$$S = 1/(1 - P + (P/N))$$

Total No. of Questions : 8]

[Total No. of Printed Pages : 2

Roll No ....

MCADD-805 (2)

M.C.A. (Integrated), VIII Semester

Examination, November 2023

Parallel Computing

(Elective - IV)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Describe the concept of permutation network with an example. Also, explain perfect shuffle permutation and Butterfly permutation. 7

   b) Illustrate Flynn's classification of parallel computer systems. List salient features of all categories. 7

2. Define MPI. Discuss the performance and issues factor in pipelining. 14

3. Discuss the following : 14

   i) Amdahl's Law

   ii) Gustafson's Law $g = s + (1-s) \cdot p$

4. a) Discuss the concepts of multithreading and its uses in parallel computer architecture. Give suitable example of multithreading. 7

   b) Explain the algorithm for odd-even transposition using a suitable example. 7

MCADD-805 (2)

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5. State and explain the law, which uses the notion of constant execution time. Explain with the help of an example.   14

6. Write short notes on the following: 14
    i)   Grid computing
    ii) Hyper threating
    iii) Parallel virtual machine
    iv) Array Processing

7. a) Discuss Handler's classification based on three distinct levels of computers.   7
    b) What is Synchronization Latency Problem in multithreaded processors?   7

8. Explain the parameters used to analyse genetic algorithms. Write a parallel algorithm to rank the elements of a linearly linked list in terms of distance from each node to the last element of the list.   14

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