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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- February, 2019

M. Tech II Semester (CSE & IT)

COURSE CODE: 14M1WCI432 MAX. MARKS: 25

COURSE NAME: Parallel Programming Techniques

COURSE CREDITS: 3 MAX. TIME: 90 Minutes

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

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1. Classify PRAM models according to the constraints they impose on global memory access. (CO3) [4 **marks]**
2. Write a parallel algorithm for computing OR of n bits on a Tolerant CRCW PRAM. (CO3)**[3 marks]**
3. How much time is taken to compute OR of n bits on EREW PRAM with n/2 processors? (CO3) **[2 marks]**
4. Sort N items on a linear array of size N. In how many steps the array has input in sorted order? In how many steps all the outputs are finally received? Explain the process for an array of size five with elements {4, 5, 2, 1, 3}. (CO3 **[4 marks]**
5. Sort an array {2, 5, 8, 1, 6, 4, 3, 7} using Odd-Even transposition sorting technique. Write all the steps. (CO3) **[2 marks]**
6. What is the dimension and degree of N-node hypercube? (CO4) **[2 marks]**
7. In how many steps a task on PRAM of N processors is self simulated on a PRAM of n processors? Discuss with one example. (CO4) **[3 marks]**
8. Describe the process of computing prefix sum on an EREW PRAM of N processors for the following array of size N. Array elements are{4, 8, 1, 5, 2, 7, 3, 6}. (CO4) **[3 marks]**
9. Compute the merge of the following two sorted arrays using rank and cross rank method.
   A={A, D, G, X, Y},
   B={F, J, L, M, N} (CO4) **[2 marks]**