Paper : III
Computer Architecture

Time : 3 Hours *M.M. : 100*

(Compulsory Question)

1. Define :
   (i) True Complement (ii) Radix-minus-one-Complement
   (iii) RISC (iv) CISC
   (v) Instruction Stream (vi) Data Stream
   (vii) Interchange Switch (viii) Omega switching Network
   (ix) MIMO

UNIT–I

2. (a) Derive an algorithm in flowchart form for adding and subtracting two fixed point binary numbers.
   (b) Solve the following using normalized floating point numbers :
   (i) .4516 E4 + .7815 E4
   (ii) .7415 E5 – .3675 E4
   (iii) .2315 E6 + .6518 E4 9, 9

3. (a) Derive an algorithm in the form of flow chart for Booth algorithm for multiplication of signed –2's Complement numbers.
   (b) Show the Register configuration for hardware implementation of Booth algorithm. 9, 9

UNIT–II

4. What do you mean by Interrupts ? Explain its types. Also give exmaples for each types. 18

5. (a) Distinguish between RISC and CISC.
   (b) Give an example of RISC instructions that will perform the following operations :
   (i) Decrement a register
   (ii) Complement a register
   (iii) Negate a register 9, 9

UNIT–III

6. (a) Briefly explain the advantages of lookahead systems.
   (b) Draw a space-time diagram for a six-segment pipeline showing the time it takes to process eight tasks. 9, 9

7. Draw a flowchart showing the pipeline for floating point addition and subtraction. 18

UNIT–IV

8. Explain Parallel Processing. Draw a diagram showing the process with multiple functional units. 9, 9

9. Briefly explain the following :
   (a) System topologies
   (b) MIMO system architecture. 9, 9