



B.E /B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, Apr/May 2011
INFORMATION TECHNOLOGY
IV SEMESTER (REGULATIONS 2008)
IT 9252 – Embedded systems

Time: 3 hrs

Max. Marks:100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. Give major levels of abstraction in embedded system design process
2. Explain the following instructions of 8051
MOV @R2,#06H
MOVX A, @DPTR
3. List the interrupts in 8051 and explain interrupt vector table
4. The memory address of the last location of a 1KB memory chip is FBFFH.
What is the address of first location
5. Explain cyclostatic scheduling and list its drawback
6. Check the feasibility of rate monotonic scheduling for the given set of process.
P1 top priority, P3 least priority
Process execution time period
P1 1 2
P2 2 5
P3 2 8
7. Write an assembly code to monitor p1.7 and when it is high send 55H to P2
8. Write a embedded C program for finding number of even numbers in an array
- 9 Explain briefly in circuit emulator
10. Discuss the design issues (problems) in real time Embedded systems

PART – B (5 X 16 = 80 Marks)

11. i. Explain the data flow model of ARM Processor and discuss its processor modes 8
- ii. A switch is connected to port P2.3. Write an assembly program to check the status of the switch and perform the following
(a) If switch is high, send a low pulse to activate a buzzer connected to pin P1.4 (b) Continue monitoring the pin status 8

12.a. Explain how serial communication is performed in 8051 micro controller with the help of pin diagram, using interrupt. Demonstrate this using a embedded C code.

(or)

b. Explain the difference between onchip and offchip memories in 8051. Interface a data memory of capacity 32K x 8 using 8K x 8 DRAM chips Also interface a program memory of 32K x 16 using 32K x 8 ROM chips. Write a small code segments to access data and program code from above memories.

13.a, Write a notes on Real Time OS, context switching, Priority driven Scheduling and inter process communication

(or)

b, discuss about static scheduling and dynamic scheduling in real time OS and schedule the following task set with above two Scheduling algorithms for at least 3 hyper period (P1 top priority, P3 least priority for static scheduling)

Process	Execution time	Period
P1	1	3
P2	2	6
P3	2	7

14.a, Write a embedded C program using interrupts to do the following
Generate a 10000 hz frequency on P1.2 using T0 8 bit auto reload.
Use timer 1 as can event counter to count up a 1 hz pulse and display it on P2.
The pulse is connected to EX1 (XTAL=11.0592MHz set baudrate at 4800)

(or)

b.i, Write a embedded C program to bring in a byte of data serially one bit at a time via port P1.3.(LSB should come first) 8

ii. Write an assembly code to check the data given in array is divisible by 3 & 8 8

15. a. Discuss about design methods using Spiral model, waterfall model, successive refinement development model, and hierarchical design flow model

(or)

b, Explain multi state systems and its different categories. Give any one multi state system with an application with brief code and explanation