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Unit Test IV Date: 09/11/2020

Class : BE Computer Div: A Subject : High Performance Computing
Academic Year : 2020-21 Sem : I Exam Date: 11/11/2020

Q. No.	*Question Description*	*Options 28*	*Correct Answer*	*Marks*	*CO*	*PO*	*PSO*	*BTL*
1	Select the parameters on which the parallel runtime of a program depends.	A. Input size B. Number of processors C. Communication parameters of the machine D. All of the above	**D**	**2**	**4**	**1**	**3**	**4**
2	The time that elapses from the moment the first processor starts to the moment the last processor finishes execution is called as _____.	A. Serial runtime B. Parallel runtime C. Overhead runtime D. Excess runtime	**B**	**2**	**4**	**4**	**3**	**4**
3	Select how the overhead function (T_o) is calculated.	A. $T_o = T_P - T_S$ B. $T_o = p*n\ T_P - T_S$ C. $T_o = p\ T_P - T_S$ D. $T_o = T_P - pT_S$	**C**	**2**	**4**	**1**	**3**	**1**
4	What is is the ratio of the time taken to solve a problem on a single processor to the time required to solve the same problem on a parallel computer with p identical processing elements?	A. Efficiency B. Overall time C. Speedup D. Scaleup	**C**	**2**	**4**	**1**	**3**	**4**
5	The parallel time for odd-even sort (efficient	A. 3.75 B. 3.5	**B**	**2**	**4**	**1**	**3**	**1**

	parallelization of bubble sort) is 50 seconds. The serial time for bubblesort is 175 seconds. Evaluate the speedup of bubble sort.	C. 0.33 D. 0.26						
6	Consider the problem of adding ***n*** numbers by using ***n*** processing elements. The serial time taken is Θ (***n***) and parallel time is Θ (**log *n***). Evaluate the efficiency.	A. E = Θ (***n*** / **log *n***) B. E = Θ (***n*** **log *n***) C. E = Θ (**log *n* / *n***) D. E = Θ (**1** / **log *n***)	**D**	**2**	**4**	**1**	**3**	**1**
7	What will be the efficiency of cost optimal parallel systems?	A. ***E*** = *O*(n). B. ***E*** = *O*(1). C. ***E*** = *O*(p). D. ***E*** = *O*(n log n).	**B**	**2**	**4**	**1**	**3**	**3**
8	Which law states that the maximum speedup of a parallel program is limited by the sequential fraction of the initial sequential program?	A. Amdahl's Law B. Flynn's Law C. Moore's Law D. Van Neumann's Law	**A**	**2**	**4**	**3**	**3**	**1**
9	Arrange the steps for the Matrix-Vector 2-D partitioning: i) result vector is computed by performing an all-to-one reduction along the columns. ii) Alignment of the vector *x* along the principal diagonal of the matrix. iii) Copy the vector	A. i, ii, iii B. ii, iii, i C. iii, i, ii D. ii, i, iii	**B**	**2**	**4**	**3**	**3**	**1**

	elements from each diagonal process to all the processes in the corresponding column using *n* simultaneous broadcasts among all processors in the column.							
10	Arrange the communication sequence in Matrix-Vector 2-D partitioning: i) all-to-one reduction in each row ii) one-to-all broadcast of each vector element among the *n* processes of each column iii) one-to-one communication to align the vector along the main diagonal	A. i, ii, iii B. ii, iii, i C. iii, ii, i D. ii, i, iii	**C**	**2**	**4**	**1**	**3**	**4**
11	Parallel time in Rowwise 1-D Partitioning of Matrix-Vector Multiplication where p=n is ____.	A. $\Theta(1)$ B. $\Theta(n \log n)$ C. $\Theta(n^2)$ D. $\Theta(n)$	**D**	**2**	**4**	**4**	**3**	**4**
12	What are the sources of overhead in parallel programs?	A. Interprocess interaction B. Idling C. Excess computation D. All of the above	**D**	**2**	**4**	**4**	**3**	**4**
13	What are the performance metrics of parallel systems?	A. Execution time B. Total parallel overhead C. Speedup	**E**	**2**	**4**	**4**	**3**	**4**

		D. Efficiency E. All of the above						
14	The isoefficiency function determines the ease with which a parallel system can maintain a constant efficiency. True of false?	A. True B. False	**A**	**2**	**4**	**1**	**3**	**1**
15	Which matrix-matrix multiplication algorithm uses a 3-D partitioning?	A. Cannon's algorithm B. DNS algorithm C. Both of the above D. None of the above	**B**	**2**	**4**	**1**	**3**	**1**

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