2017/ODD/08/24/MCS–904 (C)/
MS–304 (C)/134

PG Odd Semester (CBCS) Exam., December—2017

COMPUTER SCIENCE

(9th Semester/3rd Semester)

Course No. : MCS–904 (C)/MS–304 (C)

(Advanced Computer Architecture and Parallel Computing)

Full Marks : 75
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. *(a)* What are the various architectural classification schemes? What is an instruction stream? What is a data stream? 2+2=4

(b) Explain any *two* with proper diagrams : 5½×2=11

(i) Pipeline computers

(ii) Array processors

(iii) Multiprocessor systems

2. *(a)* Explain Feng's classification. 8

(b) Explain the following interconnection networks : 1+2+2+2=7

(i) Tree

(ii) Diamond

(iii) Hypercube

(iv) Cube-connected cycles

UNIT—II

3. Explain the concepts of loosely and tightly coupled multiprocessor systems with proper diagrams. 7½+7½=15

4. *(a)* What do you mean by $C\ \langle N, F, I, M\rangle$? 3

(b) Explain masking and data-routing mechanisms with proper diagrams. 5

(c) Explain the static and dynamic SIMD Interconnection Networks with proper diagrams. 7

UNIT—III

5. *(a)* What is temporal parallelism? What are the disadvantages of temporal parallelism? 2+4=6

(b) Explain the PRAM approaches to handle concurrent write. 5

(c) Write a short note on agenda parallelism. 4

6. *(a)* Explain prefix computation on a linked list. 7

(b) Compare between *(i)* random access machine (RAM) and parallel random access machine (PRAM) and *(ii)* data parallelism with dynamic assistant and specialist data parallelism. 4+4=8

UNIT—IV

7. *(a)* Discuss the odd-even merging circuit. 6

(b) Compare between sequential matrix multiplication and parallel matrix multiplication. 4

(c) Explain Cannon's algorithm. 5

8. *(a)* Write down the procedure for odd-even transposition sort. 5

(b) Write a short note on sorting of linear array. 5

(c) Explain bitonic circuit for sorting. 5

UNIT—V

9. *(a)* What are the limitations of BFS in parallel computations? 4

(b) Explain parallel depth-first search. 5

(c) Explain data flow computer architecture. 6

10. *(a)* What are parallel search and bound search? 4

(b) Compare between parallel BFS and parallel DFS. 5

(c) Discuss the working strategies of best-first search. 6

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