded C.	[7M]

UNIT-IV

7.	a)	What is IPC? Mention the two methods available for it.	[7M]
	b)	Discuss different fundamental issues in hardware software co-design.	[7M]
		(OR)	
8.	a)	Explain the design principles when using a RTOS to design an Embedded system.	[7M]
	b)	Differentiate Multi threading and Multi tasking in detail.	[7M]

UNIT-V

9.	a)	Explain the advantages and limitations of simulator based debugging.	[7M]
	b)	Explain about quality assurance and testing of the design in embedded systems.	[7M]
		(OR)	
10.	a)	Explain about different laboratory tools available for the embedded system design?	[7M]
	b)	Draw and explain the integrated embedded system development environment.	[7M]

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Code No: R203204C **R20** SET -3

III B. Tech II Semester Regular/Supplementary Examinations, May/June -2024
EMBEDDED SYSTEMS
(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1. a) What is non-operational quality attributes? Explain the important non-operational quality attributes to be considered in any embedded system design. [7M]
   b) Discuss the Domain Specific Embedded system with an example. [7M]

(OR)

2. a) What is the role of embedded system present life? Discuss major application areas of embedded systems. [7M]
   b) Discuss the following Operational Quality attributes of embedded systems: [7M]
   i. Response ii. Security

UNIT-II

3. a) Explain about Timer and counting devices in Embedded Hardware. [7M]
   b) Explain about digital electronic components in embedded systems. [7M]

(OR)

4. a) Explain serial interface, timer and counters along with their usage in an embedded processor. [7M]
   b) What are the analog and digital electronic components? Explain. [7M]

UNIT-III

5. a) Explain the advantages and disadvantages of high level language based embedded firmware development. [7M]
   b) Explain different files generated on cross-compilation and also explain about Decompiler. [7M]

(OR)

6. a) Discuss about different Embedded Firmware development languages with examples. [7M]
   b) What are the basic approaches for the design and implementation of embedded firmware? Explain any one approach. [7M]

UNIT-IV

7. a) Explain about Multiprocessing and Multitasking with examples. [7M]
   b) Write short note on Shared Memory concept. [7M]

(OR)

8. a) Explain about Fundamental Issues in Hardware Software Co-Design. [7M]
   b) Explain how thread and process are used in an embedded syst. [7M]

UNIT-V

9. a) State the uses of assembler and deassembler in embedded application Development. [7M]
   b) With a neat sketch explain a smart card software architecture. [7M]

(OR)

10. a) Explain the important features of compilers and linkers that are relevant to embedded system. [7M]
    b) Explain IDE tools for embedded system development?. [7M]

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Code No: R203204C **R20** SET -4

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EMBEDDED SYSTEMS
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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
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UNIT-I

1.	a)	What are the different types of memories used in Embedded System design? Explain the role of each.	[7M]
	b)	Distinguish between a sensor and an actuator. Also explain their role in an embedded system with suitable examples.	[7M]
		(OR)	
2.	a)	Explain about Domain Specific Embedded System application by taking an Automotive Embedded System (AES) as an example.	[7M]
	b)	Give an overview of the different market players of the automotive Embedded application domain.	[7M]

UNIT-II

3.	a)	Explain different types of I/O in embedded system	[7M]
	b)	Explain the working of watchdog timer and also explain about control and status registers.	[7M]
		(OR)	
4.	a)	Explain the purpose of a Real Time Clock and its functionality in an embedded System.	[7M]
	b)	What are the various serial communication devices used in an Embedded Hardware? Explain any one of them?	[7M]

UNIT-III

5.	a)	What is Device driver? Explain about device driver programming.	[7M]
	b)	Explain different Embedded Firmware design approaches.	[7M]
		(OR)	
6.	a)	Explain the advantages and disadvantages of Assembly language based embedded firmware development.	[7M]
	b)	What is ISR? Explain about Interrupt servicing mechanism.	[7M]

UNIT-IV

7.	a)	Explain the working of DMA with appropriate diagrams.	[7M]
	b)	What are the issues to be considered in Hardware software co-design? Explain	[7M]
		(OR)	
8.	a)	Explain the important Hardware Software Tradeoffs in Hardware Software Partitioning.	[7M]
	b)	Explain how thread and process are used in an embedded system.	[7M]

UNIT-V

9.	a)	With a neat sketch explain a ACC hardware architecture.	[7M]
	b)	Explain the advantages and limitations of simulator based debugging.	[7M]
		(OR)	
10.	a)	List and describe the translation tools used in an embedded system.	[7M]
	b)	Describe in detail the improvements over firmware debugging starting from the most primitive type of debugging to the most sophisticated on chip debugging.	[7M]

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