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Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Embedded Systems

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. What is an embedded system? With the aid of a neat functional schematic diagram, explain the components of an embedded system. (08 Marks)
- b. With the help of a neat diagram, explain the process of converting a C program into the file for the ROM image. (08 Marks)

OR

- 2 a. What are the different competing design metrics? What are the challenges faced in designing an embedded system? (08 Marks)
- b. Explain the three classes of embedded systems, Further discuss the skills required for an embedded system designer. (08 Marks)

Module-2

- 3 a. With neat sketch, explain synchronous serial input and synchronous serial output operations. (08 Marks)
- b. Explain :
 - i) I²C Bus
 - ii) WatchDog Timer
 - iii) SDIO.
 (08 Marks)

OR

- 4 a. With the aid of a functional diagram, describe how an internet enabled embedded system is communicating to other systems on the internet. (08 Marks)
- b. Explain the following wireless and mobile system protocols.
 - i) Bluetooth
 - ii) ZigBee
 (08 Marks)

Module-3

- 5 a. Explain the working of busy and wait transfer mode for the I/O devices. (08 Marks)
- b. What do you mean by throwing an exception? How is the exception condition during execution of a function (routine) handled? (08 Marks)

OR

- 6 a. Explain context switching, interrupt latency and interrupt service deadline. (08 Marks)
- b. Describe DMA transfer in an embedded system, with the help of a neat diagram. (08 Marks)

Module-4

- 7 a. Define process and tasks. Distinguish among the ISRs, tasks and functions. (08 Marks)
- b. What is a semaphore? Explain use of a semaphore as resource key and its critical section. (08 Marks)

OR

- 8 a. Explain the pipe functions. (08 Marks)
b. What is shared data problem and solution for shared data problem? (08 Marks)

Module-5

- 9 a. What is RTOS? Explain the design principles when using an RTOS to design an embedded system. (08 Marks)
b. Discuss the 3 approaches used for interrupt routines in RTOS environment and handling of interrupt source calls. (08 Marks)

OR

- 10 a. Mention the various scheduling models. Explain the cyclic and round robin with time slicing and co-operative scheduling model. (08 Marks)
b. What is a target system? With the help of a block diagram, illustrate the different components of a target system. How does target system differ from the final embedded system? (08 Marks)
