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

 Roll No.....

MCSE-103

M.E./M.Tech. I Semester

Examination, June 2017

Advanced Computer Architecture

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions out of eight.
ii) All questions carry equal marks.

1. a) Explain Flynn's classification based on the multiplicity of instruction streams and data streams in a computer system with the neat diagram. 7
   b) Discuss Handler's classification of parallel computing structures. 7

2. a) Compare static interconnection networks and dynamic interconnection networks. 7
   b) Discuss pipelining and vector processing. 7

3. a) Prove that a *k*-stage linear pipeline can be at most *k* times faster than that of a non-pipeline serial processor. 7
   b) Explain the possible hazards between read and write operation in an instruction pipeline. 7

4. a) Explain the following terminologies associated with SIMD computers: 7
      i) Lock-step operations
      ii) Burrel-shifting functions
      iii) Mashing of processing elements

   b) Draw the functional structure of a modern pipeline computer with scalar and vector capabilities. 7

5. a) Consider the following pipeline reservation table: 7

	0	1	2	3	4	5	6
S_1			X		X		
S_2		X		X			
S_3			X				X
S_4	X	X		X		X	

      i) What are the forbidden latians?
      ii) Draw the state transition diagram.
      iii) List all simple cycles and greedy cycles.
   b) Explain about data and control hazards and internal forwarding and register tagging. 7

6. a) Discuss the characteristics of MIMD multiprocessor that distinguish them from multiple computer systems. 7
   b) Explain the array processing. 7

7. a) Write a algorithm for associative search. 7
   b) Discuss about determistic scheduling models for multiprocessor systems. 7

8. Write short notes on the following (any four): 14
   a) SIMD matrix multiplications
   b) Instruction pipeline
   c) Multilevel cache coherance
   d) Multistage Omega network
   e) Parallel search algorithms

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