



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

PAPER ID : 214405

Roll No.

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M. C. A.

(SEM. IV) THEORY EXAMINATION, 2014-15

ADVANCE COMPUTER ARCHITECTURE

Time : 3 Hours]

[Total Marks : 100

Note : Attempt **all** questions. **All** questions carry equal marks.

1 Attempt any four parts : **5×4=20**

- (a) What is m-way interleaving ? Discuss different types of memory interleaving.
- (b) Comment on balancing of system bandwidth.
- (c) Discuss various classifications of parallel processing mechanisms in uniprocessor computers.
- (d) Differentiate between DMA and I/O channel.
- (e) How memory contention problem can be reduced in multiprocessor systems ?
- (f) How multi cache coherence problem is handled ?

2 Attempt any two parts : **10×2=20**

- (a) Discuss functional architecture of SIMD multiprocessor systems.

- (b) Discuss superscalar and superpipelined processing. Also estimate the performance of superpipelined superscalar processor of degree(m, n).
- (c) What are the hazards that occurs in pipelining in your opinion. Explain.

3 Attempt any two parts : 2×10=20

- (a) What is meant by cache coherency ? Explain with the help of a suitable example.
- (b) How POSIX threads are creating and exiting ? Explain.
- (c) Differentiate between parallel and distributed processing. Why array computers are termed as parallel computers ?

4 Attempt any two parts : 10×2=20

- (a) Discuss static and dynamic data flow architecture model. Elaborate Flynn's classification.
- (b) Vectorizing compilers generally detect loops that can be executed on a pipelined vector computer. Are the vectorization algorithms used by vectorizing compilers suitable for MIMD machine parallelization ?
- (c) Explain how instruction set compiler technology CPU implementation & control and memory hierarchy effect the CPU performance. Justify the effects in terms of program length, clock rate and effective CPI.

5 Attempt any two parts :

10×2=20

- (a) Define parallel computing. What are the fundamental issues in parallel processing ? Why parallel computing is required ?
 - (b) What do you understand by linear and nonlinear pipeline processor ? Explain them.
 - (c) Write short notes on :
 - (i) Condition compilation
 - (ii) Master and synchronization constructions.
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