

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (2012 to 2017) (Sem.-7,8)

EMBEDDED SYSTEMS

Subject Code : BTEC-701

M.Code : 71910

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) Explain the concept of thumb instructions in ARM processor.
- b) Which assembly instruction would you use to load 4 words starting from the memory location 0×80000000 into the registers r0-r3?
- c) Describe the significance of ARMs and ARMulator.
- d) Explain process status register (PSR) for ARM.
- e) Assume that x is an array of integers, and i and j are integers. Convert the following C statements into ARM assembly language.
 - (i) $x[i] = j$;
 - (ii) $x[j] = x[i]$;
- f) Differentiate between CPSR and SPSR.
- g) Discuss the role of write-back cache in ARM processors.
- h) How is ARM processor different from other processors?
- i) Give different applications of ARM processors.
- j) List down the differences between ARM and Thumb Instructions.

SECTION-B

2. Discuss the role of L1 and L2 cache memories in ARM processor.
3. How ZIGBEE can be interfaced with an ARM processor. Draw and explain an interfacing diagram.
4. With a neat diagram explain the different general purpose registers of ARM processors.
5. Explain the use of pointers with example.
6. Differentiate between conditional jump and unconditional jump instructions using appropriate examples.

SECTION-C

7. What are addressing modes? Explain various addressing modes with two examples of each used for ARM processors.
8. Use `ldm` and `stm` to write a short sequence of ARM assembly language to copy 16 words of data from a source address to a destination address. Assume that the source address is already loaded in `r0` and the destination address is already loaded in `r1`. You may use registers `r2` through `r5` to hold values as needed. Your code is allowed to modify `r0` and/or `r1`.
9. Write notes on the following :
 - a) I²C Bus
 - b) JTAG

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.