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 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]**