CLASS: BE   SEMESTER : VII
BRANCH: IT   SESSION : MO/19

SUBJECT: IT7041 PARALLEL AND DISTRIBUTED COMPUTING

TIME: 3:00 HOURS   FULL MARKS: 60

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Explain the need of parallel computing.	[2]
Q.1(b)	Differentiate between parallel computing and distributing computing.	[4]
Q.1(c)	Compare and contrast data parallelism with control parallelism.	[6]
Q.2(a)	Present RAM and P-RAM abstract model of computation.	[2]
Q.2(b)	Given a PRAM model with a single active processor, prove that $\lceil \log p \rceil$ instructions are both necessary and sufficient for 'p' processors become active.	[4]
Q.2(c)	Write and illustrate an EREW PRAM algorithm for parallel reduction.	[6]
Q.3(a)	Define the dilation of an embedding and the load of an embedding.	[2]
Q.3(b)	Prove that a binomial tree of height greater than 4 cannot be embedded in a 2-D mesh without increasing the dilation beyond 1.	[4]
Q.3(c)	Describe various methods of dynamic load balancing on multicomputers.	[6]
Q.4(a)	Write a parallel algorithm for multiplying two n × n matrices on a 2-D mesh SIMD computer.	[6]
Q.4(b)	Present an illustration of your algorithm for 3 × 3 operand matrices.	[4]
Q.4(c)	Comment on the complexity of your algorithm.	[2]
Q.5(a)	What are the goals of Distributed System?	[2]
Q.5(b)	Give an example of distributed system with your justification that why can't it be called a parallel system.	[4]
Q.5(c)	Explain Remote Procedure call with the help of a block diagram.	[6]
Q.6(a)	What are inherent limitations of a Distributed system?	[2]
Q.6(b)	Define 'happend before relation'. What are casually related events?	[4]
Q.6(c)	How does Lamport's logical clocks helps in ordering the events in distributed system? Show the limitation of Lamport's clocks.	[6]
Q.7(a)	State the need of consistency and replication in Distributed System.	[2]
Q.7(b)	Define Strict and FIFO Data Centric Consistency Models.	[4]
Q.7(c)	Present a short note on Distribution Protocols.	[6]