Roll No. .....

Subject Code—613

M.C.A. EXAMINATION

(Fifth Semester)

MS-33

ADVANCED COMPUTER ARCHITECTURE

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

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

1. (a) What are the system attributes which describe the performance of a computer system ? Discuss in brief.

(b) Differentiate SISD and MIMD.

(c) Differentiate scalar and superscalar architecture. **8+6+6**

2. (a) Explain Bernsteins conditions for parallelism.

(b) What do you understand by the term scalable system network ? Discuss its characteristics.

(c) Differentiate multistage network and crossbar. 6+6+8

3. (a) Differentiate linear and non-linear pipelines.

(b) What is the speed up with a pipeline of 'K' segments ?

Can we keep on increasing the number of segments ? Discuss.

(c) Differentiate CISC and RISC architectures. 6+8+6

4. (a) What is the significance of cache coherence ? Describe in brief methods used for cache coherence.

(b) Differentiate LRU versus FIFO policies of page replacement. Enumerate other known policies also. 10+10

5. Compare the relative merits and demerits of the following four cache memory organizations :

(i) Direct mapping cache

(ii) Fully associative cache

(iii) Set association cache

(iv) Sector mapping cache. 4×5=20

6. (a) Explain multithreading concept with illustrations.

(b) Discuss use of data flow graph in a data flow computer. It is said that the data flow computer does not need much memory storage. Comment. 8+12

7. (a) Describe the concept of vector processor. How is vector processor different from a scalar processor and under what conditions it improves the processing power ?

(b) Explain the difference in the architecture of a scalar register vis-a-vis vector register. 15+5

8. Write short notes on any *two* of the following :

(a) Nanotechnology

(b) Quantum Computing

(c) Grid Computing

(d) Omega Network

(e) VLIW architecture and its efficiency.

10+10