Total number of printed pages – 4   **B. Tech**

PECS 3407

Eighth Semester Examination – 2008

PARALLEL AND DISTRIBUTED SYSTEMS

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory
and any **five** from the rest.
The figures in the right-hand margin
indicate marks.*

1. Answer the following questions :   2×10

    (a) What is module granularity of a parallel algorithm ?

    (b) What do you mean by communication geometry in the context of parallel algorithm ?

    (c) Define running time of the parallel algorithm.

    (d) What do you mean by PRAM ?

    (e) What is the need of interconnection network for parallel computer ?

    (f) What is bisection width and bisection bandwidth in case of static interconnection network ?

    (g) What is cache coherence problem in multiprocessor system ?

    (h) What are the performance metrics parallel system ?

    (i) What is the use of MPI routines in parallel programming ?

    (j) Define bisection width of dynamic networks.

2. (a) Distinguish between synchronous computation and asynchronous computation.   5

    (b) Explain the superscalar processor architecture.   5

3. (a) Define and differentiate between static and dynamic interconnection network. 5

(b) What are the three different techniques are used in parallel computer for message passing ? 5

4. (a) Discuss the process of embedding a linear array into mesh network. 5

(b) What are the different blocking message passing operations in MPI paradigm ? 5

5. (a) Write a brief classification of processor organization, suitable for parallel computation. 5

(b) What do you mean by connectivity of a network ? What is arc connectivity for 3-dimensional hypercube ? 5

6. (a) Discuss the parallel formulation of Prim's algorithm to compute minimum spanning tree of a Weighted undirected connected graph ? 5

(b) What are the two primary form of data exchange in parallel computation ? 5

7. Discuss cache coherence problem in multi-processor system with state diagram of a simple three state coherence protocol. 10

8. Explain the process to sort n numbers on a parallel computer with p number of processors. Where $p = 2^d$, for any positive integer d. 10

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