SEAT No. :

[Total No. of Pages : 2

## [4460] - 757
## M.E. (Computer Engineering)
## ADVANCED COMPUTER ARCHITECTURE
## (2013 Pattern)

*Time : 3 Hours]*         *[Max. Marks : 50*

*Instructions to the candidates :*

1) *Answers to the two sections should be written in separate books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

### SECTION - I

**Q1)** What is the significance of PRAM models? Describe the four variants of PRAM model and compare it with parallel computer architectures. **[9]**

OR

State the following terms w.r.t. various interconnect architectures : **[9]**

a) Network diameter.
b) Node degree.
c) Bisection Bandwidth.
d) Static IN.
e) Dynamic IN.
f) Non blocking Network.

**Q2)** Explain the terms speedup, efficiency and throughput w.r.t. performance of parallel computer system. Derive the Amdahl's low for speedup performance.

**[8]**

OR

With example, illustrate the mismatch between software and hardware parallelism. How can we match the software and hardware parallelism. **[8]**

**Q3)** Compare between instruction and arithmatic pipeline. Design a 6-bit multiplier using CSA tree. How it can be viewed as a k-stage pipeline. **[8]**

OR

Discuss three important properties related to information stored in memory hierarchy. How the data transfer takes place between adjustment levels of a memory hierarchy? **[8]**

*P.T.O.*

## SECTION - II

*Q4)* Explain the following terms associated with cache design :   **[8]**

    a) Write back v/s write-through caches.

    b) Write update v/s write-invalidate protocol.

    c) Private v/s shared caches.

### OR

Discuss the dataflow and hybrid approach used in the design of multi-threaded architectures.   **[8]**

*Q5)* What do you mean by implicit and explicit parallel programming? With example discuss message passing parallel programming.   **[8]**

### OR

With example, explain in brief the dependance analysis of data arrays done in parallelizing compilers.   **[8]**

*Q6)* Explain the following terms w.r.t. grid computing :   **[9]**

    a) Middle ware.

    b) Virtual organization.

    c) OGSA.

    d) OGSI.

### OR

Explain in brief the following architectures w.r.t. distributed parallel processing :   **[9]**

    a) Cloud computing.

    b) Neuro computing.

    c) Quantum computing.

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