END-TERM EXAMINATION

THIRD SEMESTER [BCA] DECEMBER-2007

Paper Code: BCA-203(Batch-2005-2006)　　　　Subject: Computer Architecture
Paper ID: 20203

Time : 3 Hours　　　　　　　　　　　　　　　　　　Maximum Marks : 75

Note: Q.No.1 is compulsory. Attempt one question from each unit.

Q.1	(a)	What do you mean by register transfer language (RTL)?	(3)
	(b)	What are shift registers? Where are these useful?	(3)
	(c)	What is Instruction Cycle? What are its types?	(4)
	(d)	What is associative memory? Outline its significance.	(3)
	(e)	What is stack organization?	(3)
	(f)	What are I/O interfaces? How are these important?	(3)
	(g)	What kind of hardware is required for memory management? Discuss.	(3)
	(h)	What is the relevance of priority interrupt?	(3)

Unit-I

Q.2　What are micro-operations? What are its various types? Illustrate the implementation of each category of micro-operations through its block diagram(s). (12.5)

Q.3　(a)　What is a bus? Design a bus system capable of transmitting data from any register from a group of 16 registers (32-bits each) to any other register existing in a group of 8 registers (32-bits each). Illustrate the logic through its block diagram. (7.5)
　　　b)　What is the importance of timing and control in the design of control unit? (5)

Unit-II

Q.4　(a)　What do you understand by an Instruction Set? What are different types of instructions? Discuss the significance of each type of instruction. (7)
　　　b)　What are addressing modes? Discuss different types of addressing modes. (5.5)

Q.5　Explain the following
　　　(a)　Instruction Format (6)
　　　(b)　ALU Design (6.5)

Unit-III

Q.6　Explain the following: (6)
　　　(a)　Division algorithm
　　　(b)　Direct Memory Access (DMA) (6.5)

Q.7　(a)　What is a floating point number? What maximum and minimum floating-point number can be represented in a 64-bit computer having a sign bit for mantissa, 15 exponent bits and 32 mantissa bits? Also indicate the positive/negative overflow and underflow ranges of the number on the scale. (9)
　　　(b)　Differentiate between synchronous and asynchronous data transfer. (3.5)

Unit-IV

Q.8　What is memory hierarchy? Discuss each of the elements in this hierarchy. (12.5)

Q.9　Differentiate between the following:
　　　(a)　RAM and ROM (6)
　　　(b)　Cache Memory and Virtual Memory
　　　　　　　　　　　　　　　　　　　　　　(6.5)

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