Total No. of Questions : 8]

SEAT No. :

P3973

[Total No. of Pages : 2

[5561]-677
B.E. (Computer Engineering)
HIGH PERFORMANCE COMPUTING
(2015 Pattern) (Semester - I) (410241)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Make suitable assumptions whenever necessary.***

Q1) a) Explain Store - and - Forward and packet routing with its communication cost. **[6]**

b) Differentiate between Static and Dynamic mapping techniques for load balancing. **[6]**

c) Explain Circular shift operation on mesh and hypercube network. **[8]**

OR

Q2) a) Discuss the applications that benefit from multi - core architecture. **[6]**

b) Define and explain the following terms. **[6]**

i) Granularity

ii) Task interaction graph

iii) Degree of Concurrency

c) How to improve speed of communication operations? **[8]**

Q3) a) Explain performance matrices of parallel systems. **[8]**

b) Explain the effects of granularity on the performance of a parallel system. **[8]**

OR

Q4) a) Explain Matrix - matrix multiplication in detail. **[8]**

b) Write a note on minimum and cost optimal execution time. **[8]**

P.T.O.

Q5) a) Explain compare - exchange and compare - split operation on parallel computers. **[8]**

b) Explain odd - even transportation on bubble sort using parallel formulation. **[8]**

OR

Q6) a) Explain parallel Depth First Search for solving 8 puzzle problem. **[8]**

b) Explain Dijkstra's algorithm in parallel formulation. **[8]**

Q7) a) What is CUDA? Draw and explain CUDA architecture in detail. **[9]**

b) Explain how the CUDA C program executes at the kernel level with example. **[9]**

OR

Q8) a) Describe CUDA communication and synchronization along with CUDA C functions. **[9]**

b) Write a short note on: Managing GPU memory. **[9]**