

Total No. of Questions : 8]

SEAT No. :

P3563

[Total No. of Pages : 2

[4959] - 1163
B.E. (Computer Engineering)
High Performance Computing
(2012 Pattern)

Time : 2 $\frac{1}{2}$ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) First Two Questions are Compulsory. Answer three questions. (Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.)
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Assume suitable data if necessary.

Q1) a) Explain SIMD, MIMD and SIMT architecture. [4]

b) Explain basic working principal of VLIW processor. [6]

Q2) a) Write a note on IBM Cell Broadband Engine (CBE). [6]

b) Write a short note on Dataflow Model. [4]

Q3) a) Differentiate between Thread and Process. For Multi threading implementation there is implicit support of architecture. Justify. [7]

b) Explain how 'pthread_mutex_trylock' reduce locking overhead? [8]

OR

Q4) a) Implement Producer Consumer problem using Mutex synchronization primitives in Pthreads. [7]

b) Describe Barrier Synchronization for Shared address space Model. [8]

P.T.O.

- Q5) a)** Write a pseudo-code for Parallel Quick Sort. [7]
b) How pivot selection is crucial factor for algorithm performance? [8]

OR

- Q6) a)** Explain sorting network with suitable diagram. [7]
b) Explain single source shortest path algorithm with suitable example. [8]

- Q7) a)** Write a short note on (Any Two): [15]
i) Discrete optimization problems.
ii) Parallel Best-First-Search.
iii) Quantum Computers.
b) Share your thoughts about how HPC will help to promote “MAKE IN INDIA” initiative. [5]

OR

- Q8) a)** Write a short note on (Any Two): [15]
i) Parallel Depth-First-Search.
ii) Search Overhead Factor.
iii) Power Aware Processing.
b) Define term HPC and Elaborate its use to Indian Society. [5]

