Code :R7321903 1

III B.Tech II Semester(R07) Regular & Supplementary Examinations, April/May 2011
EMBEDDED & REAL TIME SYSTEMS
(Electronics & Computer Engineering)

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

Answer any FIVE questions
All questions carry equal marks

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1. Explain the differences in hardware and software of a desktop computer and an Embedded System.
2. What are the features of Assembly Language? Explain why assembly language programming is preferred over high level language for some types of Embedded Systems.
3. Describe how numerous operations permitted by the concurrent process model can be implemented by using a single or a general purpose processors.
4. What are the different steps to establish serial communication between two machines running the windows operating system? Explain in detail.
5. (a) Explain Round Robin and Pre-emptive Multi tasking Algorithms.
   (b) What is the difference between Semaphore and Mutex?
6. (a) What is the difference between mail boxes and message queues?
   (b) What is meant by a signal? Explain signal management function calls.
7. (a) What are the common features of various operating systems?
   (b) Describe memory management in RTOS
8. (a) With a neat diagram explain Gajski Y-chart.
   (b) What is meant by Automation, and Verification.

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1. Discuss various steps involved in Embedded System Design, with an example.
2. List and explain the various Embedded Software Development Tools in detail.
3. What is meant by Communication among processes? Explain the communication among processes with suitable example.
4. Draw the protocol architecture of Bluetooth and explain in detail about each layer.
5. (a) Define Task. Explain characteristics of a task in Multi tasking.
   (b) Explain importance of Semaphores in Multi tasking system.
6. (a) Explain the use of message queues in multi tasking.
   (b) What is the use of event register? Explain its management function calls.
7. Explain any two Real Time Operating Systems.
8. With an example, explain combinational logic synthesis.

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Code :R7321903 **3**

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Answer any FIVE questions
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1. What is an Embedded System? Explain about Hard Real Time and Soft Real Time systems with suitable examples.
2. With a neat sketch explain in detail the Software Development Process. Also explain the development environment.
3. Explain in detail about Hierarchical/Concurrent State Machine Models.
4. With the help of a block diagram explain how devices are connected through IEEE 1394 Firewire bus. Also explain its protocol architecture
5. (a) Explain semaphore Management function calls in RTOS.
   (b) Define Task, Process, Thread and Multi tasking.
6. (a) Describe the pipe management function calls and their usage in task synchronization.
   (b) Give two examples of mail boxes and message queues.
7. List the Handheld operating systems and explain any two handheld operating systems.
8. (a) Explain logic and Register-transfer synthesis.
   (b) Define core? What are the various forms of the core? Explain.

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Code :R7321903 4

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Answer any FIVE questions
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1. List the various Hardware functional blocks that constitutes Embedded Systems. Briefly explain their features and usage.
2. Explain the features of a DSP processor. Why DSP processors are faster than general purpose microprocessors? Explain instruction level parallelism.
3. What is pseudo-code? Give pseudo-code for a pair of functions implementing the send and receive communication constructs. You may assume that mutex and condition variables are provided.
4. List and Explain in detail about the various serial wireless protocols.
5. (a) Explain critical section with an example. How do you use a semaphore in critical section of a task?
   (b) Define Real-Time and Real -Time Operating System.
6. Explain the critical section handling with Mutexes and spin locks
7. What are the various Mobile/ Handheld operating systems and explain their features.
8. In detail explain various synthesizing methods for sequential circuits.

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