Roll No……. **10412**

MCA/D-13

COMPUTERARCHITECTURE AND PARALLEL PROCESSING

Paper—MCA—503

Time allowed : 3 hours] [Maximum marks : 80

Note : Attempt five questions in all. Question No. 1 is compulsory. Attempt four more questions selecting one question from each unit.

1. Answer the following questions in brief:

(a) Why Booth's 'multiplication algorithm is faster?
(b) What are pros and cons of horizontal and Vertical microinstruction formats?
(c) Distinguish' between SIMD and MISD architectures.
(d) What are levels of utilized parallelism?
(e) Distinguish between aligned and unaligned issue.
(f) What is branch problem?
(g) What are pros and cons of multicomputer as compared with multiprocessor?
(h) Distinguish between pended and split transaction bus. 8x3=24

Unit-I

2. (a) Devise an algorithm in flow chart form to multiply two integers represented in sign-magnitude form. 7
(b) Devise an algorithm in flowchart form to add/subtract two floating point numbers. 7

3. What is control unit? What are its functions? When hardwired control is preferred? 7

(b) Explain microinstruction addressing scheme with the help of a suitable diagram. 7

Unit-II

4. (a) Discuss the relationships between programming languages and parallel architectures. 7
(b) Explain multi-level hierarchical framework of computer architecture. 7

5. (a) Explain RAW, WAR and WAW dependencies with suitable examples. 7
(b) Explain loop unrollin g technique of code scheduling. 7

Unit-III

6. Write short note on :
(a) Sequential consistency model 7
(b) Shelving 7
7. (a) Explain static prediction schemes for branch handling 7
(b) Explain guarded execution scheme of branch handling. 7

Unit-IV

8. (a) Explain the following static interconnection networks: Linear Array, Binary Tree and 2D Mesh. 7
(b) What is cache coherence problem? Explain full-map directory scheme for this problem. 7
9. (a) Explain the construction and working of 8X8 Omega network.
(b) Explain the architecture of CC-NUMA computer. 7