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: (i) UMA (ii) NUMA	(10)
	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 or 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: (i) Distributed databases (ii) Distributed operating systems	(10 x 2 = 20)

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