B.E / B.Tech.(Full Time) DEGREE END SEMESTER EXAMINATIONS, Nov / Dec 2012
INFORMATION TECHNOLOGY BRANCH
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. List challenges of embedded systems design
2. Differentiate JZ and JNC instruction set with example
3. Draw memory interface diagram for generating a 32k x 8 memory with memory blocks of 8k x 8
4. Write register structure of TCON and IE registers in 8051
5. Explain briefly the parameters which will affect the system performance in scheduling policies
6. List out three different scheduling policies and compare them
7. Write a embedded C program to check the status of the switch connected to 2^{nd} pin of Port 1
8. Write a 8051 C program to set bits of P1 with 44H and reset to 00H continuously forever with some delay
9. Explain briefly Emulators
10. list out major steps in the design of embedded system

Part – B (5 x 16 = 80 Marks)

11 (i) Draw architecture diagram of 8051 micro controller and explain the working principle of this processor (10)

(ii) Write an Assembly language program to generate a rectangular pulse with an ON pulse of 50 ms and OFF pulse of 10ms for a microcontroller working on an oscillator frequency of 22Mhz (6)

12.a. Explain how the interrupt port communication done in 8051 with an example assembly code

(OR)

b. Explain the method of interfacing memory with the micro controller (8051) with a example of connecting 32K x 16 (program memory) using 8K x 8 chips and write a code segment to read a program from above memory

13.a. Explain RMS algorithm in scheduling and .Schedule the following task set with fixed priority and a dynamic priority algorithms (16)

Process	exe time	period
P1	1	5
P2	2	15
P3	3	10

(OR)

b. Discuss in detail about inter process communication mechanisms in embedded systems

14 a. Write a C program using interrupts to do the following
Receive data serially and send it to P0
Read port P1, transmit data serially and give a copy to P2
Make timer 0 generate a square wave of 5 Khz on P0.2
Assume XTAL =12Mhz , baud rate 4800

(OR)

b. Write an 8051C program to send two different strings to serial port. Assuming SW is connected to pin P2.0 monitor the status and make a decision as follows
SW=0 send your first name
SW=1 send your last name
Assume XTAL=12Mhz, Baud rate 9600, 8 bit data and 1 stop bit

15.a(i) Describe the hierarchical design flow for an embedded system

(OR)

(ii) Design a controller for a domestic washing machine, identifying the function to implement the system and write the code for the same