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**Fourth Semester B.E. Degree Examination, June/July 2014**  
**Computer Organization**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1
  - a. Draw the connection between processor and memory and mention the functions of each component in the connection. (08 Marks)
  - b. Write the difference between RISC and CISC processors. (04 Marks)
  - c. A program contain 1000 instructions. Out of that 25% instructions requires 4 clock cycles, 40% instructions requires 5 clock cycles and remaining requires 3 clock cycles for execution. Find the total time required to execute the program running in a 1 GHz machine. (05 Marks)
  - d. Add +5 and -9 using 2's compliment method. (03 Marks)
- 2
  - a. Explain immediate, indirect and indexed addressing modes. (08 Marks)
  - b. Explain different rotate instructions. (06 Marks)
  - c. Write ALP program to copy 'N' numbers from array 'A' to array 'B' using indirect addresses. (Assume A and B are the starting memory location of a array). (06 Marks)
- 3
  - a. Explain the following terms :
    - i) Interrupt service routine    ii) interrupt latency    iii) interrupt disabling. (06 Marks)
  - b. With a diagram, explain daisy chaining technique. (06 Marks)
  - c. What you mean by bus arbitration? Briefly explain different bus arbitration techniques. (08 Marks)
- 4
  - a. With a block diagram, explain how the printer is interfaced to processor. (08 Marks)
  - b. Explain the architecture and addressing scheme of USB. (08 Marks)
  - c. Define two types of SCSI controller. (04 Marks)

**PART – B**

- 5
  - a. Explain direct memory mapping technique. (06 Marks)
  - b. What is virtual memory? With a diagram, explain how virtual memory address is translated. (08 Marks)
  - c. Explain the working of 16 megabyte DRAM chip configured as 1 M × 16 memory chip. (06 Marks)
- 6
  - a. Design 4 bit carry look ahead logic and explain how it is faster them 4 bit ripple adder. (08 Marks)
  - b. Multiply  $14 \times -8$  using Booth's algorithm. (06 Marks)
  - c. Explain normalization, excess - exponent and special values with respect to IEEE floating point representation. (06 Marks)
- 7
  - a. With a diagram, explain typical single bus processor data path. (08 Marks)
  - b. Explain with neat diagram, the basic organization if a microprogrammed control unit. (08 Marks)
  - c. Differentials hardwired and microprogrammed control unit. (04 Marks)
- 8
  - a. Define and discuss Amdahl's law. (06 Marks)
  - b. With a diagram, explain a shared memory multiprocessor architecture. (08 Marks)
  - c. What is hardware multithreading? Explain different approaches in hardware multithreading. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.