Total No. of Questions : 8]

P3116

SEAT No. :

[Total No. of Pages : 2

May 2017

[5154]-683

B.E. (Computer Engineering)

HIGH PERFORMANCE COMPUTING

(2012 Pattern) (Semester -II) (410450) (End Sem.)

Time : 2 ½ Hour] *[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) What are applications of Parallel Computing? [4]

b) Explain Granularity, Concurrency, and Dependency Graph [6]

Q2) a) What are principles of Message Passing Programming [6]

b) Explain Non-Blocking communications using MPI. [4]

Q3) a) Describe Logical Memory Model of a thread? [7]

b) Why synchronization in important? Enlist Thread APIs for Mutex Synchronization. [8]

OR

Q4) a) Implement Merge sort using synchronization primitives in Pthreads. [7]

b) Illustrate importance of read-write lock for Shared address space Model. [8]

Q5) a) What are different partitioning techniques used in Matrix-Vector Multiplication. [7]

b) Describe Cannon's Algorithm for Matrix multiplication with suitable example. [8]

OR

Q6) a) Describe different techniques for Latency Hiding. [7]

b) How Latency Hiding is different than Latency Reduction? [8]

P.T.O.

Q7) a) Write a short note on (Any Two) [15]

i) Parallel Depth-First-Search.
ii) Search Overhead Factor.
iii) Power Aware Processing.

b) Elucidate Thread Organization in detail. [5]

OR

Q8) a) Write a short note on (Any Two) [15]

i) Distributed Memory.
ii) Optical Computing.
iii) Green Computing.

b) Intricate sorting issues in parallel computers. [5]

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