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M.E. First Semester (Digital Electronics) (Part Time / Full Time) (C.G.S.- New)

13207 : Embedded System Design : 1 UMEF 5

P. Pages : 2

Time : Three Hours

* 0 7 3 4 *

AW - 3490

Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Draw and explain the block diagram of 32-bit ARM processor. 6

   b) Describe memory hierarchy criteria for embedded system. 7

OR

2. a) Describe the features of the following processor used in embedded system design. 6
   i) GPP ii) ASSP
   iii) AISP iv) SOC

   b) Describe the ARM register set for user operating mode. Also specify the various flags in CPSR of ARM-7 processor. 7

3. a) Describe the features of the start-up code provided in ARM-C cross compiler. 6

   b) Explain in detail what are C data types supported by ARM processor. 7

OR

4. a) Write ARM assembly code to implement y = (c – d) + (e – f) Assumption : c, d, e, f are stored in an array at label number. 7

   b) Explain the procedure to call assembly language routines in high level language with suitable example. 6

5. Draw and explain an interfacing of stopper motor with ARM. Write a program to rotate motor in clockwise directions. Also draw the flowchart of it. 14

OR

6. Draw the interfacing of LCD unit with LPC2148. Write a program to display "SGBAU" word on it. Draw the necessary flowchart. 14

SECTION – B

7. a) Mention the differences between Mutex and Semaphore. 6

   b) What are the goals of an operating system. 7

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OR

8.	a)	What is semaphore? Explain the different types of it. Where it is used?	6
	b)	What is task control block? Explain the structure of TCB.	7
9.	a)	Describe Earliest deadline first Algorithm.	7
	b)	What is RTOS? Describe its features.	6

OR

10.	a)	Define critical section of task? What are the ways by which the critical section run by blocking other processes?	6
	b)	Discuss the elements of various aspects of task assignment problem with the help of suitable example.	7
11.	a)	What are the steps involved in estimation? Explain in detail.	7
	b)	What is In-circuit emulator? How is it used to test target platform?	7

OR

12.		Discuss the following issues hardware – software co-design. i) Model selection. ii) Architecture selection. iii) Programming language selection. iv) Partition system requirements into hardware and software.	14

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