USN | | | | | | | | | | |

06EC82

Eighth Semester B.E. Degree Examination, June/July 2011
Embedded System Design

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is a design metric? Mention the design metric and explain them. **(10 Marks)**
b. Derive an equation for percentage revenue loss for any rise angle rather than just for 45 degrees. **(10 Marks)**

2 a. Design a single-purpose processor that outputs Fibonacci numbers up to 'n' places. Start with a function computing the designed result and translate it into a state diagram. **(10 Marks)**
b. Design a combinatorial logic for y and z where y is 1, if a is 1, or 'b' and 'c' are 1 and z is 1 if 'b' or 'c' is 1, but not both (or a, b and c are all 1). **(10 Marks)**

3 a. What is watchdog timer? Explain ATM timeout using a watchdog timer. **(10 Marks)**
b. Describe the working of PWM unit with timing diagrams. How can it be used for speed control of DC motor? **(10 Marks)**

4 a. Explain the features of flash memory, SRAM and OTP ROM. **(06 Marks)**
b. Explain memory hierarchy and cache operation. **(08 Marks)**
c. Design a 8k×8 ROM using 1k×8 ROM using an address decoder. **(06 Marks)**

PART – B

5 a. Explain shared data problem with an example, show how interrupt facility can be used for solving the problem. **(10 Marks)**
b. Explain interrupt handling procedure, context switching and critical section. **(10 Marks)**

6 a. Briefly compare the methods for intertask communication. **(10 Marks)**
b. Give drawbacks of 'malloc' and 'free' library functions of C in real time systems. Explain getbuf and regbuf using program code. **(10 Marks)**

7 a. Explain interrupt routines in RTOS environment. **(10 Marks)**
b. What is meant by encapsulating the semaphores? Bring out the need for it. **(10 Marks)**

8 a. Explain how memory space can be saved in hard real time scheduling with an example. **(10 Marks)**
b. Discuss any five problems with semaphores. **(10 Marks)**

* * * * *