$$\boxed{\textbf{Set No. 1}}$$

IV B.Tech II Semester Regular Examinations, Apr/May 2008
EMBEDDED SYSTEMS
(Computer Science & Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. What are embedded systems? Define hard-real time and soft-real time embedded systems. Give any two examples for each of these two categories and justify why they are hard/soft real time embedded systems. [2+6+4+4]

2. What kind of memory is preferred to store each of the following and why?

   (a) The program of an intelligent VCR which are required in millions of units.
   (b) The user-configurable name for a printer attached to a network that the printer should remember even if the power fails.
   (c) The program for a beta version of an x-ray machine that your company is about to ship to general hospitals on experimental basis.
   (d) The data that is just received from the network. [4+4+4+4]

3. Explain the sequence of operations that take place in the CPU starting from when it receives an external interrupt till it completes the interrupt sub-routine. [16]

4. Explain the functions of a scheduler in an RTOS and how does the scheduler carryout those functions. [8+8]

5. What are events? Explain the role of events in RTOS. [8+8]

6. Explain the need for encapsulating semaphores and queues with an example. [16]

7. Explain the following software development tools

   (a) A Cross-Compiler
   (b) A Cross-Assembler
   (c) A Linker
   (d) A loader/locator [4+4+4+4]

8. Explain the important features of the following operating systems that are relevant to embedded applications.

   (a) RT Linux
   (b) Windows XP
   (c) Win CE
   (d) V_x works [4+4+4+4]

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Set No. 2

IV B.Tech II Semester Regular Examinations, Apr/May 2008
EMBEDDED SYSTEMS
(Computer Science & Engineering)

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. Write short note on the following parts of embedded systems.

   (a) Processors
   (b) Memory
   (c) Operating System
   (d) Programming Languages   [4+4+4+4]

2. Explain the terms: 'power supply decopling', 'open-collector output', 'Tristate output', 'fan-out' for TTL logic gates.   [4+4+4+4]

3. What are the important features of Assembly Language? Explain the reasons why Assembly Language programming is preferred for some types of embedded systems.
                                                                                      [8+8]

4. Explain the functions of a scheduler in an RTOS and how does the scheduler carryout those functions.   [8+8]

5. Compare various methods of intertask communication.   [8+8]

6. Explain the terms 'structure', 'modularity', 'encapsulation', and 'maintainability' in the context of embedded software.   [4+4+4+4]

7. Explain the following software development tools

   (a) A Cross-Compiler
   (b) A Cross-Assembler
   (c) A Linker
   (d) A loader/locator   [4+4+4+4]

8. Explain the functional blocks and the specification of the software of a GPS system.
                                                                                      [16]

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Set No. 3

IV B.Tech II Semester Regular Examinations, Apr/May 2008
EMBEDDED SYSTEMS
(Computer Science & Engineering)

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. Write short note on the following hardware units used to build embedded systems.

   (a) Microprocessors

   (b) Microcontrollers

   (c) DSP processors   [5+5+6]

2. Explain the terms: 'power supply decopling', 'open-collector output', 'Tristate output', 'fan-out' for TTL logic gates.   [4+4+4+4]

3. Explain the sequence of operations that take place in the CPU starting from when it receives an external interrupt till it completes the interrupt sub-routine.   [16]

4. Explain the functions of a scheduler in an RTOS and how does the scheduler carryout those functions.   [8+8]

5. What are events? Explain the role of events in RTOS.   [8+8]

6. Explain the terms 'structure', 'modularity', 'encapsulation', and 'maintainability' in the context of embedded software.   [4+4+4+4]

7. Explain the differences between an 'Host Computer System' and a 'Target System' in terms of their hardware and software.   [8+8]

8. Explain the requirements (specifications) of any four Networked Java-Enabled information appliances.   [16]

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Set No. 4

IV B.Tech II Semester Regular Examinations, Apr/May 2008
EMBEDDED SYSTEMS
(Computer Science & Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks
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1. Write short note on the following.

   (a) Serial data transfer standards
   (b) Laboratory instruments for testing the embedded systems.   [8+8]

2. Explain the terms: 'power supply decopling', 'open-collector output', 'Tristate output', 'fan-out' for TTL logic gates.   [4+4+4+4]

3. What is shared-data problem in an embedded system? Explain with an example.
                                                                                [8+8]

4. Give justifications for using a multitasking RTOS for embedded systems. Explain the different states of a task in the system with the help of a state transition diagram.   [8+8]

5. Why do we need timer functions in RTOS? Briefly discuss how they are provided.
                                                                                [8+8]

6. Explain the need for encapsulating semaphores and queues with an example. [16]

7. Explain the differences between an 'Host Computer System' and a 'Target System' in terms of their hardware and software.   [8+8]

8. Explain the important features of the following operating systems that are relevant to embedded applications.

   (a) RT Linux
   (b) Windows XP
   (c) Win CE
   (d) V_x works   [4+4+4+4]

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