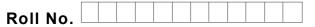
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Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(IT) (2015 & Onwards)/(CSE Engg.)/(E-Security) (Sem.–1) ADVANCED COMPUTER ARCHITECTURE Subject Code : CS-505 Paper ID : [E0685]

Time : 3 Hrs.

Max. Marks: 100

INSTRUCTION TO CANDIDATES :

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 1. a. Explain the Equal Duration computation model for the multiprocessors.

b. Explain the various applications of vector processors.

- 2. Assume that a simple addition of two elements requires a unit time. You are required to compute the execution time needed to perform the addition of a 40×40 elements array using each of the following arrangements :
 - a. A SIMD system having 64 processing elements connected in nearest-neighbor fashion. Consider that each processor has only its local memory.
 - b. A SIMD system having 64 processing elements connected to a shared memory through an interconnection network. Ignore the communication time.
 - c. A MIMD computer system having 64 independent elements accessing a shared memory through an interconnection network. Ignore the communication time.
- 3. Compare the following :
 - a. Cluster and grid computing.
 - b. Pipelined and Superscalar Processors.
- 4. Superscalar processors allow faster CPU throughput due to instruction level parallelism. Explain the working of superscalar processors with the help of proper illustrations.
- 5. Explain the following :
 - a. Vector Architecture
 - b. Array Processors
- 6. What is simultaneous multithreading? Explain various multithreading techniques.
- 7. Explain the decisions and transformations to be considered to obtain unrolled code in loop unrolling and scheduling.
- 8. Define Computer Architecture with the help of a diagram. Outline major challenges and issues in the design of multi-threaded architectures.

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