

ALCCS – NEW SCHEME

Time: 3 Hours

FEBRUARY 2012

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:

- Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.
- Parts of a question should be answered at the same place.

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- Q.1**
- a. List the different types of rapidly emerging distributed embedded system. Also mention their features.
 - b. Explain the use of the following tools: ICE, CROSS –ASSEMBLER.
 - c. List all software modules and tools for implementation of an embedded system.
 - d. List design issues in embedded system multimedia application of Digital Camera.
 - e. What is a “market window” and why is it so important for products to reach the market early in this window.
 - f. The design and configuration of caches can have a large impact on performance and power consumption of a system. Justify.
 - g. Explain the main features of two popular parallel protocols. (7×4)
- Q.2**
- a. What is an embedded system and list applications of that? List and define the three main characteristics of embedded systems that distinguish such systems from other computing systems. (10)
 - b. List and define the three main IC technologies. What are the benefits of using each of the three different IC technologies? (8)
- Q.3**
- a. Compare Harvard architecture and Princeton architecture and explain how control unit works in basic general-purpose architecture. (10)
 - b. What is an addressing mode? Explain different addressing modes used to indicate the data’s location in assembly language programming. (8)
- Q.4**
- a. Why composing of larger memory is required from smaller memory parts. Explain how you will approach this method. (10)

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- b. Discuss the advantages and disadvantages of using memory-mapped I/O versus standard I/O mapped. (8)
- Q.5** a. Draw system architecture of DMA using the ISA bus protocol and explain its memory write bus cycle. (10)
- b. Draw two-level bus architecture of microprocessor-based embedded system and explain it. (8)
- Q.6** a. Memory allocation and management are the most important functions of the kernel. Why? How does memory allocation differ in RTOS and OS? What is memory locking? (10)
- b. Explain the different methods of saving and optimizing the memory space. (8)
- Q.7** a. Describe an I²C bus at the following OSI-compliant levels of detail: physical, data link, network, and transport. (10)
- b. Explain protocol that would allow sensor nodes in a sensor network to determine the other nodes with which they can communicate. (8)