Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MCIT - 203

M.E./M.Tech., II Semester

Examination, June 2016

Advance Computer Architecture

Time : Three Hours

Maximum Marks : 70

Note : Total number of Eight questions. All questions carry equal marks. Attempt any five questions. Assume missing data, if any, suitably.

1. a) Define parallel computing. What are the fundamental issue in parallel processing? Why parallel computing is required? Discuss various application of parallel computing. 7
   b) What do you understand by delayed branch approach of jump instruction in the instruction pipeline discuss with suitable example. 7

2. a) Write an $O(n^2)$ algorithm for SIMD matrix multiplication and draw the successive contents of the output array in memory. 7
   b) Distinguish between static and dynamic connection networks. 7

3. a) Consider a binary integer multiply pipeline with five stages if the stage delays are $Z_1 = Z_2 = Z_3 = Z_4 =$ gons $Z_s =$ zons and the latch delay is zone then. 7
      i) Determine the maximal clock rate of the pipeline.
      ii) What is the maximal throughput of this pipeline in terms of the number of 36-bit result generated per second?
   b) Why are reservation stations or reorder buffers needed in a super scalar processor? 7

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4. a) Differentiate between shared-memory multi-processor and distributed memory multi-computer. 7
   b) Explain the following associated with SIMO. 7
      i) Cube routing function
      ii) Mesh-connected illiac network

5. a) Explain possible data hazards with its resolving techniques. 7
   b) Why are distributed memory chosen over shared memory in design of multi-computer system? 7

6. a) Draw and explain 2 state-transition graphs for a cache block using write invalidate snoopy protocols. 7
   b) What is vector processing? Give some examples of vector processing. Also discuss some primitive vector processing instruction. 7

7. a) What is the basic block scheduling? Explain the local and global optimization with suitable example. 7
   b) How many type of parallel programming model? Explain each of them in briefly. 7

8. Write short note on:
   a) Away processor 7
   b) Feng classification 7

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