2010-2011
M.TECH. (III SEMESTER) EXAMINATION
(COMPUTER SCIENCE & ENGINEERING)
PARALLEL COMPUTING
(CO-610)

Maximum marks: 75

Duration: Three Hours

Answer all questions.
To elaborate answers, give proper example and write program segments, wherever necessary.

1. Write technical notes on any three of the following: 3 x 5
   (i) Parallel programming environment
   (ii) Grid computing
   (iii) Software agent
   (iv) Heterogeneous processing.

2. (a) Discuss the computer architectural classification schemes and mention which scheme is popular and why? 05
   (b) Discuss the limitation of Von Neuman architecture. 05
   (c) Among various processor organizations which one is better, discuss their various performance indices. 05

OR

2'(a) Differentiate between Amdahl’s Law and Guotafson Barris Law with examples. Draw and explain varied speed up curves. 05
   (b) Discuss the properties and factors of an interconnection network that affects the performance of the computer system. 05
   (c) Distinguish between UMA and NUMA multiprocessor models. 05

3. (a) Differentiate between Parallelism and Pipelining. Discuss dynamic pipelining and its effects on the performance of the system. 05
   (b) Discuss the cache-coherence problems and explain their solutions. 05
   (c) Explain the concept of pipelining at various level with examples. 05

4. (a) Compare the three interleaved memory organizations on the basis of various Trade-offs. Draw the circuit and explain the limitation of 4-way interleaved memory organization. 08
(b) Discuss the concept of FORK-JOIN with suitable examples.

OR

4'(a) Discuss the merits and demerits of PRAM model. Discuss sorting algorithm on various PRAM models.
(b) Discuss parallel algorithm design strategies.
(c) Write short note on complexity of algorithm.

5.(a) Discuss and implement Search and Matrix multiplication algorithms on a mesh interconnection (SIMD) network and analyze algorithm's performance indices.
(b) Discuss and implement cost-optimal algorithm for prefix computation.