Subject Code—4384-X

M.C.A. EXAMINATION

June, 2006

(Fifth Semester)

(Re-appear)

MS-33

ADVANCED COMPUTER ARCHITECTURE

Time : 3 *Hours* *Maximum Marks :* 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Explain how instruction set, compiler technology, CPU implementation and control and cache and memory hierarchy affect the CPU performance and justify the effects in terms of program length, clock rate and effective CPI.

   (b) Compare control flow, data flow and reduction computers in terms of program flow mechanism used.

P.T.O.

2. Write short notes on the following :
   (a) Crossbar Networks
   (b) Bernstein conditions
   (c) Flow dependence and Antidependence
   (d) Pipeline Stalling.

3. (a) Explain Flynn's classification for various architectures.
   (b) Explain various tradeoffs in Scalability Analysis.

4. Describe different Page Replacement Policies in detail with examples.

5. Explain the following terms associated with cache design :
   (a) Write through *Vs.* Write back caches
   (b) Factors affecting cache hit ratios
   (c) Private caches *Vs.* Shared Caches.

6. (a) Compare Super scalar and Super pipeline design.
   (b) Explain Instruction Pipelining.

7. Explain the following terms :

   (a) Wormhole Routing

   (b) Multilevel Cache Coherence

   (c) Deadlock and Virtual Channels

   (d) Virtual Networks.

8. What is Multithreading ? Discuss various principles of multithreading.