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Code No: **RT42043C**   **R13**   Set No. 1

IV B.Tech II Semester Regular Examinations, April/May - 2017
EMBEDDED SYSTEMS
(Common to Electronics & Communication Engineering, Electronics & Instumentation Engineering and Electronics & Computer Engineering)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1.	a)	What is meant by Embedded firmware?	[3]
	b)	What are Timer and counting devices?	[4]
	c)	What are concepts of Embedded C?	[4]
	d)	What are the types of RTOS?	[3]
	e)	What are types of files generated on cross-compilation?	[4]
	f)	What are the various simulators used for Embedded system testing?	[4]

PART–B *(3x16 = 48 Marks)*

2.	a)	Draw and explain the typical Embedded system architecture?	[8]
	b)	Illustrate an application-specific Embedded system with suitable example?	[8]
3.	a)	What are the various serial communication devices used in an Embedded Hardware? Explain any one of them?	[8]
	b)	Discuss about Real time clock with respect to an Embedded Hardware?	[8]
4.	a)	Explain any one of Embedded firmware design approaches in detail?	[8]
	b)	Tabulate the concepts of compiler and cross compiler relevant to an Embedded Firmware?	[8]
5.	a)	Discuss about Multiprocessing and Multitasking techniques used in RTOS?	[8]
	b)	Briefly explain (i) Task scheduling (ii) Hardware software trade-offs	[8]
6.	a)	Draw and explain the integrated embedded system development environment.	[8]
	b)	Write notes on Embedded software development-process?	[8]
7.		Write short notes on the following	
		a) Translation Tools	
		b) Debugging Tools	[16]

Code No: **RT42043C**   **R13**   Set No. 2

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Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****
PART–A *(22 Marks)*

1. a) What is operational quality attribute? [3]
   b) What is the operation of transistor based relay driver circuit [4]
   c) What is the difference between C and Embedded C [4]
   d) What is process life cycle? [3]
   e) What are the advantages of simulator base debugging? [4]
   f) What is a target system? How does the target system differ from the final embedded system? [4]

PART–B *(3x16 = 48 Marks)*

2. a) What is Digital Signal Processor? Explain the role of DSP in embedded system design. [8]
   b) Explain the different characteristics of embedded systems in detail? [8]

3. a) Explain the role of Watchdog timer in embedded system [8]
   b) Compare the operation of ZigBee and Wi-Fi networks [8]

4. a) Explain the advantages and disadvantages of high level language based embedded firmware development. [8]
   b) What is Device driver? explain about device driver programming [8]

5. a) What is the difference between general purpose kernel and real time kernel? Give example. [8]
   b) Explain the different multitasking models in operating system context [8]

6. a) Explain in detail about different files generated during the cross compilation of an Embedded C file [8]
   b) What is a monitor program? Explain role in embedded firmware debugging. [8]

7. Explain in detail about below terms
   a) Interpreters   b) Simulator   c) Linkers [16]

Code No: **RT42043C**   **R13**   Set No. 3

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EMBEDDED SYSTEMS
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Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What is non-operational quality attribute?   [3]
    b) What is role of reset circuit in embedded systems?   [4]
    c) What is macro in embedded C?   [3]
    d) What are the activities involved during context switching?   [4]
    e) What is logic Analyzer?   [4]
    f) What do you mean by application software for a target system? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain *time to market*? What is significance in product development? [8]
    b) Explain the different communication buses used in automotive application [8]

3. a) Explain the role of Real time clock in embedded system   [8]
    b) Explain the merits and limitations of parallel port over serial interface [8]

4. a) Explain the advantages and disadvantages of Assembly language based embedded firmware development. [8]
    b) What is ISR? explain about Interrupt servicing mechanism   [8]

5. a) What is task scheduling? Explain Round Rabin scheduling algorithm [8]
    b) Explain about how to choose an RTOS   [8]

6. a) Explain role of integrated development environment for embedded software development [8]
    b) Explain the different tools used for hardware debugging   [8]

7. a) Explain in detail Translation tools-Pre-processors   [8]
    b) Explain about Laboratory Tool   [8]

Code No: **RT42043C**   **R13**   Set No. 4

IV B.Tech II Semester Regular Examinations, April/May - 2017
EMBEDDED SYSTEMS
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Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What are the difference between general purpose computing and embedded systems [4]
    b) What is watchdog timer? [3]
    c) What is Assembly language programming? [4]
    d) What is ICE? [4]
    e) What are the limitations of simulator base debugging? [4]
    f) What are Laboratory Tools? [3]

PART–B *(3x16 = 48 Marks)*

2. a) Explain different classification of embedded systems with example [8]
    b) Explain the role of embedded systems in automotive domain [8]

3. a) Explain in detail about USB. [8]
    b) Explain about Timer and counting devices in Embedded Hardware. [8]

4. a) Explain the different embedded firmware design approaches in detail [8]
    b) What is interrupt? What is role embedded application development? [8]

5. a) Explain the architecture of device river [8]
    b) What is critical section? What are the different techniques to control critical section? [8]

6. a) Explain the various elements of an embedded system development environment [8]
    b) Explain in detail about Boundary scan [8]

7. a) Explain about main software utility tool [8]
    b) What is Quality assurance and testing of the design? Explain in detail. [8]

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