AQ – 2793

First Semester M. E. (Digital Etx.) Full Time Examination

EMBEDDED SYSTEM DESIGN

Paper - 1 UMEF -5

P. Pages : 2

Time : Three Hours] [Max. Marks : 80

Note : (1) Due credit will be given to neatness and adequate dimensions.
(2) Assume suitable data wherever necessary.
(3) Illustrate your answer wherever necessary with the help of near sketches.

1. (a) Describe ARM register set, also specify the flags in ARM-7 processer. 7

   (b) Draw and explain embedded system with SOC. 6

OR

2. (a) Explain the challenges in embedded system. 6

   (b) Draw the interfacing of 64 K x 4 RAM and 32 K x 4 ROM with ARM-7 processor. Show all relevant signals. 7

3. (a) How the interrupts are handled in C ? Give example. What is an interrupt latency ? What is its effect on dead line? 7

   (b) Describe the techniques to write an efficient code in C. 6

OR

4. (a) Describe the feature of start-up code provided in C compiler. 6

   (b) What are the various data types supported in C for ARM processor ? Explain with example. 7

5. Draw the interfacing of stepper motor and 16 x Z LCD with LPC 2148 microcontroller? Write the C program to rotate motor clockwise with step angle of 30 for total 100 revolution and accordingly display revolution number on LCD unit. 14

OR

6. Draw the interfacing of 4 x 4 keyboard matrix and 16 x 2 LCD with LPC 2148 microcontroller. Write the C program to read key character from keyboard and display on LCD. 14

7. (a) Explain in detail preemptive/non-preemptive model with example. 7

   (b) Explain task control block. 6

OR

8. (a) Differentiate between Mutux and Semaphore. 7

   (b) Define threads, task, process and jobs. 6

9. (a) Explain RM algorithm. 7

   (b) Explain Micros OS-II. 6

OR

10. (a) Discuss aspects of task assignment. 6

    (b) Explain Earliest Deadline First algorithm with example. 7

11. (a) Explain the concept of validation and debugging of embedded system. 7

    (b) Discuss the ways of computing appropriate stack sites for task. 7

OR

12. (a) What is hardware software co-design? Explain the fundamental issues in hardware software co-design. 8

    (b) Why is it difficult to estimate the size of product at the beginning of product ? 6