

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (2011 Batch) (Sem.-7,8)

EMBEDDED SYSTEMS

Subject Code : BTEC-701

Paper ID : [A3000]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Which features does ARM have in common with many other RISC architectures?
- b) Differentiate between CPSR and SPSR.
- c) Explain the concept of thumb instructions in ARM processor.
- d) Implement the statement $x = (a+b) - c$, using ARM instructions.
- e) What is the WFI instruction used for?
- f) Why exceptions are used in ARM processors?
- g) Discuss the role of write-back cache in ARM processors.
- h) What is Jazelle extension in ARM processors?
- i) Draw the interfacing of 64KB *4 RAM and 32KB*4 ROM with ARM-7 processor? Show all relevant signals.
- j) What is armulator?

SECTION-B

2. Discuss the role of L1 and L2 cache memories in ARM processor.
3. Assume that there is a byte-string of ASCII-encoded characters stored in memory starting at location STRING. It is terminated by the Carriage-Return character (CR). Write an ARM program to determine the length of the string and store the length in location LENGTH.
4. How C/C++ is useful in embedded system programming? Also mention the advantages of high level programming for embedded system.
5. How ZIGBEE can be interfaced with an ARM processor? Draw and explain an interfacing diagram.
6. Explain the need for a fast interrupt service and a normal interrupt service in ARM processors with their own stack operations.

SECTION-C

7. Explain the importance of declaration static, extern, void, interrupt in embedded C.
8. Write an ARM program to find the larger of two 32-bit variables VALUE1 and VALUE2. Place the result in the variable RESULT. Assume the values are unsigned.
9. Using I/O lines, and a driver circuit, explain the operation to run a DC Motor. Also explain the interfacing of DC motor with an ARM processor by showing relevant interfacing diagram.