

B.Tech. Degree VIII Semester Examination, April 2007

CS 801 ADVANCED ARCHITECTURE AND PARALLEL PROCESSING
(Prior to 2002 Admissions)

Time: 3 Hours

Maximum Marks: 100

- I a) Describe the following shared memory multiprocessor models: (10)
(i) UMA (ii) NUMA
- b) Explain the Flynn's classification of computer architecture. (10)
- OR**
- II a) What is Parallel Random Access Machine? Explain. (10)
- b) Write short notes on array processors. (6)
- c) Distinguish between loosely coupled and tightly coupled machines. (4)
- III a) What do you mean by a nonlinear pipeline processor? (4)
- b) Illustrate reservation and latency analysis. (6)
- c) Explain the state diagram for a three stage pipeline with the help of an example. (10)
- OR**
- IV a) Briefly outline the instruction pipeline design. (10)
- b) Explain the superscalar pipeline design with the help of a sample program. Also show its dependence graph. (10)
- V a) Discuss the various parallel programming models. (10)
- b) What are the software tools used for parallel programming? (10)
- OR**
- VI a) What do you mean by data dependency? What are the different types of dependencies? Draw the dependence graph with suitable examples. (12)
- b) What are the different program transformations used in parallel programming. (8)
- VII a) What is a thread? Explain the mutex usage of threads. (10)
- b) Explain the thread management constructs in Java. (10)
- OR**
- VIII a) Explain the message passing model. List out the major message passing mechanisms. (10)
- b) Explain the functional architecture of a Parallel Virtual Machine. (10)
- IX a) Discuss the parallelisation of any two sequential algorithms. (10)
- b) Explain the different debugging techniques used in parallel programming. (10)
- OR**
- X Write short notes on: (10 x 2 = 20)
- (i) Distributed databases
- (ii) Distributed operating systems