

ALCCS

Time: 3 Hours

JUNE 2015

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.

- Q.1**
- a. Explain various types of DRAM. Mention their respective data and control signals.
 - b. Mention various I/O devices that can be interfaced in embedded systems. Explain their features.
 - c. Differentiate the functioning of port-based I/O and bus-based I/O.
 - d. Explain the issues and challenges in embedded system design.
 - e. Explain program optimization features in embedded system design.
 - f. Distinguish between CAN, IrDA and PCI protocols.
 - g. Write short notes on testing and debugging process in embedded system design. (7 × 4)
- Q.2**
- a. Compare microcontrollers and microprocessors. Also explain feature of system on chip (SoC). (6)
 - b. Explain the features of Digital signal processors. (6)
 - c. Explain the single purpose processors and general purpose processors in detail. Give an illustration. (6)
- Q.3**
- a. Explain various cache mapping techniques. Give an illustration for each. (9)
 - b. Explain how the program optimization improves the performance of embedded system. (5)
 - c. Explain the features of real-time operating system. (4)
- Q.4**
- a. Compare the features of parallel communication and wireless communication. Give their applications. (6)

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- b. Describe the functioning of strobe and handshake control methods. Explain briefly with an illustration. (6)
- c. What is the significance of arbitration technique in direct memory access (DMA)? Explain briefly. (6)
- Q.5** a. Write the application of embedded system for the following: (5+4)
 (i) Multimedia (ii) Telecommunication
- b. What is the significance of hardware/software design methodology? Define the term 'concurrent engineering' and explain the features of concurrent engineering. (9)
- Q.6** a. Compare the functioning of program state machine model and concurrent process model. (6)
- b. What is the significance of shared memory in process communication? How message passing improves the data exchange? Explain briefly. (6)
- c. Write brief notes on the power saving techniques used in processor models. Explain various modes. (6)
- Q.7** Write short notes from any **THREE** of the following: (3×6)
 (i) Networking Protocols
 (ii) Fault tolerance in embedded system
 (iii) RT-Level Combinational and sequential components
 (iv) Power Management in embedded system