

(3 hours)

[80 marks]

- Instructions: 1. Question number 1 is compulsory
2. Attempt any three questions from Question no 2 to Question no 6.
3. Assume suitable data if necessary.

- Q1. A) What are the dataflow design alternatives? Explain in Detail. [10]
B) Explain the recent developments in Nanotechnology and its impact on HPC [10]
- Q2. A) Explain SIMD, MIMD and SMIT architecture? [10]
B) Define CUDA? Explain the CUDA processor architecture. [10]
- Q3. A) Give difference between MPI and Open MP. [10]
B) Why process synchronization is required? Explain different types of synchronization mechanisms briefly. [10]
- Q4. A) What are the principles of Message passing programming? [10]
B) Explain in detail Memory hierarchy and transaction specific memory design using CUDA? [10]
- Q5 A) Design parallel algorithm structure for performing Partitioning and Matrix input / Output. [10]
B) Explain architecture of NVIDIA GPU. [10]
- Q6. Write short note on the following (any Two) : [20]
a) Major design issues of Data Flow computers.
b) Loosely coupled system vs. tightly coupled system.
c) PetaScale Computing.
d) Quantum Computers.
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