



Printed Pages : 3

TCS - 802

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0148

Roll No.

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B. Tech.

(SEM. VIII) EXAMINATION, 2008-09

ADVANCE COMPUTER ARCHITECTURE

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt **all** questions.
 - (2) **All** questions carry **equal** marks.
 - (3) Be precise in your answer.
 - (4) No second answer book will be provided.

1 Attempt any **two** parts of the following :

- (a) Define parallel computing. What are the fundamental issues in parallel processing ? Why parallel computing is required ? Discuss various applications of parallel computing.
- (b) Explain how degree of parallelism (DOP) and number of processors affect the performance of a parallel computing system. Discuss various speedup performance laws.
- (c) Explain Flynn's classification of computer architecture and how it is Feng's classification ?



2 Attempt any **two** parts of the following :

- (a) What do you understand by pipelining ? Explain it. What are hazards that occur in pipelining in your opinion. Explain it.
- (b) What do you understand by linear and non-linear pipeline processors ? Explain them.
- (c) Discuss memory hierarchy technology. Explain inclusion, coherence and locality properties.

3 Attempt any **two** parts of the following :

- (a) Explain about array computers and pipeline computers.
- (b) Explain the following :
 - (i) Neural architecture
 - (ii) Associative processors
 - (iii) Systolic architecture.
- (c) Explain the structural and operational differences between register-to-register and memory-to-memory architecture in building multi-pipelined super computers for vector processing. Comment on the advantages and disadvantages in using SIMD computers as compared with the use of pipelined super computers for vector processing.

4 Attempt any **two** parts of the following :

- (a) What do you understand by PRAM algorithms ? Discuss and explain with suitable example about the PRAM algorithm for merging two sorted lists.



- (b) Prove that the best parallel algorithm written for an n -processor EREW PRAM model can be no more than $O(\log n)$ times slower than any algorithm for a (CRCW) model of PRAM having the same number of processors.
- (c) Explain the following terms related to shared-variable programming on multiprocessors :
Multiprocessing in MIMD mode.

5 Write short notes on any **two** :

- (a) Conditional compilation
(b) Run-time library routines
(c) Master and synchronization constructs.
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