Code No: 07A80402 **R07** **Set No. 2**

IV B.Tech II Semester Examinations,APRIL 2011
EMBEDDED AND REAL TIME SYSTEMS
Common to Electronics And Telematics, Electronics And Instrumentation Engineering, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What are the Kernal services in any operating system.
   (b) Briefly explain any three Kernel services. [4+12]
2. (a) What are the features of a DSP processor.
   (b) Give reasons why DSP processors are superior to general purpose microprocessor in DSP applications. [8+8]
3. (a) Explain about Dataflow Model.
   (b) Explain about Producer - Consumer example with monitors.
   (c) Explain about Concurrent Processes. [4+4+8]
4. (a) Draw and Explain briefly about each signal for Ethernet Interface.
   (b) Give notes on Infrared communication. [8+8]
5. (a) Describe a ROM Emulator
   (b) Describe an In-Circuit-Emulator
   (c) List the Difference between ROM Emulator and In-Circuit-Emulator.[6+6+4]
6. (a) What is an Embedded System? Differentiate between a general purpose computing system and an embedded system?
   (b) what are the designer trade- offs among the advantages and disadvantages of various available processor technologies and IC technologies? [8+8]
7. List the features of the embedded Linux and compare embedded Linux with other RTOS. [16]
8. With suitable examples explain how to :
   (a) Set an event flag
   (b) Clear an event flag
   (c) Query an event flag. [5+5+6]

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Code No: 07A80402 **R07** **Set No. 4**

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
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1. (a) Explain the Basic features of Real Time Operating System.
   (b) Explain any four VxWorks functionalities. [8+8]
2. (a) Explain about FSMD.
   (b) Explain about HCFSM.
   (c) Compare State Machine and Sequential Program Models. [6+6+4]
3. (a) Explain briefly about register set in microprocessor.
   (b) What is the difference between pipelined dish cleaning and nonpipelined dish cleaning?
   (c) Draw and explain design of any microcontroller of your choice. [4+4+8]
4. (a) Explain about the role of Null Modem Cable Connection in connecting two RS232 ports.
   (b) Explain briefly about RS422/RS485 and differenciate between RS485 and RS232. [8+8]
5. (a) Explain the importance of Semaphores in RTOS.
   (b) Explain the difference between Semaphores and Mutex. [8+8]
6. With examples explain the following synthesis processes.
   (a) FSM Synthesis
   (b) RT Synthesis
   (c) Behavioral Synthesis. [5+5+6]
7. With respect to embedded RTOS compare among the following :
   (a) Mailbox
   (b) Message queue
   (c) Event Register
   (d) Pipes. [4+4+4+4]
8. Design a single- purpose processor that outputs Fibonacci numbers upto n places. Start with a function computing the desired result, translate it into a state diagram and sketch a probable datapath. [16]

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Code No: 07A80402 **R07** **Set No. 1**

IV B.Tech II Semester Examinations,APRIL 2011
EMBEDDED AND REAL TIME SYSTEMS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain about Synchronization among Processes. [16]
2. Explain the impact of complexity of the logic on logic synthesis. [16]
3. (a) Explain about Real Time Clock.
   (b) Explain about Memory Data Bus and Address Bus with neat diagram.
   (c) Explain about the role of PC and IR in any microprocessor. [4+8+4]
4. (a) Explain about Bluetooth Protocol Architecture.
   (b) What is the need for Communication interfaces in Embedded System? Give some examples. [8+8]
5. Explain the function of the following registers and their offset address of Ethernet controller used in Embedded Linux
   (a) Hardware Address Registers
   (b) Transmit states of Descriptors
   (c) Transmit start address of Description
   (d) Command Register
   (e) Interrupt mask Register
   (f) Transmit configuration Register
   (g) Receive configuration Register [16]
6. (a) Explain about Decoupling capacitors.
   (b) Explain about Open Collector devices.
   (c) Explain about Tri - State devices.
   (d) Explain about Printed Circuit Board. [4+4+4+4]
7. Taking suitable examples explain how to :
   (a) Acquire a Mutex
   (b) Query a Mutex
   (c) Wait on a Mutex. [5+5+6]
8. With suitable examples explain how to

(a) Send a signal to another Task

(b) Block a signal from being delivered.

(c) Unblock a blocked signal. [5+5+6]

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Code No: 07A80402 **R07** **Set No. 3**

IV B.Tech II Semester Examinations,APRIL 2011
EMBEDDED AND REAL TIME SYSTEMS
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. With suitable examples explain how do you:
   (a) Resume a Task
   (b) Change priority of a Task
   (c) Query a Task. [5+5+6]
2. (a) What is ISR and briefly explain.
   (b) Explain about various external interrupts in any microprocessor.
   (c) Explain about Less - General ASIP environments. [12+4]
3. (a) Explain how inter-task synchronization can be done through Mailbox.
   (b) With suitable examples explain how to
      i. Create Mailbox
      ii. Delete a Mailbox. [8+8]
4. (a) Explain about Concurrent Process Model.
   (b) Explain briefly about embedded system example for Heartbeat Monitoring System. [8+8]
5. (a) Explain about various memories used in Embedded Systems.
   (b) What is timing diagram? Draw and explain timing diagram for a NAND gate. [8+8]
6. (a) Draw the action plan for designing a pure embedded system in its development process.
   (b) Explain the action plan for designing an RTOS based embedded system in its development Process. [8+8]
7. (a) What are the devices that can be connected through IEEE 1394 Bus? Explain its limitations.
   (b) Which are Bluetooth devices? Explain how they can be used to setup Personal Area Networks? [8+8]
8. Inter CPU motherboard is an embedded board. Assuming the RTOS is ported on to this board explain the following features of this board

(a) Interrupt support
(b) DMA support
(c) Machine or Bus cycles
(d) Memory. [4+4+4+4]

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