

Roll No. ....

Total Pages : 3

OMCA/D-20

**24200**

**COMPUTER ARCHITECTURE & PARALLEL  
PROCESSING**

Paper–MCA-503

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

**Compulsory Question**

1. Answer the following questions in brief :  $4 \times 4 = 16$ 
  - (a) Compare and contrast Horizontal and Vertical microinstruction formats.
  - (b) Explain Flynn's classification of Computers.
  - (c) What are Branch penalties? Explain Guarded execution scheme to reduce it.
  - (d) Distinguish between Bus and Linear array interconnection Networks.

**24200/K/842**

**P. T. O.**

## UNIT-I

2. (a) Derive an algorithm in flowchart form for addition and subtraction with signed magnitude Data. Also show the hardware needed for its implementation. 8
- (b) Derive an algorithm in flowchart form for multiplication with normalized floating-point Data. Also show the hardware needed for its implementation. 8
3. (a) What are functions of Control unit? Discuss Classical method of hardwired design of Control unit 8
- (b) What is Microprogrammed control unit? Explain Microinstruction addressing scheme used in Microprogrammed control unit. 8

## UNIT-II

4. (a) Discuss the evolution and latest Interpretation of Computer Architecture. 8
- (b) What is Utilized parallelism? Explain different levels of Utilized parallelism. 8
5. (a) Explain different Data dependencies among Instructions and suitable examples. 8

- (b) What is Code scheduling? Explain Global scheduling in detail. 8

### UNIT-III

6. (a) What is Superscalar processor? Explain Shelved issue with suitable diagram. 8
- (b) Explain the models of preserving Sequential consistency of Instruction execution. 8
7. (a) What is Branch problem? Explain early Branch detection schemes. 8
- (b) What are Static prediction schemes used for Branch handling? Explain them. 8

### UNIT-IV

8. (a) What is Multicomputer? Discuss the general architecture of Multicomputer with suitable diagram. 8
- (b) Explain Ring interconnection network with suitable diagram. Also explain its variants. 8
9. (a) What is Cache coherence problem? Explain Snoopy protocol. 8
- (b) What are the limitations of UMA model? How are these overcome by NUMA model? 8