

ALCCS – NEW SCHEME

Time: 3 Hours

AUGUST 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. Define embedded system. List common characteristics of embedded systems. Which distinguishes it from other computing systems.
 - b. How to measure performance of a system? List the important parameters required to measure performance of an embedded system.
 - c. Explain an embedded system design life cycle model with a suitable example.
 - d. Draw and explain the block diagram of a two level bus architecture in a microprocessor based embedded system.
 - e. Describe how wireless communication will be useful in embedded system. Give brief description of any two wireless protocols.
 - f. The design and configuration of caches can have a large impact on performance and power consumption of a system. Justify.
 - g. List the advantages of Real Time OS in an embedded system. Give an example of a process synchronisation procedure in RTOS for an embedded system. **(7×4)**
- Q.2**
- a. Explain with the help of example how delayed market entry of an embedded product will yield to losses. **(10)**
 - b. Explain with an example the principle of priority inversion in interrupts in an embedded system. **(8)**
- Q.3**
- a. What is an optimization? Explain the different optimization opportunities available to customize single-purpose processors. **(10)**

Code: CT74**Subject: EMBEDDED SYSTEMS**

- b. Describe Pipelining, Superscalar and VLIW Architectures. (8)
- Q.4** a. Compare the write ability and storage permanence of popular memories. (10)
- b. Implement a RS-232 interface with a microcontroller and explain the signals and commands in it. (8)
- Q.5** Explain cache Direct mapping, Fully associative mapping and Set-associative mapping techniques. (6×3 = 18)
- Q.6** a. Explain the flow of actions in a peripheral to memory transfer with DMA in an embedded system. Give its advantages over the transfer taking place with vectored interrupts. (10)
- b. Compare the Processes and Threads. (8)
- Q.7** a. How is an embedded system applied in telecommunication devices and systems? Illustrate with the help of a case study. (10)
- b. Write short notes on
- (i) Network – oriented arbitration
 - (ii) Error detection and correction. (8)