

Roll No

MCSE - 103**M.E./M.Tech., I Semester**

Examination, December 2015

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) Discuss the Flynn's classification scheme of computer architectures.
b) Describe the characteristics of the SIMD array processor with respect to MIMD.
2. a) Discuss the different data dependent hazards. How can these hazards be avoided.
b) Explain the internal data forwarding and possible hazards between read and write operations with respect to mechanism for instruction pipeline.
3. a) Draw the basic structure of a linear pipeline processor. Define the following terms related to linear pipeline :
i) Speed up ii) Efficiency
b) Describe the arithmetic pipeline $X = B + (A * 2)$.
4. a) Differentiate between UMW and NUMA models of shared memory multiprocessor.
b) Define systolic array along with different characteristics.
5. a) Justify the significance of any search algorithm in parallel computing.
b) Explain the SHAD parallel algorithm $O(n^2)$ for SIMD matrix multiplication.
6. a) Define Mapping in cache memory along with its classification in detail.
b) Explain the language features to exploit parallelism.
7. a) Differentiate between synchronized and asynchronous parallel algorithm?
b) Discuss the classification of pipeline processors.
8. a) Write short notes on any three of the following :
i) Cache coherence problem
ii) Control flow versus data flow mechanism
iii) Message passing mechanisms
iv) MIMD Multiprocessor.
b) What is Vector Processing? Discuss the various vector instruction types.
