Seventh Semester B.E. Degree Examination, June 2012

Embedded Computing Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Define an embedded system. Explain the components of embedded system hardware.
                                                                                     (06 Marks)
   b. Point out major differences between Harvard and Von Neuman architecture.   **(04 Marks)**
   c. Explain the various software tools for designing an embedded system.   **(08 Marks)**
   d. Point out various applications of embedded system.   **(02 Marks)**

2 a. Compare the advantages and disadvantages of data transfer using serial and parallel ports/devices.   **(10 Marks)**
   b. Describe and compare UART, Rs232C, SDI$_o$ devices.   **(10 Marks)**

3 a. What is a timer? How does a counter perform :
   i)   timer functions?
   ii)   prefixed time initiated event generation?
   iii) time capture functions?   **(10 Marks)**
   b. Explain the following wireless and mobile system protocols :
   i) Bluetooth   ii) Zig Bee   **(10 Marks)**

4 a. What do you mean by throwing an exception? How is the exception condition during execution of a function (routine) handled?   **(10 Marks)**
   b. What are the uses of hardware and software assigned priorities in interrupt service mechanism?   **(10 Marks)**

PART – B

5 a. What are the different programming models? Give an example, explain the SDFG model.
                                                                                     (10 Marks)
   b. What is a semaphore? What are the IPC functions used by a software programmer? Explain them.   **(10 Marks)**

6 a. What is a process manager? What are its services?   **(06 Marks)**
   b. What is RTOS? Point out and explain the various services of RTOS.   **(10 Marks)**
   c. Explain the user and supervisory mode structure in OS.   **(04 Marks)**

7 a. Explain preemptive scheduling model. Point out the various scheduling models.   **(08 Marks)**
   b. What are the important operating system security issues? List the important security function.   **(04 Marks)**
   c. What are the methods of optimizing memory space in RTOS?   **(08 Marks)**

8 a. What is a target system? How is embedded software loaded into the target system?**(10 Marks)**
   b. What is a simulator? Illustrate the detailed design development process using a simulator.
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