

02540

**MCA (Revised)**  
**Term-End Examination**  
**June, 2012**

**MCSE-011 : PARALLEL COMPUTING**

Time : 3 hours

Maximum Marks : 100

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*Note : Question number 1 is compulsory. Attempt any three questions from the rest.*

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1. (a) Describe different architectures for shared memory multiprocessing along with their advantage and disadvantages. 10
- (b) What is meant by Temporal Parallelism and Data Parallelism ? Explain with the help an example for each. 10
- (c) Explain Bens's Network as a Non blocking network. Show the interconnection of Ben's Network for the following permutations : 10
- $$P = \begin{pmatrix} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 2 & 6 & 0 & 4 & 7 & 3 & 5 & 1 \end{pmatrix}$$
- (d) Compare and contrast between the Flynn's classification and structural classification. 10

2. (a) Explain the applicability and the restriction involved in using the Amdahl's Law, Gustafson's Law and Sun and Ni's Law to estimate the speed up performance of h processor system compared with that of a single processor system. 10
- (b) When an algorithm is said to be asymptotically time optimal ? Mention a problem for which we have a time optimal algorithm and justify your answer. 10
3. (a) Explain pipeline processing using an example and explain the architecture of pipeline processing. 10
- (b) Write and explain the algorithm for solving the matrix multiplication problem using the parallel model. 10
4. (a) What is meant by vector processing ? Write at least four differences between vector processing and scalar processing. Also, explain various vector instructions along with their function mappings. 10
- (b) What is the meaning of scalability of parallel algorithms ? Write the characteristics of parallel algorithm written for PRAM machine. 10
5. Write a short notes on the following : 5x4=20
- (a) Array Processing
- (b) Hyperthread Processor
- (c) Cluster Computing
- (d) Parallel Virtual Machine