Seventh Semester B.Tech. Degree Examination, May 2014
(2008 Scheme)
08-716 : (EMBEDDED SYSTEMS) (TA)

Time : 3 Hours Max. Marks : 100

Instructions: 1) Answer all questions from Part A. Each question carries 4 marks.
2) Answer any two questions from each Module in Part B. Each question carries 10 marks.

PART – A

1. List and define three main characteristics of embedded systems that distinguish such systems from other computing systems.

2. What is meant by real time? What are the different categories of real time?

3. What is a watchdog timer? Explain.

4. Distinguish between ISRs and tasks.

5. Explain task scheduling in RTOS.

6. How are interrupts different from polling?

7. How task synchronisation can be achieved using mutexes? Under what conditions polling is better than interrupts?

8. What are the three necessary conditions for a set of tasks to be schedulable?

9. Discuss the important features provided by every RTOS.

10. Distinguish between serial and parallel communication.
PART – B

Module – I

11. Draw and explain the timing diagram for a bus protocol that is handshaked nonaddressed and transfers 8-bits of data over a 4-bit data bus.

12. Give an overview of processors and hardware units in an embedded system. What are the challenges in designing an embedded system?


Module – II

14. What steps are taken when ISRs are called during the execution of a task? How are nested and non-nested ISRs different in this regard? What is the relevance of interrupt vector table in embedded systems?

15. Explain briefly the structures, goals and services of operating system.

16. Describe briefly about (a) Macros and functions (b) Pointers.

Module – III

17. a) Describe the boot-up sequences with RTOS in an embedded device.

    b) What is a task? How is it started, scheduled and deleted?

18. a) What is a semaphore? How are they used?

    b) What are events? How are they different from message queues?

19. Explain the following scheduling models

    a) Co-operative round robin scheduling

    b) Rate monotonic co-operative scheduling.